

# mindfocus

Volume VII, 2022

Healthcare technology for a better tomorrow

## Emerging Trends

New approaches in Fatty Liver Diagnosis

## Interview

**Dr. Divyesh Sadadiwala**

Pediatric Cardiologist

Director and Founder,  
Happy Hearts, Gujarat

## IT in Healthcare

Expectations, Reality &  
Challenges

## CMS Viewer

Changing trends in Patient Monitoring

## MT India Healthcare Awards 2022

Mindray India Pvt Ltd bags "Most Admired  
Company in Medical Devices of the Year"

## Krsnaa Diagnostics

Leveraging AI to deliver quality  
diagnostics to the rural  
hinterlands of India

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healthcare within reach

**Ms. Pallavi Jain**  
MD  
Krsnaa Diagnostics



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- Synchronize the patient information and data with the information system automatically
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- Optimize clinical workflow efficiently for better patient care
- Access patient data anywhere anytime
- Maximize your medical resources



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**WE ARE DEDICATED TO INNOVATION** IN THE FIELDS OF PATIENT MONITORING & LIFE SUPPORT, *IN-VITRO* DIAGNOSTICS, AND MEDICAL IMAGING SYSTEMS.

”



# Mindray : Leading the way forward for Healthier Bharat

I wish to express my heartfelt gratitude to all the healthcare professionals in India for your commitment and dedication during these times. We are pleased to present yet another issue of MINDFOCUS, our in-house publication at Mindray India that aims to foster connections among healthcare professionals and serve as a forum for the exchange of cutting-edge research and new industry benchmarks. I believe you will find this edition to be just as intriguing and stimulating as the previous ones.

## Positive Momentum

At Mindray, we are optimistic about the future opportunities that lie ahead. Over the last few years, our endeavors have gained positive momentum in terms of the acceptance of innovative solutions we provide to healthcare clinicians as well as our contribution to building a healthier Bharat. We have been consistently delivering high-standard products and services tailored to customer demands in India and the globe.

## Recovery of Economy

In the post-Covid era, our medical solutions are aimed at providing a higher value to the community at a mass level while optimizing the costs involved to ensure the recovery of economy. Here the value of community plays a vital role that cannot be undermined while building a fast-growing

healthcare organization. Therefore, at Mindray, having a group of peers, KOL's review and check on our progress, and share their thoughts serve as excellent motivation. Getting clinical experts to share their valuable feedback and experiences with the best clinical practices followed by industry colleagues facilitates our mission of a Healthier Bharat.

## Mindray Brand is Growing

Mindray's brand momentum in India continues to grow stronger and we are driving focused growth by introducing new generation and innovative products, expanding the supply chain infrastructure, and strengthening the team along with diversifying our channel network. We continue to see the success of our aim to be close to the customer and become a trusted partner for a Healthier Bharat, fueling even more significant potential for Mindray India over the long term.

## Trusted Partner for Healthier Bharat

Mindray integrates innovation closely with clinical scenarios to support medical institutions to provide high-quality medical services, help improve medical conditions, and reduce medical costs worldwide. We are glad to share that Mindray has become a long-term partner of many leading medical institutions across India. We will continue to support Healthcare Professionals in India by providing solutions that are accessible to all. This is the reason Mindray is growing phenomenally as a brand and is soon to become the most trusted healthcare partner leading the cause of a Healthier Bharat.

Thank you all for your unwavering support.

Be healthy, be safe!



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

# Expectation, reality, and challenges during Lab Equipment Selection Process



Dr. Manish Karekar is a qualified MBBS, MD, Pathology, Six Sigma Black belt from ISI, Pune. He is a Technical assessor for NABL (ISO 15189:2012) and an international fellow of CAP also done Health care management and Data analytics from IIM – Kozhikode.

He is currently in Krsnaa Diagnostics Ltd. as Chief Operating Officer in Laboratory Medicine and Pathology. His job role encompasses continuous improvement across the total testing process, standardization, innovation, and sustenance of standardized processes across all laboratory services. His areas of interest are coagulation, autoimmune testing, Mitigation of risk in processes, and method verifications.

He talks about how we can go about selecting equipment for the laboratory and what expectations are from the IVD Industry.



**Dr. Manish Karekar**  
MBBS, MD,  
Chief Operating Officer in  
Laboratory Medicine Pathology  
Krsnaa Diagnostics



**T**he lab equipment selection process is based upon expectations, reality, and challenges. It is like a utopian dream of choosing the perfect lab equipment. There are certain compromises that need to be made and certain specific points selected while choosing lab equipment.

Lab physicians have some specific parameters while selecting laboratory equipment like:

- Quality Goals
- Software Compatibility
- Throughput
- Scope/Test menu

The lab team/ purchase team controls the initiation of the process equipment selection process.

The lab physicians evaluate whether the equipment meets

- The quality goals
- And the throughput of the equipment since each laboratory is of a different size
- Test menu across equipment: In hematology, 10-15 years back, there were limited parameters in CBC test, but however now it has evolved and a lot of new parameters have come which can aid diagnosis of nutritional anemias and hemolytic anemia. For clinical chemistry and immunoassay, the wider the test menu the better it is.
- Software capability of the vendor of the lab equipment and how it can amalgamate with the existing Lab information system (LIS).

The selection of lab equipment in our setup is based on the quality goals for the equipment. Upon the arrival of any new equipment, they are kept at the laboratory and lab physicians compare those with the existing setup or existing equipment. If it is completely new technology or equipment which has nothing to be compared with, then peer laboratory methods or standard procedures are used for comparison.

### Parameters for choosing laboratory equipment

The primary parameter is **Accuracy**. It is the true value of the experiments, and what exactly is the value which is reported.

It is compared with peer laboratories, if there is an X value which is reported, then what is the acceptable value around X with other lab reports.

Next is the **precision** of the equipment. It consists of the repeatability variation. For example, people around the hospital or set up keep on doing the same test, then the result determines the repeatability determination. Another aspect known as the total error is defined as a combination of accuracy and precision.

International communities like CLIA in the USA, RILIBAK, and the RCPA define Quality Goals. They have defined various quality goals for the analytes. The laboratories have to select their best fit.



**THE MOST ESSENTIAL IS LABORATORY THROUGHPUT**  
WE HAVE LABS ALL ACROSS THE COUNTRY FROM SEVEN SISTERS TO JAMMU AND TO EASTERN RAJASTHAN, THE GEOGRAPHIES ARE DIFFERENT AND THE TEMPERATURE ALSO VARIES.



New Lab equipment is weighted based on these quality goals. Whenever new equipment comes, it is compared with an existing setup or equipment. If it is new technologies that do not have any comparator, it is compared with existing methods or if any peer has that equipment, some samples are collected from peers for evaluation.

**Linearity** is essential as it adds to a lot of cost savings. Linearity means the highest and lowest value reportable by the equipment or kit that can be reproducible. It is a range of a particular kit or equipment; for example, a manufacturer X measures blood sugar up to 400 mg/dL and another one Y measures up to 800 mg/dL; So if a patient value is 500 mg/dL, then the sample needs to be rerun in dilution on kit X where as the values can be released on kit Y. As kit Y measures up to 800 mg/dL, we don't need to repeat the test. The higher first-pass yield of results, means when we run the sample for the first time, how many times do we need to repeat it again? The greater the first pass yield of results, the shorter the turnaround time, which results in cost efficiency.

**Carryover** is the last assessment marker. For example, when we buy a certain vehicle, there is a specific vehicle average given by the company, but we don't get that vehicle average. Similarly, there are commitments proclaimed by the equipment of providing certain precision and accuracy but we need to verify at our end and finally, we come to know what that equipment can achieve and also be compared with peers.

One great expectation, therefore, arises that the lab equipment must be tested in different geographies and in different ethnicities. IVD companies need to collaborate with the laboratory physicians of our country to have biological reference interval which is relevant to our population.

### Expectations of vendors for lab equipment

The most essential is laboratory throughput; we have labs all across the country from seven sisters to Jammu and to eastern Rajasthan, the geographies and climates are totally different. The diagnostic market is growing at a rate of 20%- 25% per year, especially in Tier 2- Tier 3 cities where the population is less than 5 lacs. Lab physicians working in Tier 2 and Tier 3 cities essentially look for throughput of the equipment whose capacity ranges from 350 tests per hour for certain equipment to 50-60 tests per hour in







“ AS EXPANSIONS ARE HAPPENING IN TIER 2 AND TIER 3 CITIES BUT **THE SKILL WE HAVE IN THESE CITIES IS NOT COMPETITIVE ENOUGH AS BIG CITIES.** SO WE NEED MORE SOFTWARE SUPPORT SO THAT WE CAN HELP THOSE TECHNICIANS ONLINE.

tier 2 and tier 3 cities. We would require same test menu across all the laboratories as well. Whether it is smaller equipment or larger equipment, we require the same test menu so that we can serve Tier 2- Tier 3 cities. This is one of the expectations we have from vendors which some vendors have tried to achieve.

Another important requirement is **Scalability**, depending on the need, we should be able to scale from 200 patients to 400 patients per day. The vendor should have the ability to scale up. They should have an efficient modular system to join equipment together or at the same time have certain equipment with the same footprint so that the lab physicians do not have to move on to a larger area.

Everyone wants to do more with less. Admin cost or rental cost is a big concern for lab physicians. Therefore, a smaller footprint with greater throughput is always expected from the vendors.

Smaller equipment means a smaller test menu, so it deprives the tier 2 and tier 3 cities of these rarer tests, which are equally essential. Accreditation helps as well with the same equipment because reference ranges do not change, and it makes handling multi center operations easier.

## Software capability

Software capability is another important criterion as well. Software capability is something that the analyzer or equipment itself can do, and second, what it can do with our existing software by transferring data seamlessly. Transferring data seamlessly on devices or bi-directional interfacing is a huge problem as vendors are different. Collaboration between IVD and LIS vendors is important for seamless integration of equipment with LIS.

There are drivers or software which is integrated with analyzer to the software.

As expansion takes place in Tier 2 and tier 3 cities, skipping maintenance in a busy schedule can be rampant. Issue of warning alerts can also come to great help as it will then include a schedule for maintenance as required. The prospect of software aid to technicians in less developed areas is also looked into in the future.

The equipment health report is very important. As expansions are happening in Tier 2 and Tier

3 cities but the skill we have in these cities is not competitive enough as big cities. So we need more software support so that we can help those technicians online. The larger equipment of 300 test per hour offer online support but smaller equipment does not provide this type of support. If a technician is stuck and these locations also do not have instrument backups. IVD companies should try to provide these software inputs in smaller equipment as well which will be really helpful.



When we release reports, in some equipment and LIS alarms/ flags are not interfaced in the system. Alarms/Flags need to be interfaced so that it helps the Laboratory physicians to decide which report to release and which not to release.

There are certain middleware companies that have artificial intelligence enabled software (SAS) and help us to decide what reports to release and what not. The challenges with these companies are that they have a monopoly and they work with some certain equipment only.

The equipment health report is generated every month but due to work pressure technicians skip weekly or monthly maintenance. If some warnings or alerts can be given by the vendors to the technician through an auto-generated mail that these many maintenances have been skipped.

Generating accurate reports in minimal time with maximum efficiencies and minimum resources is what we laboratory physicians expect from the IVD industry in times to come.



# Anesthesia without Nitrous Oxide :

## An environmental friendly approach

**Dr. K. Senthil Kumar**  
HOD & Senior Consultant,  
Dept. of Anaesthesiology,  
Kauvery Hospital,  
Trichy, Tamil Nadu



Dr. K. Senthil Kumar underwent M.D in Anesthesiology and has completed fellowship in Interventional Pain Medicine and PG diploma in Medical Law and Ethics. He is AHA certified BLS, ACLS instructor and NABH assessor. He is interested in academics, quality assurance, teaching, and leadership. He is the senior consultant and head of the department of anesthesiology at Kauvery Hospital, Trichy, Tamil Nadu.

Kauvery Hospital is a leading tertiary care group of hospitals which consists of 8 hospitals in Tamil Nadu & Karnataka. The bed capacity combining of all the hospitals is between 1900-2000. The hospital attends to highly complicated patients, the staff have a lot of expertise and have gained vast experience working in emergency departments, critical care, and operation theatres.

Dr. Senthil discusses the use of nitrous oxide in anesthesia, new trends, challenges in the field of anesthesia and how technology can change the face of anesthesia.

### Challenges of being Anesthesiologist:

He explains the challenges that he had to face while working as an Anesthesiologist for the last two decades:

1. There was a lot of ambiguity regarding the educational qualifications and background of an anesthesiologist. People assumed anesthesiology was a special course independent of the medical courses MBBS and MD. However, anesthesiology has started gaining popularity today and people are curious to know more about their anesthesiologist.
2. There is a lack of awareness in public about the various pain relief modalities used in anesthesia. There are oral tablets, IV injections, pain-relief patches, epidural anesthesia or continuous infusions that are administered to alleviate the pain but most of the patients are clueless about it.

### Trends of development in Anesthesia Field:

Today, there are excellent and robust monitoring devices that are used in the field of anesthesia, for example the Mindray Anesthesia Machines. It comprises of an anesthesia gas monitoring system wherein the concentration levels of each gas used in anesthesia can be monitored individually. The machine measures the concentration of inhalation agents like Nitrous oxide, Sevoflurane, or Isoflurane while the patient inhales and exhales.

There are also other advancements like Bi-Spectral index monitoring and monitoring of the responsiveness to noxious stimuli that has aided in decoding the patient's reactions to anesthetic agents in terms of numbers. Based on these numbers, the sedative dose or the analgesic dose can be titrated for the patients. Similarly, devices which facilitate cardiac output monitoring have aided in identifying high risk patients, improved the safety profile and made the anesthesiologists more at ease.

### Contraindications to use nitrous oxide in Anesthesia:

Before the invention of other anesthetics like Sevoflurane, Isoflurane or Halothane, nitrous oxide was used as an anesthetic agent from the 1960s to the early 1980s. Nitrous oxide is an acidic agent which doesn't have good anesthetic properties but has good analgesic properties. However, it has lot of side effects and contraindications that were studied in the ENIGMA trial, some of which are as follows:

**WATO EX-65/65 Pro** NEW  
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**Improved Anesthesia Efficiency**

Accurately measuring anesthesia concentration and quickly achieving anesthesia target to save the cost of anesthesia and improve efficiency.

| *Optimizer* | *AA Prediction* | *AA Measurement*



1. Post-operative complications like second gas effect or concentration effect or diffusion hypoxia and post-operative nausea.
2. Prolonged exposure may cause depletion in Methionine synthase.
3. It causes accumulation of homocysteine in the blood resulting in more probability of thrombotic events.

### Is Nitrous Oxide necessary for Anesthesia?

Nitrous Oxide not only causes issues in patients but also is detrimental to the environment as it damages the ozone layer in the atmosphere. It causes Operating Theatre contamination if the anesthetic gas scavenging system is not robust enough.

The use of Nitrous Oxide should be stopped as swiftly as possible for the benefit of the future generation. There are a lot of options like oxygen, air, inhalation agents, intravenous anesthesia etc. which needs to be explored more and used more frequently.

### How will technology change Anesthesiology in future?

AI based systems will soon replace human driven monitoring systems and documentation associated with it. The app-based approach will tremendously increase in the future to reduce error. The use of technology will enable non-susceptible detection of decrease in analgesic dose for patients and the patient can be supplemented with analgesics accordingly. The clinical assistive tools will help in capturing patient data for future reference to avoid difficult intubation especially with patients who had difficult spinal anesthesia or difficult epidural or difficult airway. The data from the tool will help in taking safety precautions and resolve any intubation issues in future.

### Message for future Anesthesiologist:

With an experience of more than two decades in the field of anesthesiology, Dr. K. Senthil Kumar insists that the upcoming anesthesiologists should mainly focus on conducting a pre-anesthesia assessment for all the patients. This will help in identifying the co-morbidities, evaluating the risks, and developing a plan for anesthesia.



Providing quality diagnosis  
at an  
**affordable cost**

**Ms. Pallavi Jain**  
MD  
Krsnaa Diagnostics





## WHAT ARE THE STRENGTHS OF KRSNAA DIAGNOSTICS OVER OTHER CHAIN LABORATORIES IN THE COUNTRY?

We are a large and differentiated diagnostic service provider as we provide a range of technology-enabled diagnostic services such as imaging (including radiology), pathology/clinical laboratory and tele-radiology services to public and private hospitals, medical colleges and community health centres pan-India.

We focus on the public-private partnership (PPP) diagnostics segment and have the largest presence in the diagnostic PPP segment. Our continued focus on this segment has led us to become a preferred partner for public health agencies.

We also operate one of India's largest tele-radiology reporting hubs in Pune that can process large volumes of X-rays, CT scans and MRI scans round the clock and 365 days a year, and allows us to serve patients in remote locations where diagnostic facilities are limited.

We provide quality and inclusive diagnostic services at affordable rates across various segments and have served more than 26 million patients since our inception.

We believe that we provide quality services at

competitive rates while following accreditations and protocols in line.

## WITH BEST INDUSTRY PRACTICE

One of the key contributors to our success in terms of accuracy, turnaround time and scale of operations is the advanced technology infrastructure that we implement as part of our operations.

Today, Krsnaa Diagnostics is present in 15 states and two Union Territories of India with 80 + CT Scan, 30 + MRI Scan, 1400 + Tele reporting centre 50+ Pathology lab and 550+ collection center.

When I joined the company, Krsnaa was not even born, the idea was only in the minds. Understanding the vision of Hon. Chairman Mr. Rajendra Mutha Krsnaa Diagnostics was incorporated in December 2010. We began our journey with 2 centres in rural Maharashtra and rest is history.

The actual journey of Krsnaa Diagnostics started in Mid-2011, intending to improve medical diagnostics to world class levels and introduce a whole spectrum of services at affordable rates. Along with this, grew the philosophy of "Let's do good" as a promise to ensure that every associated person contributes to the well-being and good health of society.

## WHAT WERE THE CHALLENGES FACED BY YOU TO BE AN EMERGING WOMEN ENTREPRENEUR (A TRUE CHANGE MAKER)?

At Krsnaa Diagnostics, I got an equal opportunity to explore and execute my ideas. I believe that whenever women get the much-needed support, motivation and required vision, they can move mountains and widen their vision. Today, the organization has grown from 2 to 2000+ centres in 15 states & Union Territories across the country, and I'm proud to say that it is due to the sleepless efforts put in by my team.

In terms of a strong vision to succeed, one strong vision that I am still focusing to drive is to provide quality health care services at affordable prices to every person at the last mile. Krsnaa Diagnostics' focus is on rural healthcare, as those areas need much support and strengthening, and we will achieve this goal of tapping into every untouched area one day.

## WITH THE COMPETITION SO HIGH, WHAT IS YOUR NEXT BIG GOAL, GOING FORWARD?

We have chalked a roadmap for establishing a strong presence with diagnostic centres in Punjab, Karnataka, Himachal Pradesh and Maharashtra.

We have a clear expansion goal to increase our footprint across India, with the following activities:

Our team is focusing on successfully rolling out new centres. 6 radiology centres will be operational in Q1 FY23. 12 centres have been recently constructed and will be operational by Q2 FY23 and work for 2 more are in progress. Similarly, on the Pathology side, we have 3 labs which will be operational in Q1 FY23. 13 labs have been recently constructed and will be operational in Q2 FY23 and 8 more labs are under construction. We also have a strong pipeline of recently awarded contracts which is expected to be launched in a phased manner.

Entering in to retail diagnostics services, integrated brand-building campaigns, and raise awareness among doctors on the quality and comprehensive nature of the company's service offerings.

Evaluate inorganic growth opportunities going forward, while historically we have expanded our business through organic growth only.

We are fully geared to disrupt the growing retail market. We aim to expand the Pathology business by capitalizing on the extensive infrastructure of existing Pathology Diagnostics centres by adding more and more collection centres and reaching end consumers. We are planning to expand in 5 key states of Maharashtra, Punjab, Himachal Pradesh, Rajasthan and West Bengal in a phased manner. This will be an asset-light expansion, where we will be reaching out to direct consumers under



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our **PACH Model** which stands for Pick Up Points tie-ups with hospitals, nursing homes etc, Awareness – creating awareness through camps, wellness packages, Collection Centres addition and launching Homecare Services.

### WHAT ARE THE CHALLENGES OR OPPORTUNITIES IN INDIAN HEALTHCARE INDUSTRY POST-PANDEMIC?

Some of the challenges that lie ahead of us in the post-pandemic era:

**Cut-throat competition and impact on pricing:** With new entrants in the diagnostics space, many players are bringing in different expertise and leveraging their healthcare experience to bridge the gap.

**Declining COVID-19-related tests:** Post the third wave of COVID-19, diagnostic players are witnessing declining demand for COVID-19 tests- one of the highest-selling tests that soared their revenues.

**The risk associated with debts:** Many of the diagnostic chains are expanding their infrastructure and pumping up investments, which is leading to high debts.

### SELF-MONITORING AND DIAGNOSIS: WITH THE INTRODUCTION OF NEWER WEARABLES AND SELF-MONITORING TOOLS LIKE GLUCOMETERS, OXYMETERS, AND TECHNOLOGICALLY ADVANCED DEVICES, IS THE DIAGNOSTICS SECTOR READY TO EMBRACE THESE CHANGES?

In terms of opportunities, we have seen the trend of wearables evolving into health trackers. However, it has to be noted that they are only health trackers and soon they might become disease trackers. Most of the wearables are only indicative and there will always be issues regarding calibration, accuracy and precision. Should doctors accept the readings from these devices at face value? The answer is a resounding 'NO'. All physicians will always have to recheck any readings from wearables with results from diagnostic centres with calibrated equipment where the quality is monitored on day to day basis and the process is overseen by qualified personnel.

At the same time, disease diagnosis is getting more advanced and many diseases are being



investigated at the molecular level. This step become important for both prognosis as well as treatment. The diagnostics industry will have to gear up for this kind of testing and the industry will have to focus on newer horizons and tests.

Another upcoming industry or requirement would be the need to analyse and interpret the readings from wearables and self-monitoring tools. Some of these analysis will be AI-based, but human intervention will still be needed at critical points. The tech-enabled analysis will be the need of the hour that will emerge as wearables and home testing gets more popular and mainstream.

### WHICH NEW TECHNOLOGY YOU ARE PLANNING TO INTRODUCE AT YOUR LABORATORIES?

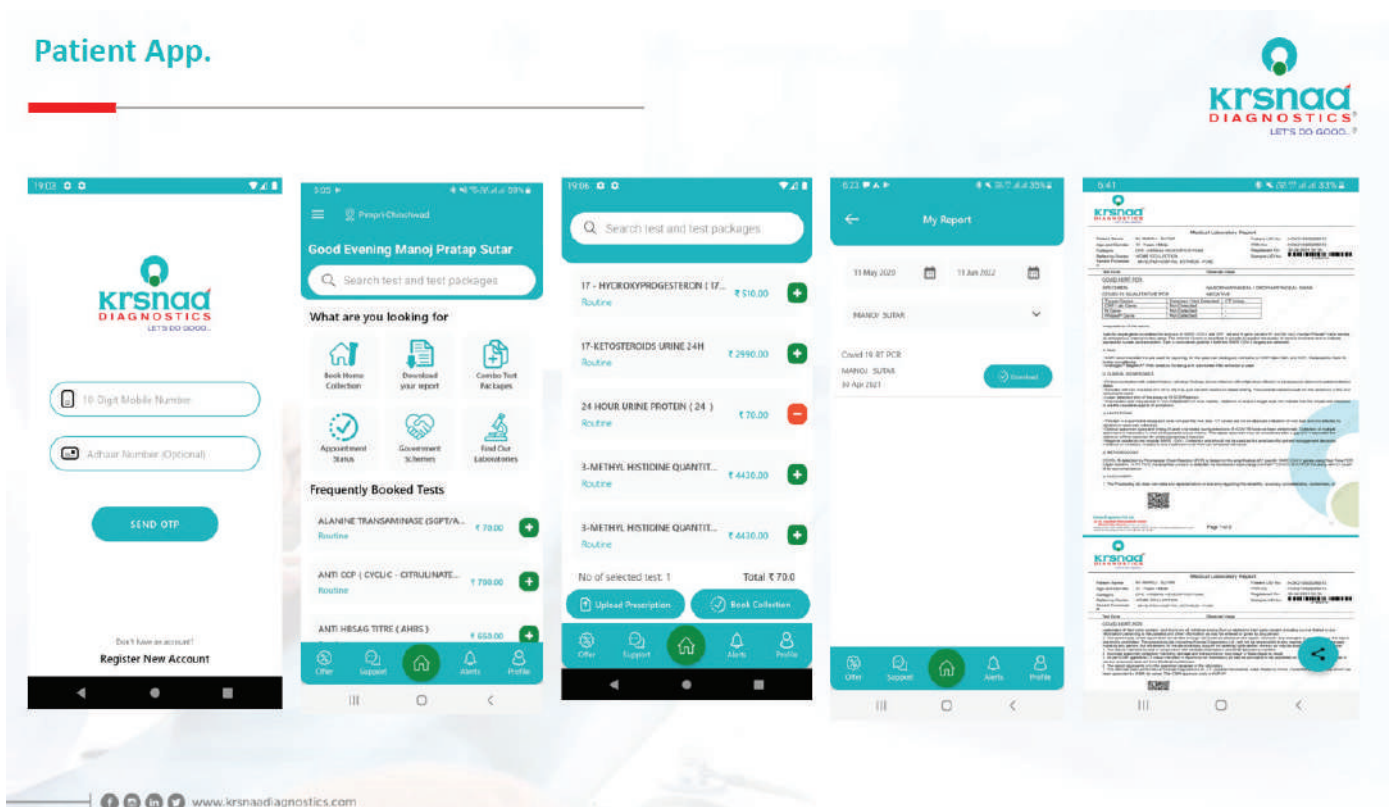
We are relaunching our Mobile Application which enables the patient to download their test reports in real-time, we are also coming up with SMART Health Reports which will give patients additional recommendations. The patient will be able to book an appointment for a Radiology test and also for home collections. We have also significantly invested in Picture Archiving and Communications System (PACS). The PACS technology ensures a seamless transition from diagnostics centres to the hub.

We are also increasing our social media engagement on health awareness & free cancer camps, associating with the nursing home, charitable institute, and corporate tie-ups and associating with various eCommerce aggregators.

In terms of Artificial Intelligence, we have plans to leverage AI for enhancing diagnostics capabilities. We intend to create an intelligent dashboard for analysing historical trends and further enhance the value-added services. Considering the pan-India data that we possess due to our strong presence in deeper markets, allows us to leverage digital solutions for radiology and pathology services.

### WHAT ARE YOUR INSIGHTS ABOUT MINDRAY MEDICAL INDIA PVT. LTD?

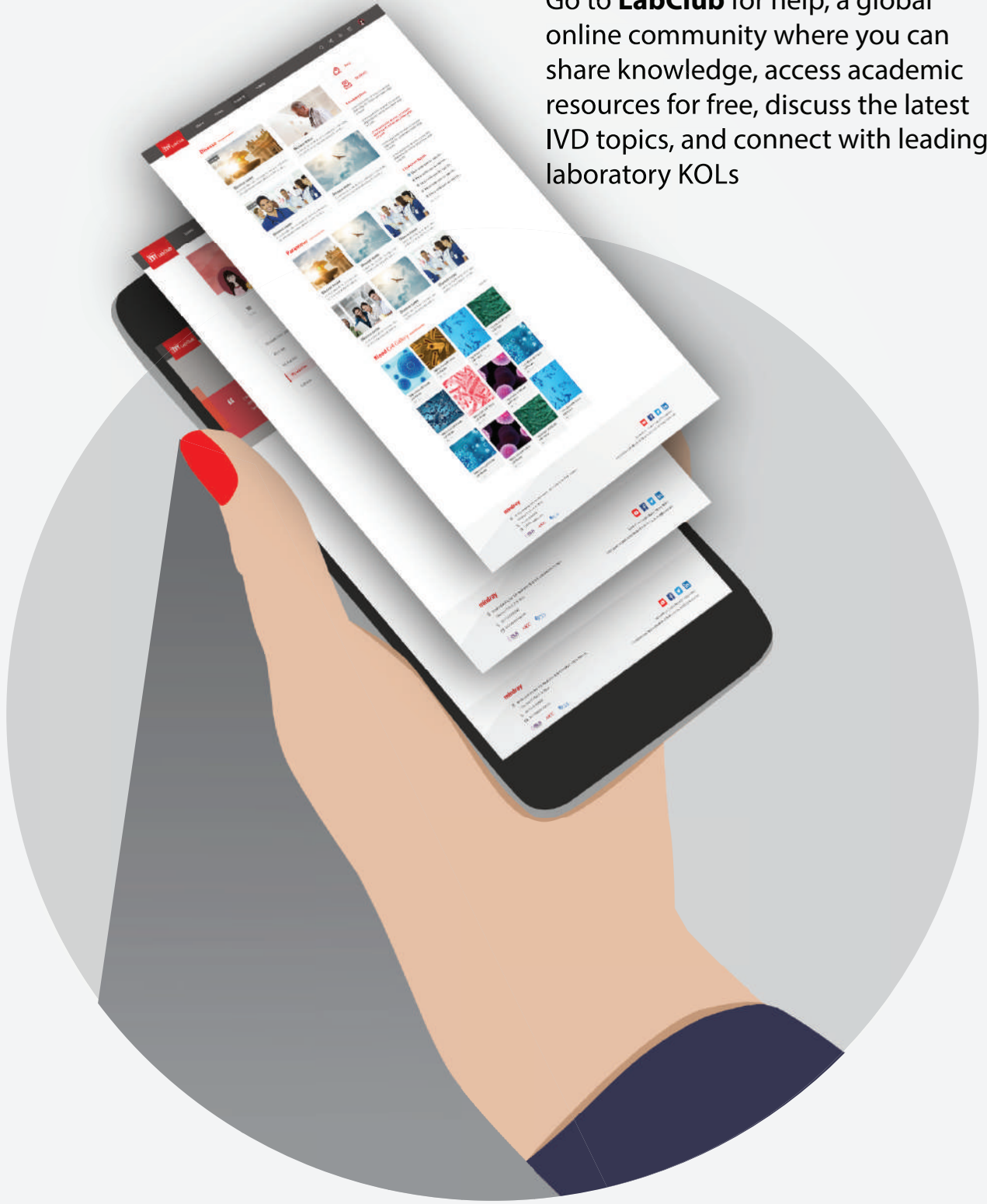
“I’m thankful to the Mindray Medical India Pvt. Ltd. for giving me this opportunity to share my thoughts. Its goal of establishing relationships with credible organizations/enterprises in India and globally, including those in the healthcare sector, is a great initiative to promote innovative solutions powered by shared learning and collaboration with stakeholders across the board.”





## Confused by abnormal results in testing?

Go to **LabClub** for help, a global online community where you can share knowledge, access academic resources for free, discuss the latest IVD topics, and connect with leading laboratory KOLs




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# IT in Healthcare Expectations, Reality & Challenges

 Artificial Intelligence

**Dr. Abhijit Patil** is a qualified MBBS and MD, Radiodiagnosis and is the VP of the Radiology department at Krsnaa Diagnostics Ltd. He has an academic experience as professor and assistant professor at various institutes. He has also worked as consultant and has keen interest in sectional imaging including CT, MRI, PET-CT, Sequential PET-MRI.



**Dr. Abhijit Patil**  
MBBS,MD  
VP-Radiology department,  
Krsnaa Diagnostics



Big Data

Cloud Deployment

IT has been a part of healthcare since a very long time and was popularly known as telemedicine. The use of IT in healthcare gained momentum in India during the mid-1990s when western countries started recommending complete digitization of healthcare data. During the SARS COV2 pandemic, the healthcare industry was at crossroads, due to lack of advanced technologies required for diagnosis, monitoring etc. This situation expedited the digitization of healthcare industry and led to the development of highly advanced medical technologies.

IT encompasses several disciplines within the healthcare system namely:

1. Computer Science
2. IT/Data science
3. Economics
4. Clinical medicine
5. Public health
6. Epidemiology etc.

The presence of IT in the above disciplines has its own advantages and disadvantages. It has eased the transfer of data, storage of data and has made a positive impact on the viability of new technologies. Soon, more contributors in healthcare will imbibe IT and this will create an ecosystem which survives and functions on IT.

Advances in technology which are contributing IT into healthcare system are:

- I. Artificial Intelligence (AI), machine learning (ML) etc.**
- II. Electronic Health Record System (EHRS)**
- III. Internet of Things (IOT)**

#### **I. Artificial Intelligence**

Radiology and Pathology are the most advanced disciplines in the healthcare sector that can easily assimilate new technologies into their system. These disciplines deal with images which are pixels or coded software and can be calculated easily in terms of Hounsfield unit (HU) values in or in terms of Region of Interest (ROI). These values are used in several parameters for different investigations in radiology. It is easier for the artificial intelligence to diagnose a X-ray or a pathological slide than to do operative procedures in a robot, like humans.

Although the term Artificial Intelligence is popular now, it was coined by John McCarthy in 1956 while he was working as a professor at Stanford University, US. Initially, it was designed to solve small problems but after it's success on small scale problems it was applied for larger problems in personal healthcare, research, and several other aspects.

Artificial intelligence involves teaching machines with the help of huge amount of data and training it to analyse unknown data. After a point, the machine will start learning from the data it encompasses every day.

For example: If an AI is fed with information regarding 1000 X-rays, then after a while, AI will be able to diagnose a completely new 1001<sup>st</sup> X-ray consisting of slightly different features with the help of algorithms.

Although the applications of AI in radiology is in infancy stage it has progressed by leaps and bounds in the past 2-3 years. It's common advantages and uses are





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POINT, THE MACHINE WILL  
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DATA IT ENCOMPASSES EVERY  
DAY.

## 1. Diagnosis

### a. Lung lesions with help of X-ray and CT scan:

During the SARS COV2 pandemic, many types of software were used to diagnose lung lesions in X-ray and CT-Scan. Although CT-Scans were recommended as the screening modality to diagnose lung lesions, CT Scan facilities were not easily available everywhere. Hence, X-rays became more popular way of screening whereby lakhs of X-rays were done daily to detect lung lesions using AI.

### b. Brain diseases:

It is helpful in diagnosing and characterizing brain lesions, grading of brain tumours, perform brain volumetry (Alzheimer's disease).

### c. Second Opinions:

The AI can be fed with multiple algorithms, and it can come to conclusions about treatment plans. During the SARS COV2



pandemic, it was a valuable approach to arrive at conclusions regarding treatment plans. It increases precision in diagnosis and helps in dose optimization in radiation and contrast dose considering BMI, HR, circulation time etc.

**2. Screening:**

It is useful in screening normal vs abnormal cases. This helps the radiologists to focus on the complete case and avoids burnout.

E.g.: The AI system was commonly used during SARS COV2 pandemic for diagnosis of Pneumonia. AI was used to screen thousands of X-rays daily for prioritizing high risk cases.

**3. TAT:**

It shortens the TAT time for routing cases.

**4. Quantification:**

It can also be programmed to quantify cases as mild, moderate of high.

**5. Precision diagnosis:**

It increases precision in diagnosis by analysing available information and filters differentials with the help of algorithms.

However, there are equal number of challenges of using AI in healthcare which are:

**1. Computing power :**

In healthcare, computers with high numbers of cores and PUs are required for processing high amount of data and cloud computing. These resources come at an exorbitant cost.

**2. Trust deficit :**

Deep learning models are developed from specific inputs, hence results for different problems are questionable from the same model.

The AI may provide erroneous conclusions if it doesn't contain accurate information about factors like geographic location, ethnicity etc. For e.g.: If the AI has been trained using MRI data samples of only Middle East countries, then it will diagnose a spondylodiscitis as an example of Brucellosis, whereas in India, 99.9% of spondylodiscitis cases will be diagnosed with Tuberculosis. New standards for data storage and software containing indigenous datasets will have to be formed to overcome such challenges.

**3. Limited knowledge :**

Only core subjects are focussed on the medical



curriculums. IT related subjects must be included in the medical curriculum so that advancement in medical technology and doctors can work like hand in glove.

#### 4. Data privacy:

There should be stringent laws for data privacy and punishments for breach.

#### 5. Bias :

The result of AI depends upon quality and quantity of data used for training e.g.- Gender, community, race etc.

#### 6. Data scarcity :

Data used to train the AI should be structured or labelled properly. However, a lot of data is not easily available due to data protection laws.

Apart from all the above challenges, the biggest challenge is training the AI with accurate information. Dr.Abhijit shared few examples of CT Scans to explain this further:

1.The first example was about meningitis, in which the AI needs to be provided with accurate information about the contrast MR regarding hyper densities in subarachnoid space. If this information is not provided accurately to the AI, then it will predict meningitis as a case of subarachnoid haemorrhage.

2. In the second example, two CT scans were presented where the first CT scan showed hyper densities in the sulcal spaces which appear as subarachnoid haemorrhage at first instance. However, it is a case of hypoxemia, where the blood vessels are dilated due to lack of oxygen.

If AI system is taught that anything hyperdense in the subarachnoid space is subarachnoid haemorrhage or meningitis, then it would predict it as a case of subarachnoid haemorrhage or meningitis.

3. The last example was about demyelination which mimicked Lymphoma. If the results were of an immunocompromised patient, then it could have been predicted as lymphoma

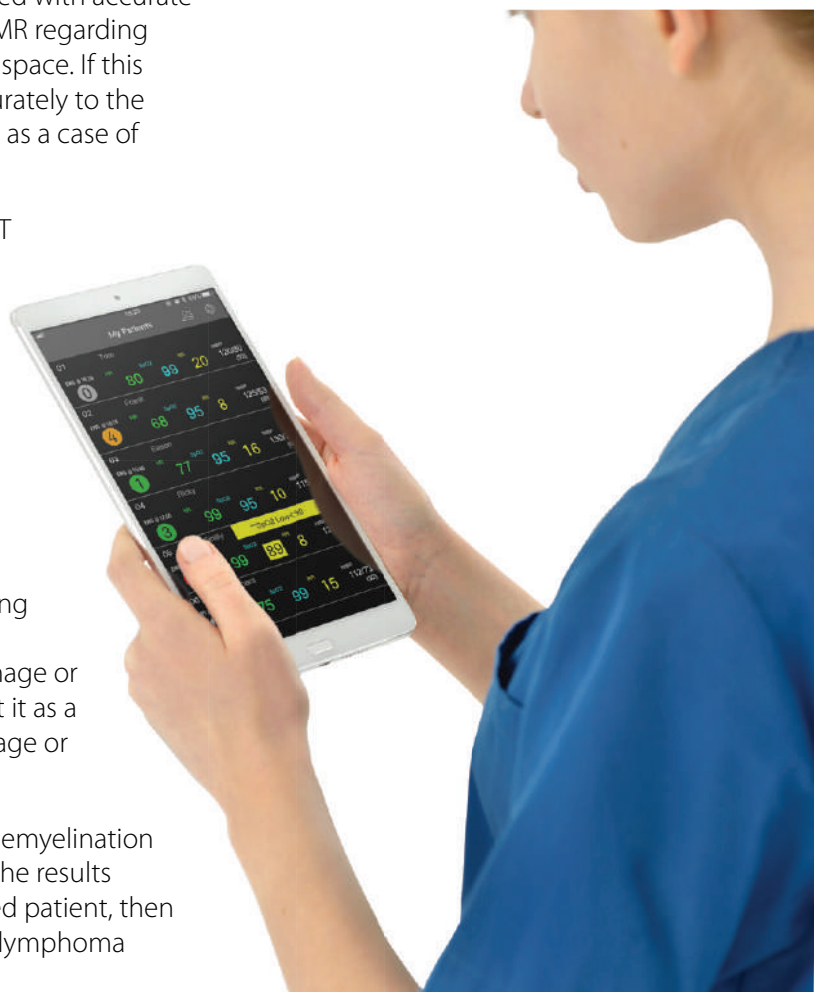
where there is peri-ventricular sub-ependymal spread but in some other instances it would be considered as demyelination. The diagnosis may vary depending upon several factors like medical history, ethnicity, common diseases present in a geographic location.

Therefore, the data must always be accurate, filtered and structured in a particular format to avoid invalid results. In addition to this, the AI system will require a lot of time to study all the minute details and incorporate these data together to diagnose precisely.

## II. Electronic Health Record (EHR):

It has the following benefits:

1. It contains patients' information like medical history, diagnosis, medication, treatment plans, immunization dates, allergies, radiology images and lab tests results.
2. It allows access to evidence-based tools that providers can use to make decisions about patient's care.
3. It is automatic and streamlines provider workflows.



4. Standardized EHR can be shared with other providers across more than one health care organization. This is beneficial when a patient is being transferred from one hospital to another.

However, there are some challenges with EHR, one of the common one being; doctors focus is diverted from the patient and treatment plan towards the EHR.

### III. Internet of Things (IOT):

It has the following benefits:

1. It is a combination of hardware and software with the use of multiple devices, sensors, and cloud technology to make sense of data with intelligent tools.
2. Anything that can transmit and receive data over cloud for a unique task-IOT device

E.g.: Intelligent ICU-Real time transmission of data is possible from machines like ECG etc to healthcare providers located remotely.

However, there are many **challenges associated** with IOT which are:

1. Lack of awareness about how data is being used, whether the data is anonymised or non-anonymised or about the legal implications.
2. Innovation in sensor technology
3. Setting up of intelligent networking
4. Cloud computing
5. Analytic software
6. Cost of cloud computing, or storage of enormous amount of data etc.
7. IT cannot be incorporated in special situations like providing mental health solutions, performing physical examination in patients, and performing special tests and more over where doctor's presence cannot be avoided.

#### Other important challenges are:

1. Technical- Standardization of Patient Records, Combined expertise Med IT, ever evolving IT and Med field
2. Societal-acceptability, accessibility,



affordability, administrative, multifactorial (Age, ethnicity, geography)

3. Ethical- Consent, Data ownership
4. Connection between health solutions- Patients→Device→ Clinician→ Laboratories→Pharmacy

#### Business Challenges:

1. Disruptive Innovation
2. Digital Revolution
3. Amazon Effect
4. Personalized Medicine
5. Regulatory changes
6. Consumerism

Amazon effect is where a competitor might disrupt the business plan by inventing alternative product. In future, circumstances might change, and the changes might lead the industry to a totally different path. So, the healthcare industry must be prepared to adapt according to the changes which cannot be forecasted today. For e.g.: a driverless car was just a dream but now it has become a reality due to highly advanced technology.

Acceptance of IT in healthcare has been increasing since last few years and in one of the surveys conducted in 2016, it was found that people are welcoming the application of IT in healthcare. The rate of acceptance has increased many folds during the pandemic where people

discovered the convenience of having advanced technology. Currently, Artificial Intelligence is the most innovative technology followed by IOT, 3D printing robots, robotics etc.

Many countries including India have accepted that incorporating AI into their healthcare is inevitable. Govt. of India took the following steps to standardize the procedures and to bring everything under legal ambit:

1. Set up EHR standards in 2013-2016.
2. Integrated Health Information Platform (IHIP) Setup by MoHFW (Ministry of Health and Family Welfare) for creation of standards compliant Electronic Health Records.
3. Consumer protection laws for all the digital data.
4. Ayushman Bharat Digital Mission (ABDM) -May 2022

Near real-time information about nurses, doctors EHR linked with ABHA-Ayushman Bharat Health Account

**Reference:**

<https://www.nhp.gov.in/integrated-health-information>

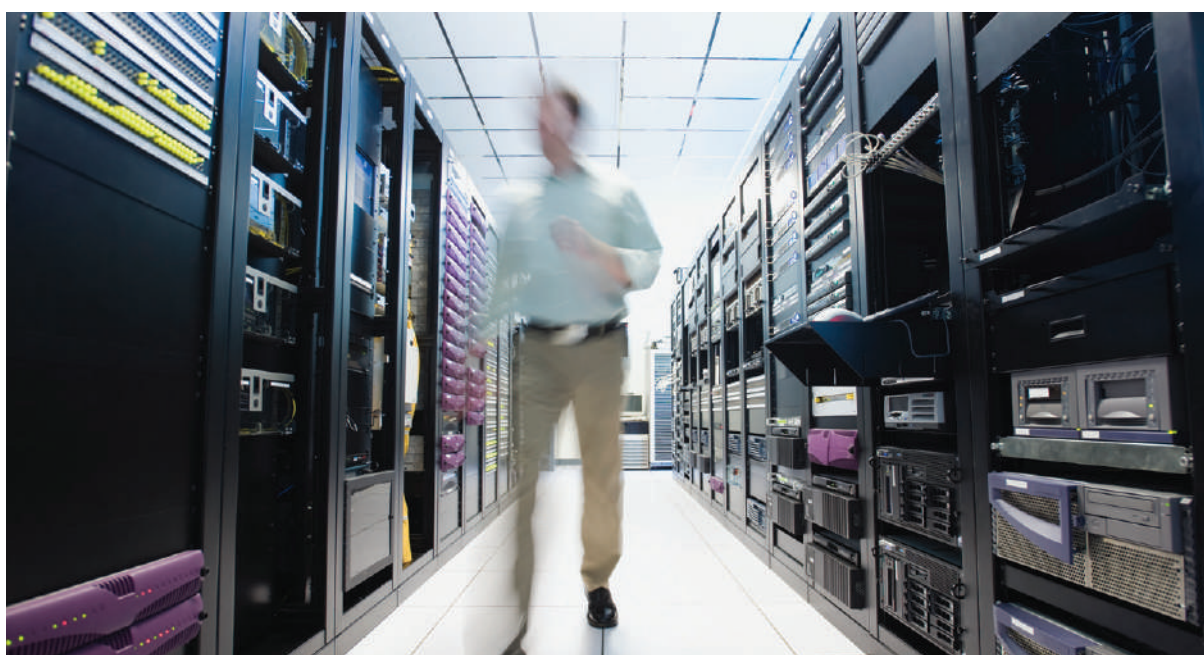
After the pandemic, India's healthcare industry and pharma industry have been under limelight as India was able to curtail the pandemic with a holistic approach and with the help of advancement in Ayurveda.

**Conclusion:**

IT and medicine are ever evolving concepts and the concepts which were fiction in the past are now a reality. However, there are some glitches which needs to be fixed as this could lead to polarization of service providers. The accountability of any report which is generated from an AI system or with the help of IT device must be fixed. Currently, there are no strict rules governing these points, however, our government is taking appropriate steps to bring everything under legal ambit.



COMPUTERS AND INTERNET WERE DISRUPTIVE IN ITS ERA; DIGITAL CURRENCY IS DISRUPTIVE IN THIS ERA AND **THE NEXT ERA WILL BE ABOUT DIGITIZATION OF HEALTHCARE INDUSTRY.** AS DOCTORS WE SHOULD PIVOT THIS DISRUPTION, WE NEED TO ACCEPT IT AND TAKE IT FORWARD.



# Mindray Products

Transforming  
Healthcare  
to Save Lives





**Dr. Hrishikesh Kalgaonkar**

Chief Administrative Officer  
Saideep Hospital Healthcare & Research Pvt. Ltd.  
Ahmednagar, Maharashtra.

**H**e specializes in hospital and healthcare management. His work entails supervision of hospital activities, procurement, and negotiations of medical equipment for the hospital. He is also actively involved in the NABH standardization program.

Dr. Hrishikesh shared his experience as an end user of Mindray products at Saideep hospital. Saideep hospital is in a tier 3 city of India called Ahmednagar. Tier two and tier three cities in India are considered potential markets for the medical equipment industry in terms of revenue generation. Hence, his feedback on Mindray products is of significant value for Mindray India.

Saideep hospital is a 260-bed hospital, equipped with various Mindray products. The products include the following:

- Patient Monitors
- Defibrillators
- Anaesthesia Workstations
- Central Monitoring System
- Volumetric pump
- Syringe pump
- Ventilators
- Operation theatre lights
- OT tables

Dr. Hrishikesh Kalgaonkar narrated his unique experience of using some of these Mindray products during the second wave of the COVID-19 pandemic.

The second wave of the pandemic in India had severe consequences like soaring COVID-19 cases and a shortage of resources required for treatment. There were multiple variants and mutants of SARS-CoV-2 spreading across India. The most challenging aspect during the second wave was making the correct diagnosis and deciding on treatment and future courses of action for the patients.

At Saideep hospital, out of the 260 operational beds, 210 beds were always occupied during the pandemic. The consultants at the hospital were also diagnosed as COVID positive and many of them were in the ICU themselves.



My Patients

Extreme Brady 40/39-40

bed no:	HR	SpO2	RR	Temp
bed no: 0 Barbara	39	2	21	93
bed no: 1 Elizabeth	127	1	21	94
bed no: 10 Thomas	64	1	22	99
bed no: 2 Helen	93	1	21	90
bed no: 3 Katharine	86	1	21	90
bed no: 4 Lee	99	2	19	92

“

DR. HRISHIKESH EXPRESSED THAT **THE ACCESSIBILITY TO THE RIGHT TECHNOLOGY LIKE MOBILE VIEWER** HELPED THEM PREVAIL OVER THE PANDEMIC

”

Dr. S. S. Deepak, Chief Consultant Physician of Saideep Hospital was also diagnosed with COVID-19 and admitted to the ICU. He was severely ill and was receiving the Tocilizumab injection for his treatment.

The Central Monitoring System for 64 beds at the hospital is always online and shows data in real-time. This data can be accessed in Mobile/Tab via Mobile Viewer at any time anywhere across the globe as it is on a static server. This technology enabled Dr. S.S. Deepak to access his patients' data while he was being treated in ICU. He used to view the data on his iPad and instructed the duty doctors on further treatment plans for his patients.

Dr. Hrishikesh expressed that the accessibility to the right technology like Mobile Viewer helped them prevail over the pandemic. He advised the medical equipment procurement team and the management of all hospitals to refurbish their infrastructure with the right technology. He added that technology will be updated, and better medical equipment will be introduced to the market every year.

However, revamping the infrastructure to accommodate new technology every time it is released is not feasible. Hence, all hospitals should be equipped with advanced medical technologies and be future-ready today.

He concluded by stating that although Saideep hospital is from a small section of the market, staying relevant in terms of technology has helped them to endure and evolve.





# Ultrasound

as the  
primary imaging modality  
in India

Dr. Nitin Chaubal is a renowned and trusted name in the field of Ultrasound Imaging. He is the flag bearer of breakthrough Ultrasound technologies, especially, in the field of contrast and Shearwave elastography (SWE). Having started his journey from Sion Hospital, Mumbai as a lecturer, he has come a long way to being the Director of the Thane Ultrasound Centre. He has been instrumental in training a number of radiologists. In this interview, he talks about developments in the field of Ultrasound, its crucial role in diagnosis, and his vision on the inauguration of the breakthrough Ultrasound system- Resona I9, powered by Mindray's revolutionary ZONE Sonography Technology, at his center.



things considerably. And then, Color Doppler, slow flow techniques changed things along with micro vascular imaging. Some exciting and notable developments have also been taking place in the functional aspects of the technology like in the field of Elastography and fat quantification.

But the bottom line is, with the increase in the resolution of the machines, sometimes one might see things that are too many and it is important to draw a line between what is important and what isn't. For example, with Color Doppler, though it doesn't happen all the times, we see flow which isn't required or is confusing. Clinical judgment plays a crucial role when drawing a line between what is important in clinical practice vs. what reading the machine gives.

## TELL US ABOUT THE MOST REVOLUTIONIZING TECHNOLOGY EMERGING IN THE FIELD OF ULTRASOUND.

Well, besides the resolution, the changes in color flow imaging has really caught up. But for the future, easy availability of contrast media and a proper use by everyone is critical. Though much in practice in Europe, Korea, and Japan, such technologies are available in only some parts of our country. We anticipate elastography to mature along with fat quantification, in coming decades, which will play a major role in preventing liver diseases. The fact that elastography is well established for Liver, needs to be applied to other fields as well, like in small parts to musculoskeletal system. With the advanced machine we will be using it as endo-cavity probes, or in uterus to differentiate fibroids, adenomyosis and, in prostate.



**Dr. Nitin Chaubal**  
Director,  
Thane Ultrasound Centre,  
Maharashtra, India

## WHAT SIGNIFICANT IMPROVEMENTS HAVE HAPPENED IN THE FIELD OF ULTRASOUND TECHNOLOGY, IN THE RECENT DECADE?

The most significant thing is the improvement in gray scale or the basic resolution that has revolutionized everything. When it comes to resolution, no other imaging modality is as good as Ultrasound, not even CT or MRI. Whether it's about picking up a very small defect in the fetal heart, the fetal brain or a small nodule in the liver and kidney, it is the resolution that has changed



WHEN IT COMES TO RESOLUTION, NO OTHER IMAGING MODALITY IS AS GOOD AS ULTRASOUND





## WHAT PART OF MRI CAN ALSO BE USED BY ULTRASOUND?

Well, musculoskeletal Ultrasound is one area where MRI and Ultrasound complement each other which plays an important role. Of course, there are fields where MRI will score more. But in a country like India Ultrasound remains a primary modality for screening anything from newborns to pregnancies to whatnot. It is also an excellent modality for intervention. Performing a biopsy or any other therapeutic procedure in real-time under Ultrasound guidance is so convenient and safe from the patient's point of view. I think in the two areas of diagnosis i.e. screening

I think, with time, Elastography application will only become wider.

## WITH THE ADVENT OF AI AND MACHINE LEARNING, HOW DO YOU THINK IT WILL IMPACT DIAGNOSIS?

Well, it has already made an impact as most machines, these days, have an AI within them now. AI is impactful due to automation settings that make life easy to some extent. But as far as Ultrasound is concerned, AI is not going to completely replace the skill and judgment needed to use the technology. Unlike X-rays and CT scans where you can put up the report and get the answers, Ultrasound is a heavily skill-dependent technique, and AI will definitely assist but cannot replace that skill and it all comes down to judgment as well as interpretation. Nevertheless, AI can definitely be used as a complementary tool in a justifiable way.

**“ULTRASOUND IS A HEAVILY SKILL-DEPENDENT TECHNIQUE, AND AI WILL DEFINITELY ASSIST BUT CANNOT COMPLETELY REPLACE THAT SKILL”**

and intervention, nothing can replace Ultrasound. It gives you the control and confidence over a needle tip, monitoring it each microsecond, which is unlikely to happen with other modalities. And, in India, it will be the modality for many more years to come. It encourages us to develop the skill at all levels to leverage its potential.

## ULTRASOUND IS AN ESTABLISHED DIAGNOSTIC METHOD FOR CLINICAL INVESTIGATION IN MANY PARTS OF THE WORLD. AS AN EXPERT IN THIS FIELD, HOW DO YOU THINK WE TAKE IT FORWARD, IN THE INDIAN CONTEXT?

Training is very important when it comes to utilizing technology, especially obstetric scanning. It is not only about getting a machine it is more about using it properly, and therefore I would urge all youngsters to keep themselves updated and then use the technology in the right perspective that can really help the country.

We are also fortunate to have very co-operative stakeholders from the industry with whom we share and discuss innovative technologies. The mutual trust helps building a relationship that will take Ultrasound technologies towards newer dimensions.

## WHAT IS YOUR OPINION ABOUT MINDRAY AS A TRUSTED PARTNER FOR A HEALTHIER BHARAT?

Honestly, I have known this company for many years and, of late we are having a sort of close relationship. I think the way Mindray India is helping people by spreading knowledge, for example, your association with IRIA in the area of preventive medicine, is considerable. I am thrilled about the Resona I9 system that has advanced Ultrasound capabilities and AI enhanced technology installed at Thane Ultrasound Center. It is certainly an innovative Ultrasound system providing a harmonic balance of resolution and tissue uniformity. I think my association with Mindray will only get better with time because of such innovative technologies that increase consistency for end users.

# Resona I9

Diagnostic Ultrasound System

## Innovation, in every facet

### Infinite imaging solutions



#### ABD

HiFR STE for liver stiffness quantification  
Smart HRI for easy assessment of liver steatosis



#### Vascular

V Flow for complex hemodynamics evaluation  
Precise hardness analysis of carotid wall



#### Small parts

Smart and accurate breast/thyroid lesion analysis  
Complete elastography solution



#### Cardiology

Auto EF for easy cardiac function evaluation  
Quantitative evaluation of myocardial movement



#### MSK

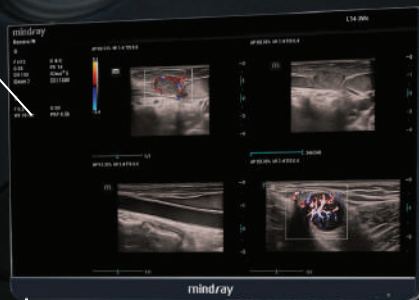
Elastography for tendon stiffness assessment  
CPP for flow analysis of rheumatic arthritis



#### Urology

Superior image with bi-plane transducer  
UWN<sup>+</sup> CEUS for prostate cancer diagnosis

23.8" bezel-less full screen  
15.6" touchscreen with intuitive interaction



iConsole: intelligent control panel  
Full-space floating adjustment



26dB super-silent design  
Long-life battery with auto indication  
Just fold and go with min 1 meter height

New Diagnostic approaches to  
**Fatty Liver Disease**



Dr. Rajas Chaubal is a renowned Radiologist in Mumbai, currently working at Thane Ultrasound Center. He is also a consultant at Jaslok Hospital in Mumbai.



**Dr. Rajas Chaubal**  
Director,  
Thane Ultrasound Centre,  
Maharashtra, India

## WHAT ARE THE TRENDS SHAPING UP IN THE MSK INDUSTRY? AND ARE THERE NEW RESEARCH FINDINGS WAITING TO BE UNCOVERED WITHIN THE MSK MEETING THAT WILL HELP PATIENT CARE SIGNIFICANTLY?

MSK Ultrasound has picked up over the last decade and it's because of a lot of pioneering work and efforts that have gone into it from senior faculty in India. We do liaise with the international faculty as well. And we are seeing this increasing trend of using MSK Ultrasound. As it is easily available, it can reach all the corners of the country. Whenever one thinks of MSK imaging, one always first thinks of MRI. But that's not always the case. The first investigation should probably be an Ultrasound. Everything has its own advantages and limitations. There'll be areas in MSK where MRI will be far superior to Ultrasound. And we also need to know where Ultrasound is, you know, very effective and especially when it comes to dynamic studies because we can do a lot of dynamic movements we can assess the patients when they are doing all these movements, which is not a possibility



with MRI, hence, it is a fantastic tool. Now, over some time we have these newer things coming up, we have been talking about microflow imaging, higher sensitivity, and colorful imaging. We are talking about using elastography in MSK. So all in all, these trends are catching up. We are not just limited to its usage on shoulders, we are using it even for Pain Management Therapies. We are hoping to use contrast in some form in MSK probably. There will be advancements that we cannot even think of at this point. To sum it up MSK Ultrasound is a very important modality and we are doing our level best to promote it so that it's reaching all corners of this country and to maximize its use.



**FATTY LIVER IS BECOMING ENDEMIC IN INDIA.** IT IS FAR MORE PREVALENT THAN WE THINK IT IS AND THERE ARE A LOT OF FACTORS THAT ADD TO THE PROBLEM LIKE DIABETES, DYSLIPIDEMIA, ETC. AS WE KNOW INDIA IS DEEMED THE WORLD'S CAPITAL OF DIABETES.



**FATTY LIVER DISEASE IS UNFOLDING AS ALMOST, AN ENDEMIC IN INDIA. SO HOW ULTRASOUND TECHNOLOGY CAN HELP IN A COST-EFFECTIVE WAY IN THE MANAGEMENT OF THIS DISEASE?**

True, fatty liver is becoming endemic in India. It is far more prevalent than we think it is and there are a lot of factors that add to the problem like Diabetes, Dyslipidemia, etc. As we know India is deemed the world's capital of Diabetes, and all of these factors are adding to the fatty liver burden. And as time passes, we'll see that these fatty livers progress into fibrosis and cirrhosis. We will be seeing far more cases of non-alcoholic steatohepatitis. And this is where we need to do a major amount of work because if we have this huge liver disease burden in our country, it's going to be a difficult task for the entire healthcare system to manage it and would increase liver transplants as well. Here, Ultrasound does play a pivotal role because the majority of the time when we do an advanced Ultrasound Scan, we are the first ones to detect or say that, yes this person has fatty liver disease. This happens very often and many patients who come for health checkups are non-suspecting candidates but one may end up seeing these fatty livers. This is observed even in thin patients and also in children. So the prevalence is high, and we can detect it on Ultrasound at an early stage. Now we are going into the functional aspects of imaging. We are trying to ascertain if fibrosis is setting to the liver. We are trying to ascertain if cirrhosis is setting in. Now on



Ultrasound, we can detect some of these things even before they start reflecting in the blood test. And as these systems become more widely available in the country, we should see faster detection of these abnormalities. And, earlier detection is absolutely critical because, prevention like we say, is always better than cure. We want to detect it at an early stage and don't want it to progress. And it is reversible, mind you, so fatty livers can be reversed. And I am an example of that. So I have reversed my fatty liver and I think anyone can. You will soon be able to even grade the fatty livers in a more functional aspect using liver attenuation. So yes, technology is building up. It will be far more easily accessible and therefore it should help a large amount of our population.

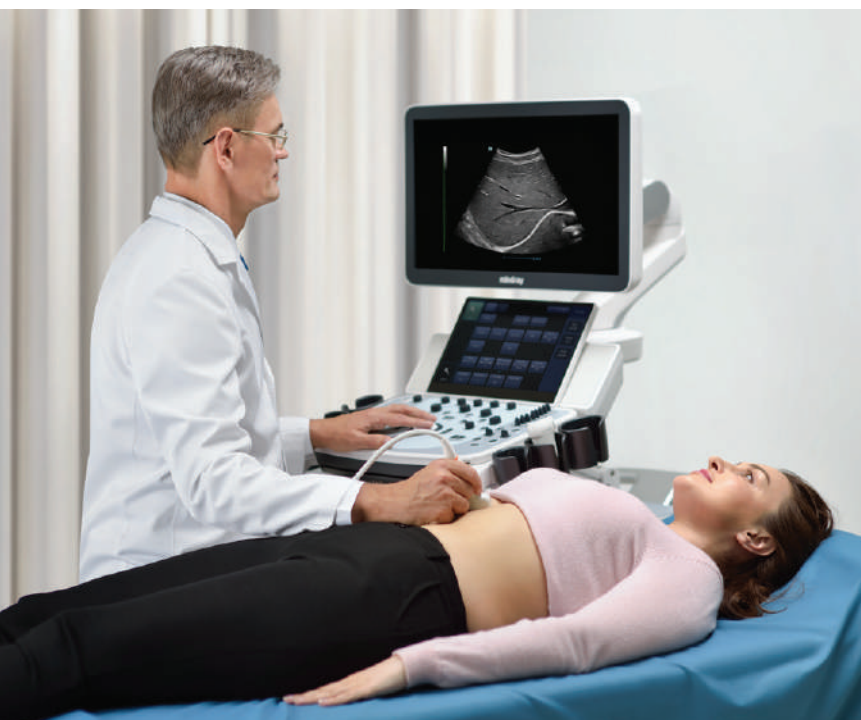
**ADVANCEMENT IN ULTRASOUND EQUIPMENT INCORPORATED WITH AI-BASED FEATURES. WHAT SUPPORT DO YOU SEEK IN THE CLINICAL DIAGNOSIS FOR ALL THE CLINICIANS FROM MEDTECH COMPANIES INTO ULTRASOUND LIKE MINDRAY?**

We can stress more especially using contrast agents, which at this point are not very widely popular, mainly because of the cost factor. We are working with teams to get the cost factors down and develop new agents. And if these agents are locally produced then the cost factor will come down and availability along with application would be easier too. It will be significant in Oncology imaging.

“

WE HAVE LAUNCHED A **NATIONWIDE CAMPAIGN ON DETECTING FATTY LIVER DISEASES** AND MINDRAY MEDICAL INDIA PVT. LTD. IS AN INTEGRAL PART OF THIS CAMPAIGN. THEY ARE SUPPORTING THIS ENDEAVOR BY THE IRIA.

”



### HOW DO YOU SEE MINDRAY AS A PARTNER FOR A HEALTHIER BHARAT ABOUT IT?

We have launched a nationwide campaign on detecting fatty liver diseases and Mindray Medical India Pvt. Ltd. is an integral part of this campaign. They are supporting this endeavor by the IRIA. We are on a quest to collect this large nationwide data. Mindray has also been extremely supportive in training our Radiologists. I would like to thank Mindray on behalf of IRIA. We will definitely plan more training programs, not only concerning fatty liver but other topics as well. We hope Mindray continues to support and help us to grow stronger by deepening our technological capabilities.



# Healing Hearts

Technology for early diagnosis and treatment



**Dr. Divyesh Sadadiwala**

Pediatric Cardiologist  
Director and Founder,  
Happy Hearts,  
Gujarat, India



Dr. Divyesh Sadadiwala is a leading Pediatric Cardiologist with over 12 years of experience treating more than 5,000 patients of congenital heart disease. He is also the Director and Founder of Happy Hearts, a clinic specially for the treatment of infants and children suffering from congenital heart disease. Dr. Divyesh talks about the new diagnostics and treatment options available for congenital heart disease and his experience with Mindray's MX7, dedicated portable Ultrasound system.





### HOW IMPORTANT IS ECHO IN PEDIATRICS?

Around 8-10 out of every 1000 newborns have congenital heart disease, amounting to nearly 200,000 newborns born with congenital heart disease in India every year. Of these, nearly one fifth have serious defects and require an intervention in the first year of life. Timely diagnosis is of utmost importance to deal with any serious consequences. Echocardiography has proven to be the gold standard test for diagnosis of congenital heart diseases. Its accuracy, noninvasiveness and being painless and relatively inexpensive makes it an invaluable tool in the pediatric and neonatal intensive care unit.



NEARLY 200,000 NEWBORNS ARE BORN EVERY YEAR WITH CONGENITAL HEART DISEASE. **ONE FIFTH OF THESE HAVE SERIOUS DEFECTS AND CAN BE FATAL**



### WHAT DISEASES CAN BE TREATED / RULED OUT IN ECHO AS EARLY DAYS?

Echocardiography allows us to diagnose almost all congenital as well as acquired heart diseases in infants and children.

Cardiac assessments that include physical examinations are performed for newborns after birth to identify any heart anomalies. However, an echocardiographic investigation offers higher sensitivity in detecting any congenital heart issue.

For additional information, we may need additional tests like CT or MRI scan, electrocardiograms, cardiac catheterization etc. Many times, in NICU and PICU, echocardiography is useful for functional assessment of the heart even in noncardiac patients.

### HOW CAN WE TREAT CONGENITAL ABNORMALITIES BETTER IN FUTURE?

The treatment for congenital abnormalities depends on the severity of the disease. Some defects may not require any treatment, while for some, treatment can include surgeries, medications and regular follow-ups.

We offer interventions and open-heart surgeries for children suffering from such abnormalities. With regular cardiac follow ups and echocardiography, we can determine exact timings of these procedures. Moreover, with the development of interventional cardiology, patients can also benefit from minimally invasive procedures.



## **INTERVENTIONAL CARDIOLOGY CAN CHANGE THE COURSE OF TREATMENT IF CONGENITAL HEART DISEASES BRINGING IN MINIMALLY INVASIVE PROCEDURES**



“3-D echo, point of care Ultrasound, integration of Artificial Intelligence and new forms of image visualization are some of the innovations in echocardiography”

### **HOW DID YOU DECIDE ON USING MINDRAY TECHNOLOGY?**

When it comes to medical devices and new age technology, Mindray has been a trusted name. I had worked in the past on a Mindray echocardiography machine. So, when it came to deploying equipment for my new clinic, Mindray seemed the best option. Additionally, before zeroing in on a machine for my new clinic I had invited Mindray company representatives.

They have been extremely helpful and provided me with great user experience.

### **HOW IS YOUR FEEDBACK ABOUT THE COMPANY AS A USER?**

Company’s products and its people establish a company in the market. Mindray’s products are extremely user friendly, and their customer service is excellent, especially the after sales support. Mindray’s employees are very much responsive in nature for all doubts raised by me till now. I hope

Mindray maintains its excellent streak and I wish to continue our partnership with them.

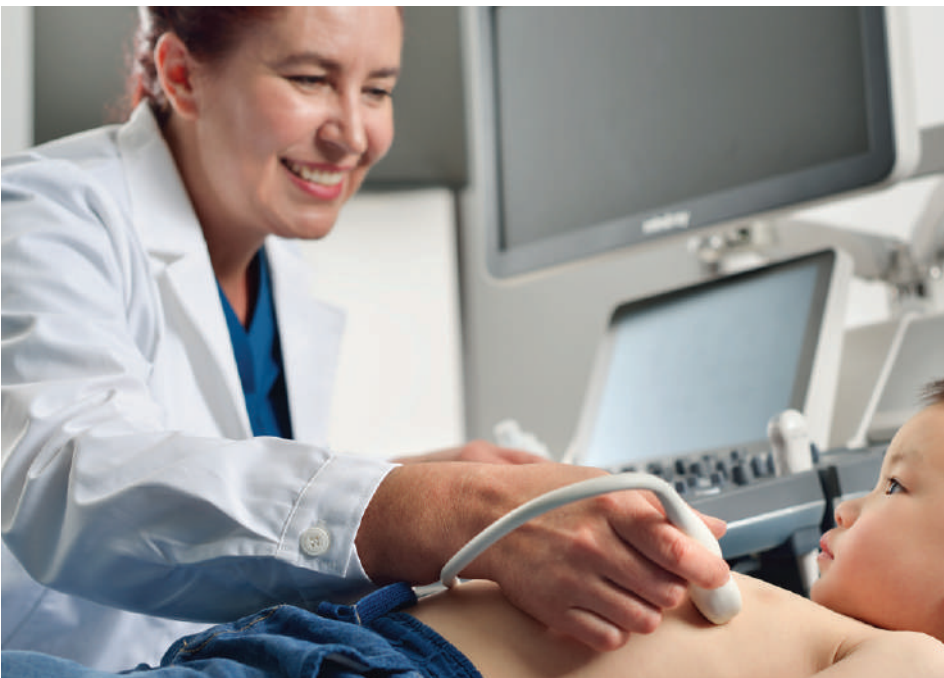
“Mindray’s products are extremely user friendly, and their customer service is excellent, especially the after sales support”

### **WHAT IS THE SCOPE OF IMPROVEMENT FROM A CLINICIAN’S POINT OF VIEW?**

With better echocardiography machines available our life has become much easier. There are several advances coming in such as 3-D echo, point of care Ultrasound, integration of Artificial Intelligence and new forms of image visualization which further has potential to help us treat our patients better. Multiple innovations are coming to help with the diagnosis and treatment better. It’s about time for such innovations to be integrated in a wider practice for optimal clinical outcomes.

### **MX7 – HOW IT MATCHES YOUR EXPECTATION**

This is a remarkable machine for cardiac imaging. Its ZST platform and customizable touch screen facilitates accurate diagnosis. The best part is its 8-hour long battery time which has been extremely helpful, especially while handling mobile diagnosis. With the ZST platform I can see this machine creating a new path for the company.



**mindray**

healthcare within reach

# Intuitive interface 3 screens design



# MX

Portable Ultrasound System



Lighten up infinite possibilities

# In Conversation with **Sudeep Mukherjee**



Sudeep Mukherjee is a seasoned professional with more than three decades of experience in the IVD industry. He has been instrumental in bringing growth in his various senior management roles. Completed Electronics and Communication engineering in 1990 from the Indian Institute of Rural Technology in Allahabad. He is managing the IVD business for Mindray Medical India Pvt. Ltd.

## Q1. CAN YOU PLEASE ELABORATE ON MINDRAY'S VISION & CONTRIBUTION TO INDIAN HEALTHCARE?

### Mindray's Vision Better healthcare for all

Mindray believes in providing the best-in-class innovative solutions to the healthcare industry. We produce high-quality and advanced healthcare devices at an affordable cost to cater to all segments of the market.

Regarding our contribution to Indian healthcare, Mindray India started direct operations which were started in the year 2006. Over the last 15+ plus years, Mindray has established its presence both as a leading manufacturer and marketer of medical devices in the Indian healthcare sector. We are proud that our products are widely installed in healthcare facilities ranging from small clinics to large corporate and government hospitals. Our team has successfully built a culture that is driven by commitment, ingenuity, and integrity.

We are dedicated to innovation in the fields of Patient Monitoring & Life Support, *In-Vitro* Diagnostics, and Medical Imaging System.

Adhering to the vision of "Better healthcare for all", Mindray has been providing many innovative medical solutions to meet the diverse needs of all customers. We assure the industry that we will continue to remain the trusted partners in building a Healthier Bharat.



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



**Q2. AS PER OUR RECENT DATA, MINDRAY IS IN INDIA FOR HAEMATOLOGY ANALYSERS AND CONSUMABLE SALES. HOW DOES MINDRAY HEMATOLOGY SOLUTION EMPOWERS LABORATORIES WITH BETTER PERFORMANCE?**



**MINDRAY IS CONSTANTLY TRANSFORMING ADVANCED TECHNOLOGY INTO A WIDE RANGE OF RELIABLE DIAGNOSTICS SOLUTIONS COVERING HEMATOLOGY, BIOCHEMISTRY, AND CHEMILUMINESCENCE IMMUNOASSAY IN INDIA.**



It is continuous innovation and development of new models that have kept us ahead in the hematology segment. At Mindray we believe each test matters because every patient is important.

Starting from a very basic 3-part hematology analyzer, we have been able to develop modular systems, an Automated Slide Stainer, and a Digital Morphology platform with artificial intelligence. With our Digital Morphology systems, customers can get clearer images that are able to capture minute cellular abnormalities in more detail, resulting in greater productivity.

Aiming at improving operational efficiency with affordable cost and delivering more reliable results, Mindray is the only manufacturer that developed 200 tests/hr standalone unit BC-6800Plus for high volume workload sites with a special feature of Platelet de-aggregation.

I am excited to share the latest invention i.e. our BC-700 series which is capable of providing 5-part differential counts with

NRBC, IMG, IPF, Malarial parasites, Reticulocyte, and Body Fluids along with ESR. It is the first all-in-one box hematology solution in the world. This series is designed to empower medium-volume laboratories with advanced diagnostics technologies. Mindray is constantly transforming advanced technology into a wide range of reliable diagnostics solutions covering hematology, biochemistry, and chemiluminescence immunoassay in India.

### Q3. APART FROM HEMATOLOGY WHICH ALL SEGMENTS DOES MINDRAY CATER TO IN A LABORATORY SETUP?

Mindray is known for its innovation and new product development capability. We are equally capable in Biochemistry and Immunology segments.



“

NOT ONLY TECHNOLOGY AND BUSINESS, BUT WE ALSO BELIEVE IN **EDUCATING MEDICAL PROFESSIONALS** TO UPDATE THEM WITH NEW ADVANCEMENTS AND DEVELOPMENTS IN THE MEDICAL SECTOR.

”

We provide comprehensive solutions for all laboratory sizes. Mindray has scalable biochemistry and immunology solutions to meet different laboratory needs.

In biochemistry starting from 100 tests/hour to 2600 tests/hour throughput models are widely installed in various parts of the country.

In immunoassay, we are catering to the entire segment of the market with our various models starting from 120 tests/hour to 480 tests/hour.

We have also introduced modular systems in India that deliver fast throughput and powerful integration of immunoassay and chemistry systems. We have a comprehensive range of test menus of reagents offering high reliability and accuracy at affordable costs.

We have recently launched our state-of-the-art Biochemistry analyzer in a modular platform i.e. BS-600M has the capability of delivering results between 5 to 6 sigma levels.

### Q4. HOW WILL MINDRAY CONTRIBUTE TO IMPROVING HEALTHCARE INFRASTRUCTURE IN INDIA?

At Mindray, we are proud to have been a key contributor to providing quality and cost-effective medical solutions to the hospitals and laboratories of India. We are also confident to say that Mindray is all set to take the next leap in healthcare transformation in India by providing better healthcare for all. We shall be launching many more innovative technologies in the future in all three verticals of our IVD segment. In short, our endeavor will be to continuously develop new products and technologies at an affordable cost to serve mankind.

Not only technology and business, but we also believe in educating medical professionals to update them with new technologies and developments in the medical sector. We have highly experienced medical professionals who conduct regular online and offline training for technicians and doctors.

**We will continue to do hard work towards becoming the most trusted partner in building a healthier Bharat.**



**Medgate**  
today Magazine  
Presents

**12 TH**  
**MT INDIA**  
HEALTHCARE AWARDS **2022**  
HONOURING EXCELLENCE

IN ASSOCIATION WITH





**Mindray India**  
bags at  
**Medgate Today's**  
**'Most Admired**  
**Company in Medical**  
**Devices of the Year'**  
award



Award presented at the 12th MT India Healthcare Awards 2022

Mindray Medical India, a leading provider of medical devices and solutions, has won the 'Most Admired Company in Medical Devices of the Year', instituted by Medgate Today. The award was presented to Mindray India at the 12th MT India Healthcare Awards 2022, organised by Medgate Today in association with Medical fair India and Medicaalliance, on May 20, 2022, at Jio World Center, Mumbai.

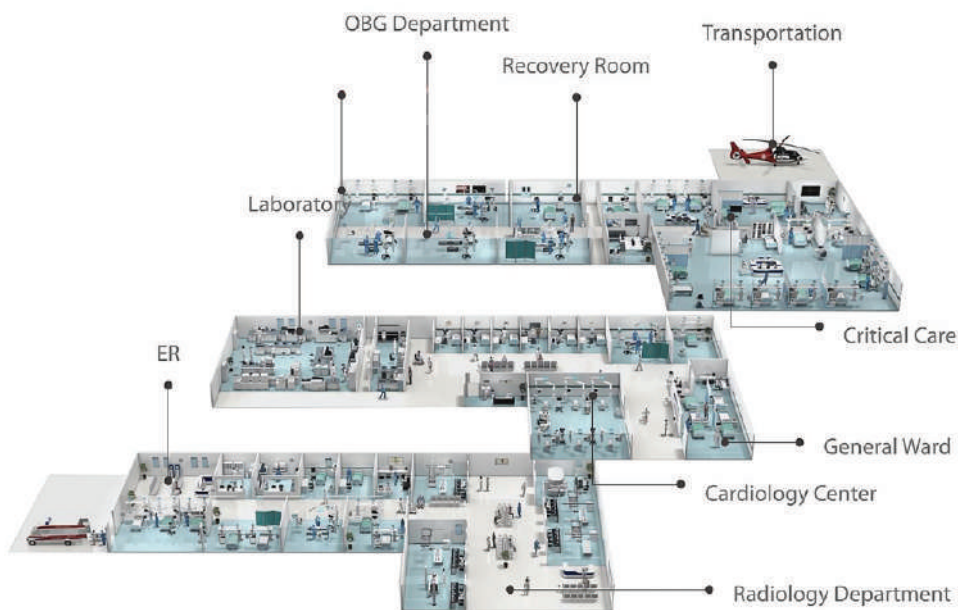
The award comes as a recognition for Mindray Medical India as it has consistently proved its commitment to innovation in the fields of Patient Monitoring and Life Support, In-Vitro Diagnostics, and Medical Imaging Systems. Medgate Today's much-sought after awards platform evaluates hospitals, companies and healthcare professionals on their outstanding performance in the healthcare and life sciences sector. It recognizes doctors and hospitals that have demonstrated best practices in a variety of regional and global markets.

With the healthcare scenario in the country having climbed on to a high pedestal in terms of an ultimate requisite, Mindray India has made sure that it has kept up with the trend. Since inception in 2006, the company has cemented its place in the healthcare equipment horizon as a leading manufacturer and marketer of medical devices.

The focussed approach on making medical technologies more accessible to everyone has brought unto Mindray the tag of a total medical solutions provider and has consistently ensured delivery of products and services to meet customer needs.



### Advancement of **In-Vitro, Patient Monitoring & Life Support and, Medical Imaging Systems**



*Innovation has been keen to the overall operations at Mindray, and the company has followed its vision towards "Better healthcare for all" over the past 15-plus years in India. Over the span of this period, Mindray has been able to present to the healthcare sector innovative medical solutions that meet the diverse needs of all customers in India.*

science are among the multi-fold arenas where Mindray has excelled. Having developed reliable and robust solutions that add to the trust, delivering accurate results while meeting the ever-growing demands on efficiency in healthcare organisations, the Company has been recognised with the latest laurel at the 12th MT India Healthcare Awards 2022.

Mindray India believes that the honour has come due to the trust from customers, and that their unflinching support had enabled the company to provide better healthcare for all. After establishing itself as a key contributor in providing quality and cost-effective medical solutions to the government-run as well as private hospitals to help them cope with the urgent challenges, Mindray Medical India Pvt Ltd is now all geared up take the next leap in healthcare transformation in India.

With an aim to be “trusted partner in building a healthier Bharat”, Mindray Medical India has



been striving to bring in dramatic changes in the Indian healthcare industry. The company, with the prestigious tag of being a total medical solution provider, has been continuously delivering products and services that meet customer needs in the changing healthcare scenario.

Kshama Nandode, Mindray India’s Sr. Marketing Manager - IVD, said:

*“We are so proud to have been recognized for such prestigious awards. We are honoured to be recognised by the industry as a trusted partner for a healthier Bharat. To support this cause we also introduced two new IVD products this year BC-700 Series, Hematology Analyzer with ESR and BS-600M, Modular Chemistry Analyzer and it is encouraging to see them get such a positive reaction. We look forward to seeing how our customers will use these devices to help improve patient care across India.”*



The Medgate Today India Healthcare Awards are among the most prestigious honours presented to the best companies in the healthcare business. Instituted by Medgate Today, which caters to doctors and hospitals in the Asian region, it encourages diverse health and lifestyle innovations in its capacity as a health centric publishing group. With significant presence in India and the whole of Asia, Medgate Today has unique, quality content in areas comprising health, wellness and lifestyle sectors.

**mindray**

# Versatility beyond Expectation

## HyBase V8

Operating table



### Safe

**460kg** weight capacity  
and Intelligent Collision  
Protection System (**ICPS™**)



### Efficient

**Intuitive** hand control  
and **E-Drive** function  
for easy movements



### Flexible

**New modular design**  
for a wide range of  
surgical positions

