

mindfocus

Quarter 1 Edition, 2020

Healthcare technology for a better tomorrow

■ Mindray combats COVID-19

Battling through odds

■ Modernisation of Fetal Imaging

Making a big impact

■ MSK Imaging

New face of diagnosis

■ Changing trends in IVD

Big on global tech advancements

■ Risk Management

Respiratory support strategies for COVID-19

■ Dengue Management

Predictive markers of platelet recovery

KIMS HEALTHCARE GROUP

SOUTH INDIA'S
ICONIC HEALTHCARE GROUP
ON A GROWTH SPREE

Dr. Bhaskar Rao Bollineni
Managing Director
KIMS Healthcare Group

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Trusted Partner for Healthier Bharat

As a leading global provider of medical devices and solutions with a deep focus on healthcare, Mindray is striving to advance medical technologies to make healthcare more accessible for about 30 years.

Mindray provides a total solution in the fields of Patient Monitoring & Life Support, In-Vitro Diagnostics, and Medical Imaging System. With the goal to be a trusted partner in building healthier Bharat, Mindray will continue delivering products and services that meet customers' needs and bring better healthcare to more people.



Ultrasound Imaging System



Patient Monitoring & Life Support



In-Vitro Diagnostics



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*We are agile, We are ready.
Mindray's systems are built for
healthcare optimization and
peak efficiency. During this
pandemic crisis, the Mindray
team in India is adept to serve
and provide support to the
medical community*”

Mindray's crusade against Corona and its learnings !

Dear Readers,

Firstly I appreciate your encouragement and patronage to MindrayMedical its products. Your response to our corporate magazine MINDFOCUS has been overwhelming. It encourages us to just do greater for the medical community. MINDFOCUS is introduced to strengthen professional connect within the medical community and create a platform to exchange scientific information, provide groundbreaking technology updates and following best practices in healthcare voiced by experts.

The world around presently is coping with the greatest challenge of fighting the coronavirus. The spread of the corona virus has incurred humanitarian, financial and social costs, and we are only beginning to understand its effect on other areas. One of the economic costs of this virus to China has been a disruption in its ability to supply goods to the rest of the world for several weeks. But its truly commendable that the Chinese Government has fought bravely to contain the virus and has achieved phase-wise success looking at the current scenario world over.

This edition of Mindfocus features stories from Mindray team, China exhibiting their tenacity and resilience in delivering services to the health system against all odds. Our production lines did not haul and employees kept working round the clock in such times. Based on our ongoing analysis and support for our clients around the world, we have made our learnings. The key goal in managing dynamic and unpredictable demanding situations is resilience – the capacity to continue to exist and thrive via unpredictable, changing, and probably negative events.

The covid-19 virus is changing our businesses and society in many ways. It is likely to change how companies configure their supply chains. While most managed to ride difficult waves, companies must look back at such a crisis and realize what must be learned and reflect on plans ahead.

We are agile, We are ready. Mindray's systems are built for healthcare optimization and peak efficiency, During this pandemic crisis, the Mindray India team is adept to serve and provide support to the medical community. I assure the medical fraternity, that no services will be hampered from our side.

I congratulate and salute the indomitable spirit of all doctors and paramedics who are risking their own lives & are working tirelessly at the forefront of this crisis. On behalf of the Mindray family, I pray for everyone's health & well-being. Be healthy, Be safe!

Happy Reading!



A handwritten signature in black ink, appearing to read 'Dean Zhang'.

Dean Zhang
Managing Director,
Mindray Medical India Pvt. Ltd

MINDRAY IN ACTION TO COMBAT COVID-19



The newly-emerged epidemic pneumonia caused by a new type of coronavirus (COVID-19) has become the biggest concern in China and the very focus of public attention around the world. As a company with the mission to “advance medical technologies to make healthcare more accessible”, Mindray has immediately responded with multiple actions. From Jan 25 to Feb 6, Mindray completed the installation of over 3,000 units of devices against time as Huoshenshan and Leishenshan completed the construction on Feb 2 and Feb 6 respectively.



FRONTLINE: QUICK RESPONSE IN THE SHORTEST POSSIBLE TIME

At the very early stage of the epidemic outbreak, Mindray Wuhan Subsidiary proactively arranged over 200 service engineers to check the status of over 20,000 Mindray devices installed across Hubei Province. An emergency plan was also carried out to ensure the supply to regions badly affected by COVID-19 in Hubei.



Mindray engineers delivered medical devices to hospitals in Wuhan

The demand for quality medical devices also staggeringly soared across the whole nation. As the leading provider of medical devices and solutions in China, Mindray has allocated resources efficiently and spared no efforts to ensure the timely supply of devices urgently needed. Till Feb 17, Mindray has delivered over 35,000 units of medical devices to help nationwide hospitals and caregivers to combat the novel coronavirus.

And when the construction of Huoshenshan Hospital just started, colleagues from sales, marketing and customer service departments in Mindray Wuhan Subsidiary made coordinated efforts, round the clock, to put together a total solution for the whole hospital. The customer service team performed lean management, by allocating the responsibility of transportation, installation and after-service to the corresponding group leaders. Though the construction site was very crowded with all kinds of people involved in the Huoshenshan Hospital's construction, thanks to a meticulous plan, Mindray team worked in an orderly and coordinated manner. What's more, since time was extremely tight, Mindray team members worked in shifts, with no less than 50 engineers in each shift, to keep the installation on the go and, eventually to finish all the tasks in time.



Mindray engineers installed the devices at Huoshenshan and Leishenshan Hospitals

A comprehensive solution meets various demands

In response to complicated and special clinical demands of front-line hospitals, Mindray has offered an optimal comprehensive solution across Patient Monitoring & Life Support, In-Vitro Diagnostics and Medical Imaging System in the shortest time.

PMLS

Safe ICU

- By combining invasive and non-invasive ventilation in one device, Mindray's ventilators can meet patients' needs of different acuity levels. Various protective ventilation strategies and tools are available to care for Acute Respiratory Distress Syndrome (ARDS) patients.
- Industry-leading multi parameter patient monitors provide comprehensive bedside monitoring for infected patients, with a series of smart Clinical Assistive Applications (CAAs) to help with clinician's prevention, diagnosis and treatment against cross-infections and complications. The versatile, compact transport patient monitor also makes it easy to realtimely monitor the patient's vital signs during intra- and inter-hospital patient transport.
- Precise infusion therapy is enabled by Mindray infusion pumps to make sure that every patient enjoys individualized critical care.

IVD

Hematology solution (BC-6800Plus, BC-5390CRP)

- The Neutrophil-to-lymphocyte ratio (NLR) reported on Mindray BC-6800Plus and C-reactive protein (CRP) by BC-5390CRP are effective predictors for severe cases of patients with COVID-2019 infection.



Part of Mindray products installed in Huoshenshan and Leishenshan Hospitals



- The closed tube sampling design can protect laboratory technicians from risks of infection.
- The high level of automation helps improve efficiency of CBC+CRP testing. Chemistry and immunoassay solution (SAL 9000, CL-6000i)

- Mindray provides reliable chemistry and immunoassay solution to assist in the treatment and management of patients with COVID-19 infection in the testing of PCT, diabetes, hypertension, etc.

- Reaction compartment maintenance free design, reducing biological pollution and risks of infection

- Dedicated STAT port and transport line

- Efficient sample loading and unloading, up to 600 samples capacity Microbiology solution (TDR-X120, TDR-300B Plus)

- Mindray provides reliable microbiology solution for management of secondary bacterial/fungal infections in Coronavirus-infected patients at the later stage of pneumonia treatment.

- Blood culture: Colorimetry can achieve sensitive and rapid detection of secondary infection pathogens.

- ID&AST: Microbroth dilution helps provide multiple and accurate results for individualized anti-infection treatment.

MIS Ultrasound disinfection solution (TE series)

- Unique transducer tracking function, Z-tracking records the transducer usage and basic patient information, which is helpful for hospital tracing and infection control.

- Seamless touchscreen and screw-less design avoids residue of disinfectant.

- Cable management avoids contamination caused by cable hanging down to the floor.

- 10-second screen locking feature for cleaning even during exams provides the convenience of infection control.

- Extensive and comprehensive list of product-compatible disinfectants: The most commonly used disinfectants in the world have been tested which reaches up to over 60. Smart cardiopulmonary assessment solution: ultrasound assists in the diagnosis of severe pneumonia

- Facing ARDS, ultrasound's lung exam mode helps clinicians to make rapid and precise diagnosis. Following up on that, Mindray's Smart B-line on our newly launched TE7 ACE automatically calculates B-lines number, percentage, and distance which provides a comprehensive lung evaluation for clinicians to understand the progression of the disease and assess the pulmonary function.

- Facing septic shock, ultrasound helps to quickly assess patients' volume responsiveness and status: Not only in Wuhan, in order to fully cooperate with the control and prevention of COVID-19 across other regions, all Mindray subsidiaries in China immediately established emergency teams, involving production, customer service, technical support, and clinical training. All people are standing by 24/7 in case of any urgent request for our service and ensure that all devices in use are functioning properly.

Mindray is committed to offering high-quality products to all regions. We firmly believe this epidemic will be brought under control. With joint efforts, we can win the battle against this common enemy to all humankind.



MODERNIZATION OF FETAL IMAGING IN INDIA

Dr Devang Patel is a renowned gynaecologist & Feto Maternal Medicine Specialist specializing in high-risk pregnancy and fetal medicine. He is a consultant at CareInstitute of Medical Sciences (CIMS Hospital) and also attached with Gujarat Fetal Medicine Center, Ahmedabad

Dr Patel's special area of interest includes invasive procedures like Amniocentesis , Chorionic Villus Sampling, Fetal reduction , Intra uterine blood transfusion, fetal echo, multifetal pregnancy, Aneuploidy screening.

He also specialises in Hypertensive Disorders, Medical Disorders with Pregnancy like APLA , SLE, Jaundice and Thrombocytopenia in Pregnancy.

Dr Patel is a specialist in management of Morbidly Adherent Placenta (PL Accreta) & Recurrent Pregnancy Loss.

Dr Patel talks about the emerging state of fetal imaging in the country and the benefits of modern imaging technology.



Dr. Devang Patel
Feto Maternal Medicine Specialist,
Consultant at CIMS Hospital &
Gujarat Fetal Medicine Center,
Ahmedabad

CAN YOU COMMENT ON THE CURRENT STATE OF FETAL IMAGING AND PRENATAL CARE IN OUR COUNTRY?

D. P. : Prenatal ultrasound scenario in India is still finding its path to make an overall impact. Only 24 percent pregnant women are hardly undergoing one ultrasonography throughout their pregnancy. It means almost 3/4th of the pregnant women do not get the facility of the ultrasound. Primarily there is a lack of awareness about the importance of the imaging system during pregnancy. This is a cause of concern as prenatal ultrasound imaging helps us to diagnose several anomalies like neural tube defect and certain heart conditions in the fetus during antenatal period.

WHICH ARE THE MOST COMMONLY SEEN FETAL ABNORMALITIES NOWADAYS?

D. P. : In Our experience of antenatal ultrasound, the most common defects which are found are neural tube defect, heart conditions like ventricular septal defect, transposition of great arteries and also renal anomalies.

WHAT TECH ADVANCES ARE OBSERVED IN FETAL IMAGING? HOW ARE MODERN FETAL ULTRASOUND TECHNOLOGIES HELPING IN DIAGNOSIS OF THE MOST COMPLEX FETAL DEFECTS?

D. P. : With the advancement in 3-D and 4-D ultrasound imaging technology, we are better equipped in diagnosis and prognostication. Secondly advanced technology facilitates easier communication with the patients as well as the referring consultant. For example, if we find a cleft lip in the fetus during imaging, we can present the actual 3D image to the patient and the referring doctor. It helps to convey the presence of such a condition clearly .

OWING TO ADVANCEMENTS IN 3D AND 4D ULTRASOUND TECHNOLOGIES, HOW IS ADVANCED VISUALIZATION HELPING IN DETERMINING CONGENITAL DEFECTS MUCH BETTER THAN EARLIER?

D. P. : With the advancement in ultrasound technology like 3-D and 4-D imaging, colour Doppler, power Doppler, STIC etc., we get a clear diagnosis of several anomalies like that of the heart during the antenatal period. With these results, you can actually counsel the patients with a better approach and they can be prepared for any further corrective measure. If the condition is life threatening or the prognosis is poor, they have the option of termination of pregnancy. However, if the fetus has minor birth defects, they can be monitored well in the antenatal period and can be delivered at the tertiary perinatal Centre. Thus, the baby can be taken care of in the best supervision of experts. These are the advances in fetal echocardiography which has decreased the perinatal morbidity and mortality caused due to prenatal defects.

WHAT IS THE FUTURE SCOPE AND POTENTIAL OF GROWTH OF FETAL IMAGING IN OUR COUNTRY?

D. P. : There is a huge lacunae to be filled in the field of fetal medicine and antenatal ultrasound, especially in India. So, there is increased scope for the usage and development of this technology in India where we can provide these facilities to almost 3/4th of the antenatal mothers who cannot avail this technology at present.

For more information or consultation, Dr Patel can be reached at :
devangpatel05@gmail.com



DELTA HOSPITAL IMPLEMENTS MINDRAY'S PMLS SOLUTIONS

Delta Hospital, the Rajahmundry based multi-specialty hospital was recently inaugurated by the honorable Vice President of India, Shri Venkaiah Naidu, in Dec 2019. Set up in Rajamundry, AP, the 220 bedded multi-specialty tertiary hospital is a major respite for the locals, providing the best-in-class advanced healthcare treatments meeting international standards.



Dr. R Bhaskar Chowdary
Chairman & Managing Director,
Delta Hospital, Rajahmundry

Mindray India is honored to be an integral technology partner of the Delta Hospital. Recently the company has won the prestigious contract of installing the most advanced line of Mindray's patient monitoring and life-support products at Delta Hospital. The hospital's ICU and OR are equipped now with Mindray integrated One Solution, which includes patient monitoring solution, IT solutions, anesthesia workstations, ventilators, Surgical lights and infusion pumps.

Dr. Chowdary, Dr. Nitin and Dr. Sridhar had made the choice of selecting Mindray's products after considering the company's innovativeness and its sound capability to serve the Indian

"Operating a hospital is a 24x7 service that can never rest. A hospital's success is purely defined by its clinical capability to treat diseases and the application of the modern technologies that help diagnosis and improve healthcare delivery."

The hospital is a dream project of Chairman and Managing Director, Dr. R Bhaskar Chowdary who was always keen to build a state-of-the-art hospital to serve the local community. The hospital is equipped with industry-leading critical care and operating room solutions and other advanced services to provide quality healthcare treatment. Dr. R Bhaskar Chowdary states that the hospital is a collaborative effort of his trusted partners like Mindray and eminent team of doctors who are the focal point of the hospital business. Dr. Chowdary has ambitious plans to grow the local healthcare delivery, and tirelessly serve the community 24x7.





market with its wide range of products. The ICU and OR solutions provided by Mindray helps the medical staff of Delta Hospital provide high-quality, intensive medical treatment and interventions in the need of the hour. With the support of Mindray, Delta Hospital is also able to offer superlative cancer care and treat a wide spectrum of critical cardiac diseases with its dedicated multi-disciplinary and well-experienced team.

According to Dr. Chowdary, operating a hospital is a 24x7 service that can never rest. A hospital's success is purely defined by its clinical capability to treat diseases and the application of the modern technologies that help clinical diagnosis and improve healthcare delivery. With Mindray products onboard Dr. Chowdary is confident that the hospital can

provide a high-level of medical service to its patient, especially in its ICU and OR where patients need to be given the utmost attentions. In particular, he feels that the partnership with Mindray is an accomplished choice, considering the fast-growing healthcare demands anticipated in the near future in Rajamundry. Dr. Chowdary is an ardent believer of the fact that adopting the most advanced technologies will give a healthcare business an extra edge and put you ahead in the industry.

Delta hospital has been launched with a mission to serve every strata of the community. Backed with sound clinical support from top-notch doctors, nursing and paramedical staff, the hospital is poised to cater to the most advanced level of medical treatments needed by the community. The management

strongly believes that its hospital success will be defined by the collaborative efforts of its technology partners, such as Mindray and more who have already chartered on a long journey with them to serve mankind. Mr. Dean Zhang, Managing Director Mindray India, believes the country needs many more hospitals like Delta Hospital who are championing the cause of making healthcare affordable to the masses. Mr. Zhang claims that "Mindray, a new generation of medical technology provider, is not leaving any stone unturned in making medical technology accessible, even to the remotest areas of India. And the company will continue supporting Delta Hospital in all its future endeavors'. Mindray is very optimistic to play a crucial role as a technology enabler in the development of medical industry.

ANESTHESIA MACHINE WITH INTELLIGENT ELECTRONIC GAS MIXER



Dr. Manju Goyal
National Sales Manager,
Life Support Systems,
Mindray Medical India Pvt. Ltd.

Over many years the field of anesthesia has witnessed a transition from the Boyles Apparatus to external ventilator machines. From external ventilators machines to integrated ventilators-two gas version. Now we have come very far with 3 gas machines having various ventilation modes. We often have experienced the conversation between cascaded flow meters and electronic flow meters, which is more user friendly, accurate and safe. But since both of these technologies use mechanical way of mixing, there is fresh gas flow observed (through low

tubes or digital) but the machine identifies it as mechanical mixing.

So both versions have the same kind of limitations like setting independent flow for each gas, besides user spends a lot of setting adequate titration flows to meet minimal flow and maintain balance of anesthesia. As the case progresses user needs to manually adjust O₂ as per change in patient uptake.

All the extra works can be managed if you choose an intelligent and careful technical partner. The best choice is to opt for anesthesia machine with electronic gas mixer. Titration job of gases are self-automated and will take away some concerns like gas leaks. Many anesthetists have a concern regarding what flows are adequate for delivering set tidal volume at lowest fresh gas flow. In this regard they again perform titration to set adequate flow and if in case leak occur then the flow need to be changed again. This extra extra job can be left to your intelligent anesthesia machine. The mixer will alert if the gases are not adequate for tidal volume delivery or if they are more than what actually is required. This will be a more reliable feedback that is received from heart of machines and not through external signs.

Electronical gas mixing is a well-established technology in ICU Ventilators and has been very reliable over the years in anesthesia administration. This demand has set to increase as more anesthetists can benefit from this improved technology and also bring down the cost of operation significantly.

Electronical gas mixing is a well-established technology in ICU Ventilators and has been very reliable over the years in anesthesia administration .





GLOBAL HOSPITAL AHMEDABAD CREDITS MINDRAY'S MEDICAL TECHNOLOGY

Global Hospital, a Multi-super Speciality Hospital based in Ahmedabad, appreciates medical instrumentation support provided by Mindray in helping them to provide global healthcare standards to its patient. Global Hospital was established to strengthen regional health care services and was managed by Global Longlife Hospital and Research Pvt. Ltd. The hospital's facilities comprise of the most up to date and innovative healthcare technologies to provide the most advanced medical treatment. Mr. Suresh Jani-Chairman and M.D of Global Hospital, Ahmedabad elucidates that in a country like India, where major population resides in rural towns and villages, advanced medical technology is a necessity to make healthcare more accessible. Our efforts are always directed towards minimizing the healthcare burden of the country, which is a major threat to the productivity and socioeconomic progress.



Suresh Jani
Chairman and M.D.
Global Hospital, Ahmedabad

"Healthcare burden influences India's productivity and socioeconomic progress negatively, it is our moral responsibility to work hard to reduce it."

When we started standardization of our hospital, there were several challenges to take care of. Merging excellence with perfection was our primary goal. Mindray has provided us with the best available technology within our budget along with the excellent services. We have been associating with Mindray for the past 5 years. Since then we have been using

several devices like multi-parameter patient monitors the iMEC and iPM Series, the BeneHeart R12 ECG device, the BeneHeart D3 Defibrillator, the BeneFusion SP5 syringe pump, the SynoVent E3 Ventilator and the WATO EX-20 anesthesia workstation, to name a few. The simplicity of their devices is the key parameter that makes Mindray quite user-friendly.



Druv Jani
Director
Global Hospital, Ahmedabad

" We value solution providers like Mindray who are willing to walk the extra mile to provide better patient care by providing latest technologies."

"The institute believes in retaining and sustaining the quality of medical talent in our hospital. The hospital aim is to make the best advanced technology available to the masses at affordable prices. We have always worked towards modernization of the hospital's offerings and Mindray have proved to be an efficient partner to help us achieve this. When we started with the process of upgrading our hospital's infrastructure, the main limitation was replacing the older technology and processes. Mindray with its innovative solutions has eased the whole workflow for the hospital. The company is best known for its state-of-the-art innovations and excellent service records in hospital management. One thing that stands out Mindray from other companies is its efficiency and doorstep services which are available 24/7.

Being a multi-specialty hospital, we get a lot of complicated and sensitive

cases. Products and services provided by Mindray have made it easier for the medical staff to handle such cases on a daily basis. For example, we have the SynoVent E3 Ventilator in our intensive care unit. It can perform all the modern functions, and connect to both the HIS and CIS systems with ease. It can also store a large amount of patient data in 6 different modes and support up to 12 ventilation modes.

We also have the WATO EX-20 anesthesia workstation which has a complete and accurate configuration, including O₂, N₂O Air supply and Oxygen sensors, along with other advanced features which help with delivering and monitoring precise tidal volume. We have the BeneHeart R12 ECG, the BeneHeart D3 defibrillator, the BeneFusion SP5 syringe pumps in our hospital as well. These highly sophisticated and advanced medical devices have given us an upper hand in providing efficient treatment and patient care to the local community

MINDRAY INTRODUCES ADVANCED HD3 ENDOSCOPE CAMERA SYSTEM



HD3 Endoscope Camera System

Driven by the increasing prevalence of endoscopy surgeries for treatment and diagnosis as well as technological advancements, India's endoscopy market has witnessed tremendous growth over recent years. Based on deep insights into India's endoscopic imaging and clinical requirements, Mindray has debuted the advanced "**HD3 Camera system and Optcla Hand Instruments**" on 7th February 2020 in India. Beyond exceptional performance and operability, the HD3 with extraordinary versatility can be used for various surgeries including **General Surgery, Gynecology, Urology, Arthroscopy, ENT, Thoracic, GI surgery.**

With the combination of the **advanced 3-chip CMOS sensor**, premium optical lens and real-time

optimization software, the HD3 delivers more accurate images in stunning resolution (1920x1080) and vivid color. This ultimately helps surgeons to visualize fine structural details, even the smallest blood vessels. The **built-in USB recorder** provides reliable FHD video and still image capture with a single press of the shutter button. HB200L is Equivalent to a 300W Xenon lamp, the powerful **200W LED Light Source** with up to 40,000 hours lamp life provides superior quality and intensity of light for clear visibility.

The **HS50 High Flow Insufflator** makes CO2 insufflation simple, easy and safe. With a maximum gas flow of 50 liters/min, the HS50 ensures safer and quicker construction of the cavity. Additionally, it also comes with features like strict insufflation pressure control, **gas**

heating (up to 41oC), smoke evacuation and an intuitive 7-inch touchscreen for improved patient safety as well as streamlined clinical efficiency.

Optcla Hand Instruments

Mindray also introduces a wide spectrum of **disposable and reusable hand instruments** for laparoscopic surgeries. These instruments are made from imported Stainless Steel materials which **guarantee precise performance and improved patient outcomes.** The average weight of hand instruments is approximately **89 gms and ergonomic handle** combined with new ratchet design allows more comfortable and fatigue-free grips. **3-parts detachable structure** makes cleaning and sterilizing easy and efficient, resulting in reduced cost of replacement.




Premium laparoscopic solution

Inspiring your vision

Mindray's laparoscopic solution consists of the innovative HD3 endoscope camera system and a variety of laparoscopic instruments. Through providing remarkable image quality and user-friendly experiences, it help facilitate more accurate diagnosis and treatments.



Superior viewing experience

-  3-chip CMOS sensor
-  2X Optical zoom
-  FHD 1080p display






Reusable instruments



Disposable instruments

Improved patient safety

-  High-speed flow rate
-  Safe insufflation pressure
-  Auto light source detection

KIMS

HEALTHCARE GROUP: SOUTH INDIA'S ICONIC HEALTHCARE GRP ON A GROWTH SPREE





Dr. Abhinay Rao Bollineni
CEO, KIMS Healthcare Group



**OUR TOTAL BED STRENGTH IS
4500 IN THE TWO STATES.**

SIMULTANEOUSLY, EFFORTS HAVE
BEEN STEPPED UP TO
EXPAND FOOTPRINT IN EASTERN
AND CENTRAL INDIA



KIMS Hospitals Group, the Hyderabad-based multi-specialty healthcare chain is one of the leading multi-disciplinary integrated private healthcare services providers in southern India.

The group is operating a chain of multispecialty hospitals with a focus on tertiary and quaternary healthcare. With a turnover of Rs 925 crore for fiscal 2019, combined bed strength of 4000 in 10 hospitals, as well as one medical college in Andhra Pradesh and Telangana respectively, KIMS will add two 'greenfield' hospitals of 250-bed strength each in Hyderabad and Rajahmundry.



"This will take the total bed strength to 4500 in the two states. Simultaneously, efforts have been stepped up to expand footprint in Eastern and Central India first," said Dr. Abhinay Bollineni, Chief Executive Officer.

Led by Dr. Bhaskar Rao Bollineni, Managing Director of KIMS Healthcare Group, a renowned cardiothoracic surgeon explains the group has grown from a single hospital to a chain of multispecialty hospitals, both organically and through strategic acquisitions. The group established its flagship hospital at Secunderabad in 2004 with a capacity of 150 beds, regularly adding further capacity taking the total bed capacity to 1,000 beds. According to Dr. Rao, he firmly believes that affordability and quality of healthcare services provided by the hospital and its track record of building long-term relationships with medical professionals and doctors, including through equity participation by them in the companies have enabled its growth and helped build a strong name for 'KIMS Hospitals'.

The KIMS group also conducts medical education programs through its affiliations with state medical boards and universities

Most of the group's hospitals are equipped with state-of-the-art medical equipment and employ practices and policies which help provide quality healthcare services to the patients. KIMS Hospital was one of the first hospitals in Hyderabad to install 4-Arm HD da Vinci Robot technology at their hospital at Secunderabad. The flagship hospital at Secunderabad, and hospital at Rajahmundry, have been accredited by the National Accreditation Board for Hospitals and Healthcare Providers, India ("NABH") and NABH accreditation is in process for the hospital at Kondapur.

In addition to healthcare services, the KIMS group also conducts medical education programs through its affiliations with state medical boards and universities, for various broad and super specialties at their hospitals at Secunderabad and Rajahmundry, including for DNB, under graduation, post-graduation, Ph.D. and diploma programs.

KIMS Hospitals Group has firmed up plans to expand into Odisha, Madhya Pradesh, Chhattisgarh and Maharashtra in the next couple of years. In Odisha, the group has signed a memorandum of understanding (MoU) with the Government to develop nearly five hospitals through a joint venture, on a public-private-partnership model. "We have won bids for 3 hospitals, with the biggest, flagship one of 800 beds in Bhubaneswar," says Dr. Abhinay Bollineni.

In a candid conversation with Mindfocus, Dr. Bhaskar Rao expresses his pride in the group's achievements and hopes for healthier India in the future. Excerpts of the interview.



Dr. Bhaskar Rao Bollineni
Managing Director of
KIMS Healthcare Group

“The government should understand the healthcare sector better and allocate funds for schemes and projects that will bring a positive change”

TELL US ABOUT YOUR KIMS DREAM AND HOW IT BECAME A REALITY?

B. R. : While pursuing my medical education, I was highly inspired by a person who was treating my village. Villagers flocked from distances for receiving treatment and went back happy.

Looking back there weren't many good hospitals then. Very few govt or charitable groups or community-based organizations provided healthcare. The quality of medical treatment and a shortage of qualified doctors was a major drawback then. I had already made my decision to serve my village after pursuing my cardiac degree from Australia. I came back and was attached to a corporate hospital. Later along with a group of doctors, I started a non-profit organization to improve healthcare services for underprivileged patients. Subsequently, in 1996, I joined Mahaveer Hospital, a trust hospital that offered low-cost healthcare to the poor. Further, I realized that there was a dire need to provide low-cost treatment to the lowest social economic patient groups on a much bigger scale. I soon started my hospital in Nellore and then Rajamundry in Hyderabad in 2003. We also started treating the upper-class patient group only so that we could further subsidize the cost for the poor patients. From here on there was no looking back. We established our flagship hospital at Secunderabad in 2004 with a capacity of 150 beds. We have grown from a single hospital to now a chain of multispecialty hospitals. We aim to always provide affordable and quality healthcare services to the needy.

KIMS IS ONE OF THE BIGGEST CORPORATE HOSPITAL CHAINS IN HYDERABAD AND THE OVERALL FOOTPRINT OF THE BRAND HAS EXPANDED AT A VERY GOOD RATE. PLEASE TELL US ABOUT YOUR ACQUISITION MODEL?

B. R. : Initially KIMS established successful greenfield projects in Kondapur, Rajahmundry. Our projects were looked upon as effective models. Soon many sick hospitals in the Telangana state who were finding it difficult to run the business approached us for an alliance. In places like Srikakulam, Vizag, Ongole & Anantapur we developed brownfield projects that were quite successful. All hospitals were branded under the KIMS Group thus widening our presence and serving a larger community. Our hospital network has grown to six multispecialty hospitals in six cities, with a total capacity of 2,120 beds, including 1,705 operational beds. We are taking steps to expand the footprint in Eastern and Central India. In Odisha, the KIMS Group has signed a memorandum of understanding (MoU) with the Government to develop nearly five hospitals through a joint venture. Our business is thriving on 3 fundamental principles that will make us successful 1] Providing the best medical care to any patient 2] Providing growth opportunities to our employees and stakeholders 3] Safeguarding our investor's values and giving them healthy returns.

THOUGH THERE IS ALWAYS TALKS ON MAKING HEALTHCARE AFFORDABLE AND ACCESSIBLE, THE REALITY IS DIFFERENT. HOW IS KIMS MAKING A DIFFERENCE IN PROVIDING AFFORDABLE HEALTHCARE TO THE POOR?

B. R. : This can be achieved by creating a fool-proof model and implementing it right. When we started the business our policies and principle were very clear. Our business was created to serve the socially poor economic group and not for making a profit. Gradually we started catering to the middle and upper class that kept our model working by recovering costs to cover treatment costs for the poor. Under every situation, we kept beds reserved for the deserving poor class. Our doctors and other

support team played a very crucial role in applying the rules and putting things in practice. The idea was to treat more paying patients so that we can take care of the deprived. It was a workable system.

ACCORDING TO YOU WHICH IS THE BIGGEST DISEASE BURDEN IN INDIA? WHICH OTHER DISEASES ARE RISING IN INDIA?

B. R. : The most dreaded and widespread menace is cancer. Its rampant and affecting almost every age group. Our healthcare system has to be better equipped to counter with a cancer crisis. Hospitals and providers need to deploy the best clinicians, follow strict treatment modalities and make investments in research & technology to fight the disease. It's a collective effort. To achieve this KIMS Grp conducts many educative programs for cancer patient awareness. We handle such cases with utmost care. On the other side, the number of non-communicable diseases is rising, they can be controlled by putting the best system in place and engage qualified physicians who will follow treatment protocols designed by the system.

WHAT SHOULD BE THE GOVERNMENT'S ROLES IN IMPROVISING THE HEALTHCARE SYSTEM. WHAT POLICIES DO YOU THINK SHOULD BE IMPLEMENTED?

B. R. : The government should understand the healthcare sector better and allocate funds for schemes and projects that will bring a positive change and our health indexes can look promising.

The need of the hour is to monetize special programs especially for dengue and other diseases that are taking the toll. Secondly, they should create strong awareness against non-communicable diseases. Ayushman Bharat scheme is a positive move for making healthcare accessible. The latest coronavirus outbreak has posed some serious challenges to the healthcare system at large, it will put our system to test. Govt driven insurance schemes need to be well designed and its benefits must reach masses

IN YOUR VIEW HOW IMPORTANT IS THE ROLE OF MEDICAL TECHNOLOGY? HOW NEW INVENTIONS WILL IMPROVE QUALITY OF LIFE

B. R. : When it comes to healthcare, medical technology is a key driver. Modern-day technology is continuously evolving in medical space. For example, the field of radiology had advanced significantly, low dose radiation, faster scans, and precise imaging has helped in producing faster and accurate results. Similarly, IVD technology has advanced considerably allowing us to detect anomalies in an early stage. Robotics is changing the surgical workspace altogether, it's going to be the future of assisted surgery. Physicians and surgeons are now powered with technology that will immensely increase the success rates and improve quality of life. Even advanced level abnormalities can be handled well by our skilled Indian doctors and I am proud of it.

WHAT IS YOUR OVERALL EXPERIENCE WITH MINDRAY, ITS PRODUCTS & TECHNOLOGY AND HOW IT IS HELPING HOSPITALS IN IMPROVING PATIENT CARE?

B. R. : Mindray is a trusted medical company and they have great products for hospitals. Moreover, it's the people behind the company and their strong will to serve that make the company stand apart. Most of our chain hospitals have empaneled Mindray's product. We are using their operation theatre lights, ICU monitors, ultrasound systems, OT tables, Endoscopy units and more. Most importantly Mindray products are very user friendly and offer great after-sales support. Mindray has a good understanding of our hospital tech needs and assists our HODs in making the right equipment choice, the company is a trusted partner in our healthcare journey.

WHAT YOUR PREDICTIONS AND RECOMMENDATIONS ON HOW HEALTHCARE WILL EVOLVE IN INDIA IN THE FUTURE?

B. R. : The middle and lower class will form a major chunk of consumers of health services. New novel drug discoveries will change

the way diseases are treated, Digital health is the future way of managing and controlling health. Further, the boom in digital health in India will steer the evolution of the life sciences industry and amplify its positive impact on the quality of care.

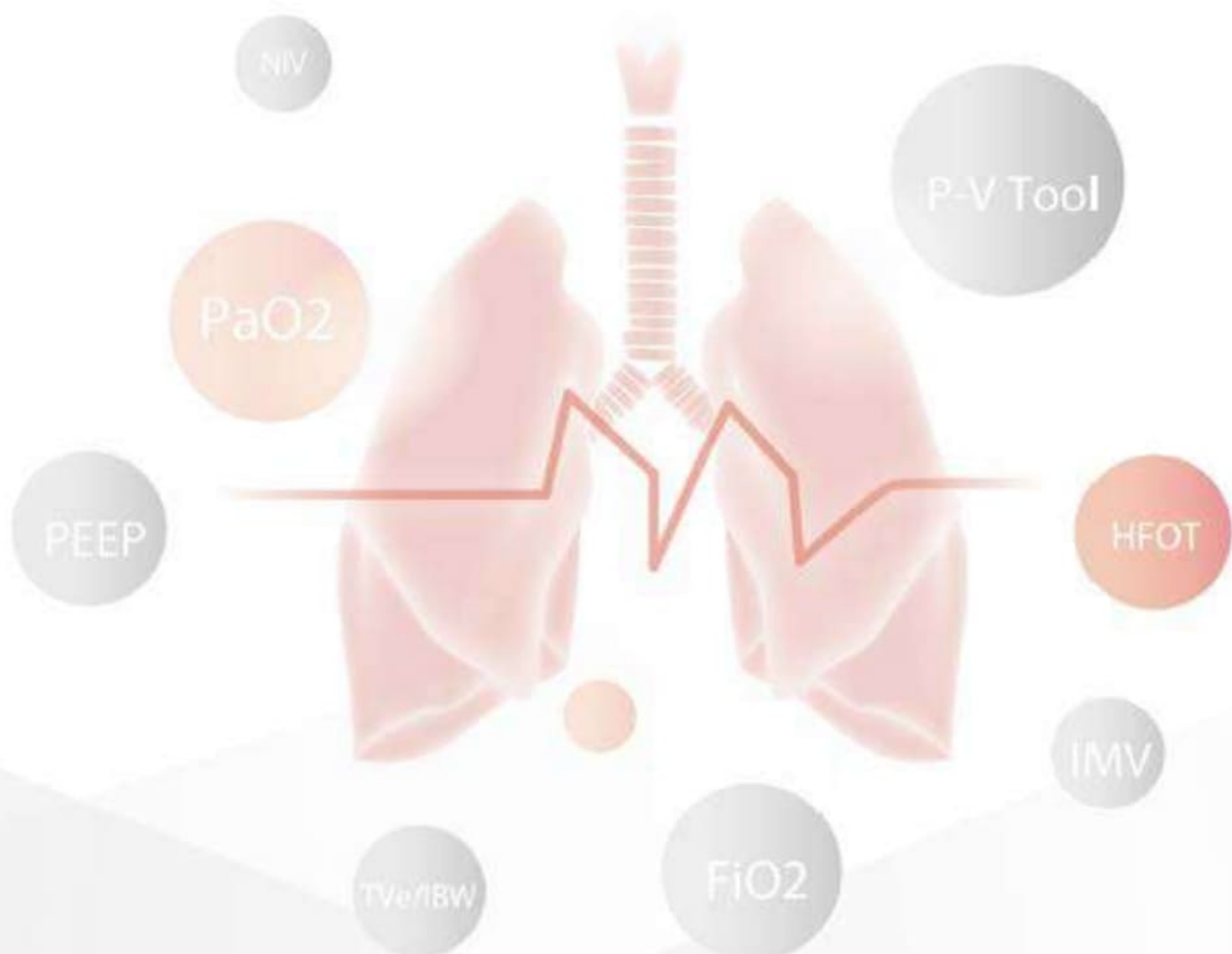
Owing to the rising disease burden and growing life expectancy, the need is to build smart hospitals with qualified doctors. Our health system is always plagued with a shortage of doctors, Govt must promote medical education to produce qualified doctors. Reinforce & propagate India's National Health Protection Scheme- Ayushman Bharat, so that it benefits a larger sect of the population. Healthcare in India will attract more private equity investment only when favorable and effective business models are created. Many healthcare startups are already working in this direction. New Govt policies will matter largely, it's predicted that healthcare consumption will double by 2030. There will be a huge gap between supply & demand and the system has to reform to fill in the gap. India needs to rise on most parameters such as infrastructure, the adoption of information, communications and technology (ICT), financial markets, skills, and innovation capability on then will see improvement. The road is not easy, but not impossible either. Govt, Hospitals, health Insurers, Medical Technology, Pharmaceutical, Diagnostics, and all stakeholder have to act in unison to bring this big change.

Mindray products at KIMS Group

- iMEC Series Patient Monitors
- BeneFusion Series Syringe Pumps
- BeneFusion Series Infusion Pumps
- HyLED Surgical Lights
- WATO-20 Anesthesia Workstations
- SynoVent Series Ventilators
- BeneHeart D2 Defibrillators
- R3, R12 ECG Instruments
- DC-80 Ultrasound Systems
- M7 Ultrasound Systems
- BS-200, Benchtop Biochemistry Analyzer
- BC-5800, 5-Part Hematology Analyzer

RESPIRATORY SUPPORT STRATEGIES FOR SEVERE COVID-19

At this moment, over 100,000 people has been diagnosed with COVID-19. The number of confirmed cases outside the Chinese mainland has already reached over 25,000. Countries like Japan, South Korea, Italy and Iran have reported thousands of COVID-19 cases. AS the World Health Organization warned that “the window of opportunity is narrowing” to contain the deadly coronavirus.



Global Cases Reported by WHO



Among patients with COVID-19, approximately 15% to 30% are severe cases with Acute Respiratory Distress Syndrome (ARDS). This rate can be even higher in some specific areas based on the overall public health landscape. Patients categorized as severe COVID-19 cases have a high risk of death therefore, it is essen-

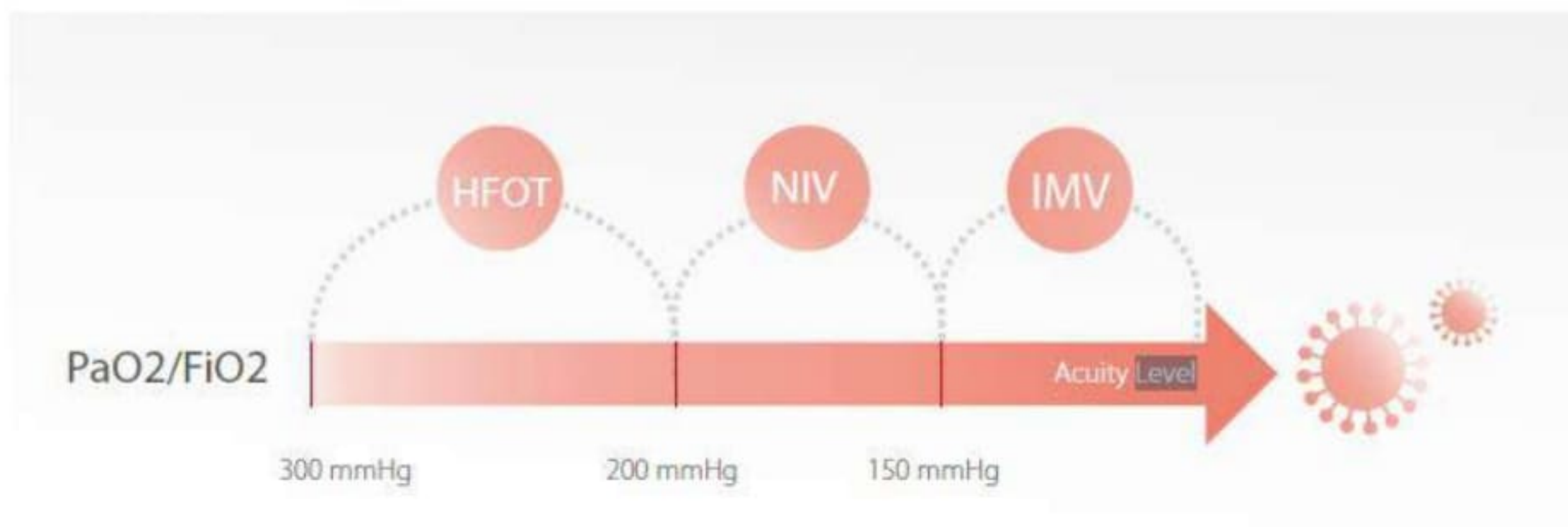
tial to provide appropriate treatment to this group of patients to minimize the overall mortality rate. Respiratory support, also referred to as mechanical ventilation, is one of the primary medical intervention for severe COVID-19 patients.

Who Are Categorized as Severe COVID-19 Cases?

Severe	Critical
<p>Patient diagnosed with COVID-19 is categorized as severe case if they meet any of the following criteria:</p> <ol style="list-style-type: none"> 1] Respiratory dyspnea with respiratory rate (RR) >30 beats/min 2] Oxygen saturation (SpO₂) <93%, in a resting state 3] Partial pressure of oxygen in arterial blood (PaO₂) / fraction of inspired oxygen (FiO₂) < 300mmHg (i.e.PaO₂/FiO₂< 300mmHg). 	<p>Patient diagnosed with COVID-19 is categorized as critical case if they meet any of the following criteria:</p> <ol style="list-style-type: none"> 1] Respiratory failure requires mechanical ventilation(non-invasive or invasive ventilation); 2] Shock 3] Multiple organ failure which requires ICU monitoring and treatment

Since the difference between severe and critical cases has little influence on the actual treatment offered to the patient, clinicians generally describe them as severe. When a COVID-19 patient has respiratory dyspnea and the oxygen therapy has failed relief the symptoms, then patient is identified as severe hypoxic respiratory failure. An ineffective oxygen therapy means that the patient is using an oxygen reservoir mask with flow

of 10L-15L/min(usually at minimal flow rate to maintain bag inflation with 60%-95% FiO₂), but continues to show increasing respiratory rate with hypoxemia. Severe hypoxic respiratory failure often results in intrapulmonary shunt caused by V/Q imbalance (also referred to as ventilation-perfusion mismatch), therefore, different ventilation strategies should be used to adapt to the acuity level of each patient.



Invasive Mechanical Ventilation (IMV)

➤ Clinical Consensus

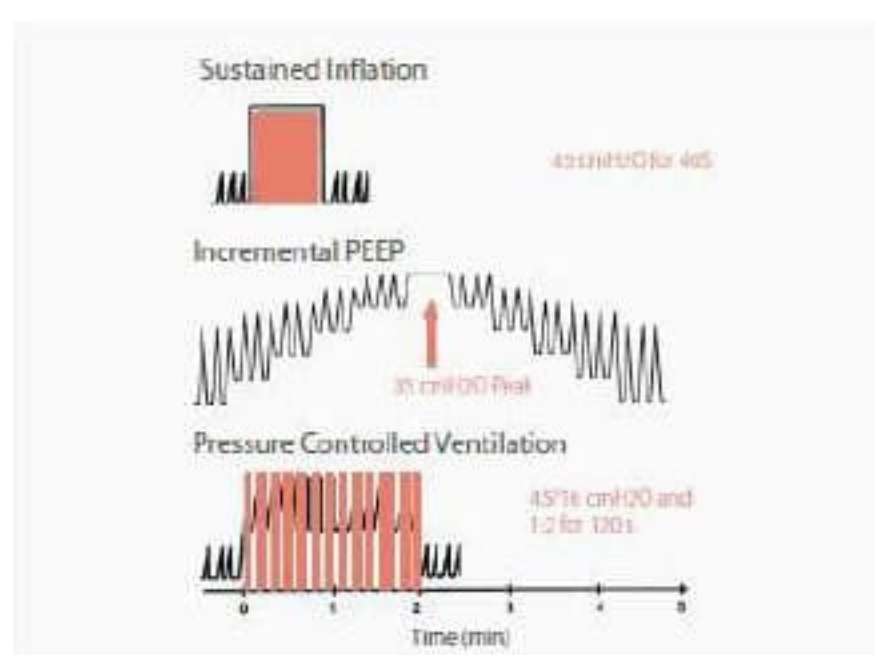
For patients with PaO₂/FIO₂ 150mmHg, IMV should be implemented as soon as possible. According to lung protection strategy, lower tidal volume ventilation is the first choice (6ml/kg PBW to 8 ml/kg PBW). It is also recommended to perform optimal positive end-expiratory pressure (PEEP) titration, appropriate lung recruitment maneuvers and other lung-protective measures.

For patients with severe ARDS (PaO₂/FIO₂) < 100 mmHg) who shown little effect to regular ventilation practices, particularly those with unevenly distributed lesions, it is recommended that clinicians give mechanical ventilation with prone positioning to the patient, with a minimum time of 12 hours.

Recruitment maneuvers: First, evaluate the patient's lung recruit ability. Increase PEEP from 5cmH₂O to 15cmH₂O [6],and check whether the following is observed:

1. PaO₂/FIO₂ rises
2. PaCO₂ decreases
3. Respiratory compliance improves.

If two of the above are observed, the patient's lung is identified as recruitable, thus a suitable recruitment maneuver could be implemented.



➤ Solutions for invasive ventilation

Lower Tidal Volume:

TVe/IBW Monitoring: Mindray SV Series ventilator can set the default TVe/IBW strategy to its volume control mode as well as monitor it in real time during ventilation, so that clinicians can keep track of the patient's real-time expired tidal volume.

Lung Recruitment Maneuvers

Sustained Inflation (SI) : Mindray's SV Series ventilator are equipped with lung recruitment tool: sustained inflation, allowing clinicians to choose a suitable tool according to the specific requirement of the patient. It is recommended that you choose the recruitment maneuver that you're most familiar with.

Respiratory Mechanics Measurement

PulmoSight: It is essential to closely monitor the changes of respiratory mechanics during PEEP titration in ARDS patients. The SV Series ventilators monitor patient's respiratory mechanics and display the data in a graphic way – Pulmo Sight to help display intuitive real-time feedback.

Non-Invasive Mechanical Ventilation (NIV)

➤ Clinical Consensus

For severe cases of COVID-19, when the patient's Pa O₂/FIO₂ is between 150 mmHg and 200 mmHg, start with non-invasive ventilation. The initial NIV parameters are to be set as the following:

1. Inspiratory positive airway pressure (IPAP): 8 cmH₂O to 10 cmH₂O (1 cmH₂O = 0.098 kPa);
2. Expiratory positive airway pressure (EPAP) : 5 cmH₂O to 8 cmH₂O; and
3. FIO₂: 100%.

➤ Solutions for NIV

Mindray SV series ventilators support non-invasive ventilation, equipped with common non-invasive ventilation modes such as PSV-S/T, CPAP/PSV, P-A/C, etc., with the leak compensation up to 65 L/min. The ventilator is used with a dual-limb circuit with a closed non-invasive mask to support NIV. During the ventilation, VTi (insp. tidal volume), VTe (exp. tidal volume), MVleak (leaked volume in a minute) and leak% (percent of leaked tidal volume) can all be closely monitored.



When providing respiratory support for COVID-19 patients, the use of non-invasive ventilation with dual-limb circuits can greatly reduce the amount of gas exhaled into the atmosphere (compared with traditional single-limb circuit expiratory valve). At the same time, with an additional filter at the expiratory valve can efficiently process the exhaled air, and reduce the risk of aerosol infection to a minimal level.

High-Flow Oxygen Therapy (HFOT)

➤ Clinical Consensus

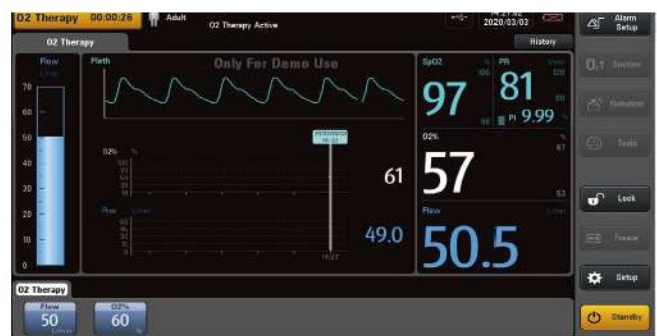
When PaO₂/FiO₂ is between 200 mmHg and 300 mmHg, it is advised that the patient is supported with high-flow oxygen therapy (HFOT) through a nasal cannula (commonly called HFNC or HFNOT). The initial setting of HFNC can be at 40 - 50 L/min with 100% FiO₂. During the therapy, clinicians should closely observe the patient's vital signs and oxygenation.

If the oxygenation deteriorates to PaO₂/FiO₂ < 200 mmHg, or SpO₂ falls below 93%, and/or the RR is above 30 times/min, then HFNC is not likely to be effective and NIV may be a better choice in this case. If the patient has any of the following symptoms, invasive ventilation should be used instead of HFOT:

1. unconsciousness;
2. severe arrhythmia;
3. shock (intravenous norepinephrine dosage > 0.1 μg/kgmin)
4. acute respiratory acidosis (pH < 7.25); or
5. airway obstruction.

➤ Solutions for HFOT

Compared with the standard oxygen therapy, Mindray's SV Series ventilator's HFOT can provide 2 - 60 L/min flow of oxygen and up to 100% FiO₂. In addition, with humidifier to actively warm and humidify the HFOT's gas flow delivered to patients, preventing mucociliary damage, sputum buildup, and other complications. Autopsy reports shown that COVID-19 lesions are concentrated in the lungs with a large amount of viscous sputum. Therefore, humidified HFOT has a great significance for patients requiring sputum clearance.



1. The comprehensive respiratory support therapy solution, including HFOT, NIV, and IMV in one device, can be switched over seamlessly to meet the changing needs of the patients;
2. The lung protection strategy package is available for effective treatment of COVID-19 patients;
3. An extensive range of parameter measurements can help facilitate the weaning of patients safely and effectively.

Challenges of treating COVID-19 patients

- Demanding clinical environments
- Shortage of medical supplies
- Heavy workload for caregivers.

What Mindray can offer

- The comprehensive respiratory support therapy solution, including HFOT, NIV, and IMV in one device, can be switched over seamlessly to meet the changing needs of the patients;
- The lung protection strategy package is available for effective treatment of COVID-19 patients;
- An extensive range of parameter measurements can help facilitate the weaning of patients safely and effectively.



CHANGING TRENDS OF IN-VITRO DIAGNOSTIC INDUSTRY IN INDIA

Dr. Roy is passionate about Diagnostic Pathology and has more than 20 years of experience as head of large diagnostic clinics as well as hospital labs. He is well acknowledged with the diagnostic field and tries to implement new technology in his lab. His research work is profound and valuable.

In an interview, Dr. Sudipta Roy discusses latest trends in in-vitro diagnostic Industry in India



Dr. Sudipta Roy
(MBBS, MD (PGI) DNB, DRC Path (UK).
Consultant Pathologist in AMRI Hospital &
Director of the Laboratory Services
AMRI Group of Hospitals.

LATELY, THE IVD INDUSTRY IN INDIA HAS BEEN WITNESSING IMMENSE PROGRESS. ACCORDINGLY, TO YOU WHAT ARE THE POSITIVE DRIVERS RESPONSIBLE FOR THIS GOOD MOVEMENT IN OUR COUNTRY.

S. R. : Global advancement in technology whether it's in the field of information technology or biotechnology or any other branch of research is a major factor for the generation of such a vast pool of information. Initially, there was a gap between the products of its application and its global commercialization. Today the booming global economy has already bridged this gap thus facilitated the commercialization at the global level. These availabilities of brooding markets in various big giants of the world have compelled for the research and production of IVD at a much larger scale. So all the benefits of scientific growth, Integration, Development, Technology, and Information have changed the face of production completely.

CAN YOU COMMENT ON THE IMPORTANCE OF TECHNOLOGICAL INNOVATIONS IN DIAGNOSTICS AND HOW IT IMPACTS THE OVERALL LAB PERFORMANCE?

S. R. : Old ways of diagnostics have resulted in errors at many levels be at the demographic level, be at the analytical level, and be at the pre or post-analytical level. But now of machines, errors have been reduced drastically, the quality of results has improved many folds. So, I feel that technological advancement has contributed a lot to the improvisation of the analytical results.

AS THE DISEASE PATTERN IN INDIA IS GETTING COMPLEX AND THEIR INCIDENCE RISING, WHICH LAB TECHNIQUES WILL EVOLVE AND SEE IMMENSE GROWTH AND ADOPTION?

S. R. : The sharing of the information with each other at every step is crucial in combating complex diseases. In instances of such disease the techniques or tool which is of prime importance is data and automation. Data on the genetic level of a certain disease is going to help at large in tackling any complex issue. The second most important thing is automation, the best example of which is Insilico drug designing which is a major part of bioinformatics. This certainly reduces the time and effort in understanding the nature of the pathogen. So, in my view, these two are an indispensable tool in the face of any adversity.

THERE IS A LOT OF CONSOLIDATION OF LABS ACROSS THE COUNTRY, PATHOLOGY CHAINS MERGING AND HOSPITAL INVESTING IN THEIR LAB SETUPS, HOW DO YOU SEE THIS TREND AFFECTING THE OVERALL INDUSTRY?

S. R. : There was a time when a single individual used to perform all the lab tests, now with the advancement of technology automation has replaced the most of manual work. From the past decade, traveling has become fast, information has become fast.

so does the technological advancements of tests. You collect the sample from one place which is processed at another place and all the reports are stored in one place for as many years you want. So, this acquisition of labs is a thoughtful and clever step towards the benefit of masses.

PLEASE COMMENT ON THE IMPORTANCE OF LAB AUTOMATION AND ITS ADVANTAGE IN PRODUCING HIGH-THROUGHPUT IN LABS WITH HUGE TEST VOLUMES.

S. R. : Nowadays people are aware of their health. They have access to loads of information about the diseases, their intensity, history, and cure. If we take an example of an individual having a history of diabetes in the family, he prefers to go for the regular check-up of the same. With the increase in the general standards of countries' growth and wealth, people are more likely to invest in their overall health. So, the pressure of getting investigated and checking periodically is of prime importance to the masses. This scenario has increased the number of tests, so choosing automation by default is a good choice.

HOW CAN LABS GET SMARTER, WILL DEEP LEARNING AND AI CHANGE THE WAY LABS FUNCTION IN THE FUTURE.

S. R. : AI or artificial intelligence, in general, is an already established field in many areas like automobiles, robotics, behavioral studies, etc. AI learns from the preceded data or information and produces future changes or

The sharing of information with each other at every step is crucial in combating complex diseases

output via using different algorithms. In the medical field, it has helped a lot in integrating and analyzing the results.

YOUR FINAL REMARKS ON THE FUTURE OF THE INDIAN DIAGNOSTIC INDUSTRY, GOING AHEAD, HOW WILL IT EVOLVE FURTHER?

S. R. : India is progressing at a very good pace in the diagnostic industry, but here I am more concerned about quality India rather than 'Make in India'. I love the fact that Indian companies are making most of this development in the IVD sector in comparison to other foreign companies. This growth and development are a milestone for India as with an increase in population the cost of the test should be reduced.

PLEASE SHARE YOUR VIEWS ON MINDRAY'S TECHNOLOGIES?

S. R. : I am associated with the company for the past many years. They are everywhere, whether you talk about radiology, testing, Imaging or diagnostics. I have seen their work very closely. I have experienced their technology, their research, their business proposals and all. And I believe, they spend a lot of time, energy and resources on Research and Development. They ensure upgradation of available technology, availability of new parameters on their various instrument platform for better patient care. It is very important for a company to keep giving updated solutions to its customers.

WHAT IS YOUR EXPERIENCE WITH MINDRAY'S SERVICES?

S. R. : As far as services are concerned Mindray has always proven itself trustworthy. My interactions with two technical people from Mindray have given me an insight into their overall commitment towards their services. Since we are into testing and saving lives, service plays a very important role and enables us to give uninterrupted and quality patient care. Service is a key factor for us to consider and decide for using instruments in our labs.

DC-40

FULL HD DIAGNOSTIC ULTRASOUND SYSTEM



Ms. Kshmta Kavra
Deputy Marketing Manager,
Ultrasound Imaging Systems,
Mindray Medical India Pvt. Ltd.

Keep innovating is the motivation for Mindray. Powered by the full-HD display, DC-40 with full HD provides you outstanding imaging clarity for a wider range of clinical diagnosis.

Key features :

Classic imaging technologies – enhancing the quality for diagnosis: iClear (speckle-reduction imaging technology); PSH (phase-shift harmonic imaging); and iBeam – spatialcompounding imaging technology.

Optimized transducers family:

Wide range of application coverage. With versatile transducers combination, DC-40 with full HD offers the best-balanced performance across a wide range of applications, and produces advanced image quality in a wide variety of patient types. ComboWave. With versatile transducers combination, DC-40 with full HD offers the best-balanced performance across a wide range of applications, and produces advanced image quality in a wide variety of patient types.

Dual-volume:

DC-40 with full HD introduces the dual-volume solution, which provides dedicated women care

from the prenatal exams. Urological solution. The specially designed biplane transducers, including the linear/convex and dual micro-convex, support versatile urological solution.

One-key exam mode switch:

One can change the frequently used mode by a single keystroke to simplify the workflow for efficiency. Higher ergonomics design. DC-40 with full HD delivers a range of tools that maximize diagnostic accuracy with convenience covering general imaging, OB/GYN and cardiology.

iTouch:

A one-button auto-image optimization solution, which can optimize the imaging quality automatically, including in B/PW mode.

Smart OB:

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

Smart FLC:

Automatically detects the number of follicles, and calculates the of each follicle

Smart face:

Fast and intelligent optimization for fetal face with one-touch operation. It immediately removes occlusions and eliminates noise information, generating an optimal view of the fetal face with more simplicity.

iLive:

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.



MSK IMAGING IS THE NEW FACE OF DIAGNOSIS



Dr. Ashwin Lawande
Consultant radiologist at
Dr. Mukund Joshi Imaging Clinic,
Mumbai.

Being a practitioner of ultrasound and radiology since the last 15 years, Dr. Lawande is a leading name in musculoskeletal ultrasound in the country. He is associated with IRIA, IFUMB, Indian Paediatric Radiology Association and has several publications to his credit in renowned journals in the field of radiology, notably in Adnexal Masses and Padiatric Renal Masses. In this interview, he discusses musculoskeletal imaging, its advancement, uses, infrastructural challenges in India and the role of Mindray in establishing the technology in India.

COMPARED GLOBALLY HOW IS MODERN MSK IMAGING EVOLVING IN INDIA?

A. L. : MSK Imaging in India has grown leaps and bounds since it started way back in 2000. Thereafter, with the advancements in technology and the efforts of various international faculties who were working to ease the accessibility of the knowledge of MSK ultrasound scanning and MRI at ground level in India, we committed ourselves to its application.

So, we started from the scratch around the year 2003-2004 in India and the major breakthrough came in 2010 when there was a plethora of information and awareness in the subject. At present we believe that we are at par with our European and American counterparts.

WHICH ARE THE KEY TREATMENTS WITHIN MSK DOMAIN THAT HAS HELPED TREAT PATIENTS PROMINENTLY?

A. L. : MSK imaging is primarily used for diagnostic purposes. We perform X-Ray sonography, MRI, CT SCAN to diagnose the cause of pain, aches etc in the patient's body. Then we go for an image guided intervention which is predominantly done by using an ultrasound machine. With this technique, we can accurately detect the cause and provide specific treatment to the patients. Ultrasound guidance facilitates relief with the aid of procedures like injecting steroids locally in tendons, PRP injections and calcium barbotage procedure. It can also be used for spine intervention for pain relief. These procedures are well developed in India and currently being

performed by a majority of medical practitioners.

HOW HAS ULTRASOUND TECHNOLOGY IN PARTICULAR IMPROVED OVER THE RECENT DECADE?

A. L. : In my opinion, there is a new advancement in the ultrasound technology market every year. We now have a 20 megahertz probe which gives the best images resulting in accurate diagnoses with great ease. Then we have light probes which have wide footprints and are technically superior to what we had 10 years back. There are convex probes available which are quite light and have a small footprint but give an excellent resolution and depth penetration. Ergonomically, the newer probes are easy to manoeuvre and along with modern hardware and software applications, they reduce the workflow time considerably, often upto 50 percent.

PLEASE COMMENT ON YOUR EXPERIENCE WITH MINDRAY'S MSK IMAGING SOLUTION?

A. L. : Mindray has been a trusted partner since the beginning of our partnership. Their machines are superior and have an amazing resolution especially in MSK imaging, abdominal imaging and obstetric imaging. MSK imaging is close to my heart and with the simplicity and excellence of machines provided by Mindray, I can treat patients with ease and accuracy. Mindray is instrumental for promoting better and healthier medical practices and I am really thankful to them for their continuous efforts and assistance.



WILL THE 'ESSENTIAL DIAGNOSTIC LIST' ACHIEVE UNIVERSAL HEALTH COVERAGE ?



With an objective to achieve universal health coverage by 2030, the Government of India has initiated significant reforms to improve citizens' access to good quality, affordable healthcare. There remains, however, a need to strengthen the broad ecosystem in which health services are delivered. Patient testing forms the major component of diagnosis and treatment. The cause of delayed treatment was not lack of access, but rather missing or inaccurate diagnoses say NITI Aayog's November 2019 Publication "Health system for a New India: Building Blocks – Potential Pathways to reform". NITI Aayog is responsible for charting India's road



Dr. Rohit Jain
 Founder Secretary,
 Practising Pathologist Society
 Rajasthan

map towards attaining the commitments under the Sustainable Development Goals, particularly in critical social sectors such as health and education. (NITI -National Institution for Transforming India)

An in-vitro-diagnostic medical device (IVD) is the instrumentation needed to carry out a particular pathology test (or tests) on human samples to assist in clinical diagnosis or treatment decision-making. These devices include the laboratory or point-of-care devices, calibrators, controls, kits, reagents, and accessories used to perform diagnostic tests. IVDs are distinct from medical devices in that they never come into direct contact with the patient; however, they still have an impact on life-changing, and potentially life-saving, treatment decisions.

The World Health Organization (WHO) published the first edition of its Model List of Essential In Vitro Diagnostics in May 2018, recognizing that IVDs are an essential component to their three strategic priorities: advancing universal health coverage, addressing health emergencies, and promoting healthier populations. India has become the first country to compile a National Essential Diagnostics List (NEDL) in August 2019 to guide the government on the diagnostic tests required by healthcare facilities at different levels of healthcare.

The growing demand for personalized medicines, innovations in diagnostic techniques, increasing preference for point-of-care testing among the general population, a growing geriatric population base and an increase in disposable incomes are driving the growth of the IVD sector in India. With a population of more than 1.33 billion, India is the world's second-largest country and Asia's fourth-largest (and rapidly growing) market for IVDs. The global IVD market is estimated to reach US\$97 billion in 2022 – a market share of which India held just 1 percent five years ago, but anticipates doubling to 2 percent by 2020 and is likely to exceed US\$ 1.8 Billion mark by 2025, whereas China's IVD market size enjoyed a CAGR of 40.9% during 2010-2018 and stood



“

Pathology is the cornerstone of modern medicine, ensuring that patients are correctly diagnosed and given appropriate treatment.

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PREDICTIVE MARKERS OF PLATELET RECOVERY IN MANAGEMENT OF DENGUE



Dr. Pradeep Suri
Director - Dr. Suri Path Lab
New Delhi

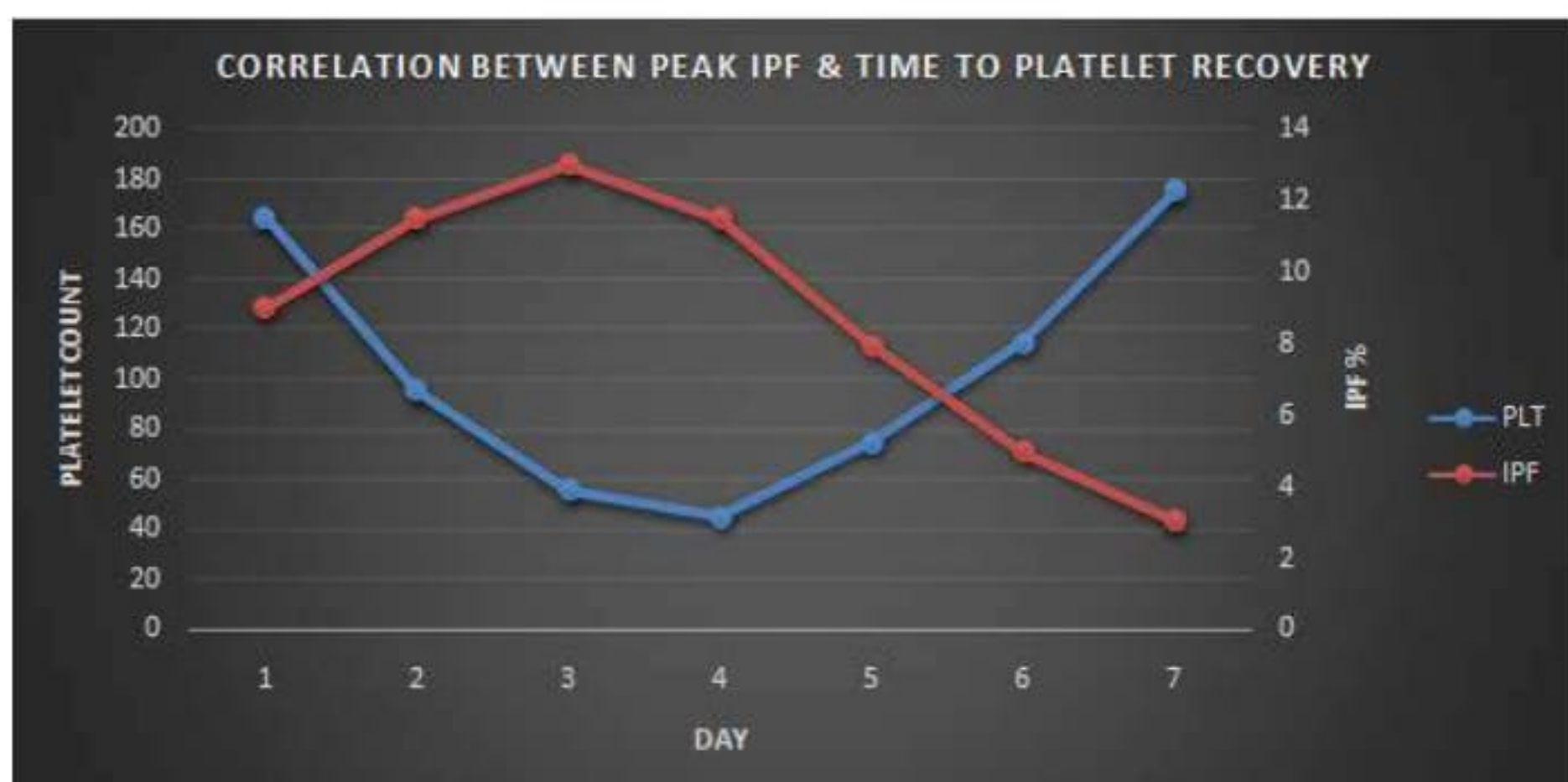
Approximately 2.5 billion people live in dengue risk regions with about 100 million new cases each year worldwide. Dengue disease presents highly complex pathophysiological, economic and ecologic problems. Dengue poses challenges on resources both in terms of number of hospital beds as well as facilities for platelet apheresis.

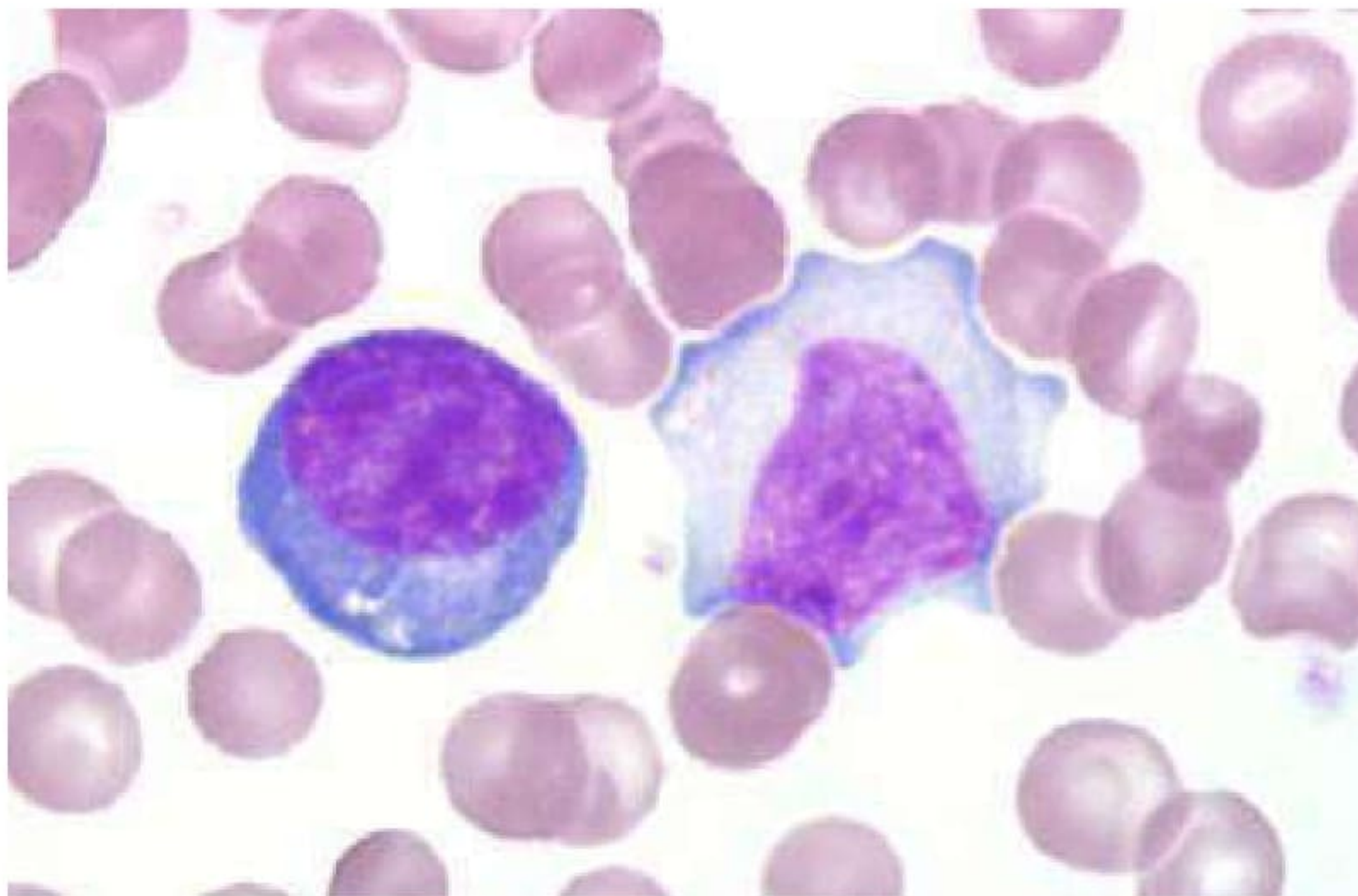
Dengue related thrombocytopenia, poses a critical challenge in patient management, especially in predicting Platelet recovery. Since many parameters are available for predicting platelet recovery, it was required to evaluate all of them,

and find the most efficacious one. We evaluated different parameters and their trends to predict platelet recovery within a defined period. Availability of these parameters in predicting platelet recovery can help clinicians in decision making.

IMMATURE PLATELET FRACTION

Immature Platelet Fraction (IPF) represents the youngest circulating platelet population. IPF reflect the megakaryopoietic activity of bone marrow and can be used as non-invasive tests in patients with thrombocytopenia. Reticulated platelets are newly released platelets; they contain RNA and are larger than mature platelets.





They are the analogue of the red cell reticulocytes. They are more reactive than mature platelets and their number reflects the rate of Thrombopoiesis.

The reticulated platelet count can be used to distinguish between causes of thrombocytopenia. In marrow failure, the count would be low and where there is increased marrow production, secondary to peripheral platelet destruction or consumption, the count will be high.

The clinical utility of this parameter has been established in the laboratory diagnosis and monitoring of thrombocytopenia because of increased peripheral platelet destruction, particularly autoimmune thrombocytopenic purpura (ITP) and thrombotic thrombocytopenic purpura (TTP). The IPF is raised in diseases where

there is increased platelet destruction or consumption and decreased in bone marrow failure. There is a rise in the IPF% preceding the rise in platelet counts in most dengue and transplant patients.

The rise in IPF% in the peripheral blood stem cell (PBSC) derived transplant patients occurs earlier and is more closely related to platelet recovery than for bone marrow transplant patients. The IPF should permit more reasoned use of prophylactic platelet transfusion and provide the potential to reduce the use of platelet concentrates in these patients. Peak IPF is a promising predictor of time to recovery of platelet counts in thrombocytopenic patients with dengue. Majority of patients show platelet recovery within a defined period from peak IPF values.

HIGH FLUORESCENCE CELLS

High Fluorescence Cell (HFC) = Blast + Atypical Lymphocyte

Relative lymphocytosis is usually reported in viral illnesses, such as infectious mononucleosis, hepatitis virus infection, or cytomegalovirus infection. It usually increases on day four of viral fevers including dengue and continues to rise as long as platelet counts are decreasing. It begins to decrease as the platelet count begins to increase. HFC can be used as a prognostic marker for platelet recovery in thrombocytopenic dengue patients. HFC jump is a better predictive marker than peak HFC values in platelet recovery. HFC jump is defined as 3-4 times jump of HFC value in a single day. Platelet counts recover within 48-72 hours of this jump in vast majority of patients.

PLATELET LYMPHOCYTE RATIO (PLR)

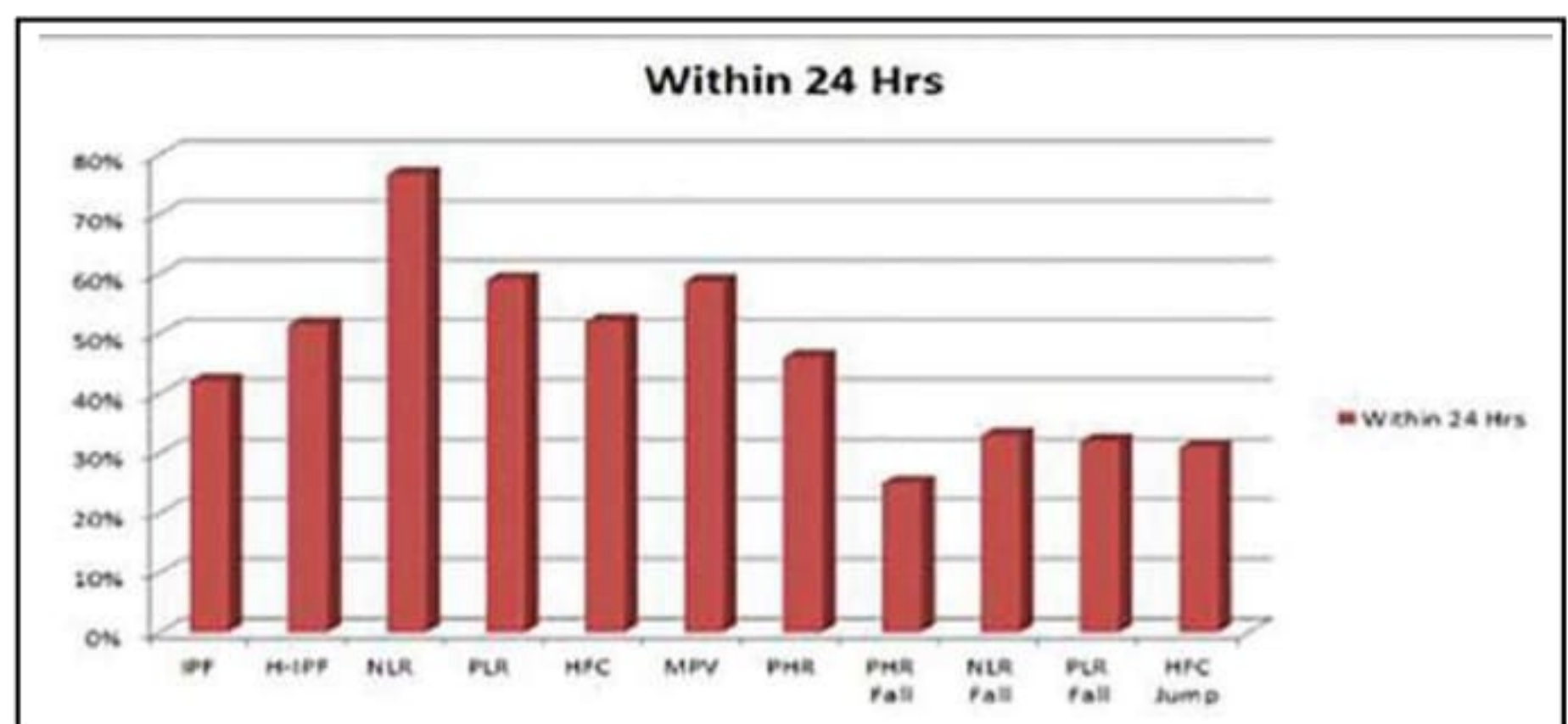
In Dengue Infection the hematological picture begins from relative neutrophilia on day one to relative lymphocytosis by day six. As the platelet count begins to decrease the lymphocyte count increases hence the Platelet Lymphocyte Ratio (PLR) decreases and reached a trough/nadir point and then recovers with increase in Platelet count. However the PLR fall is a better predictor of platelet recovery than platelet trough. PLR fall is defined as intraday reduction to less than half of previous day's value.



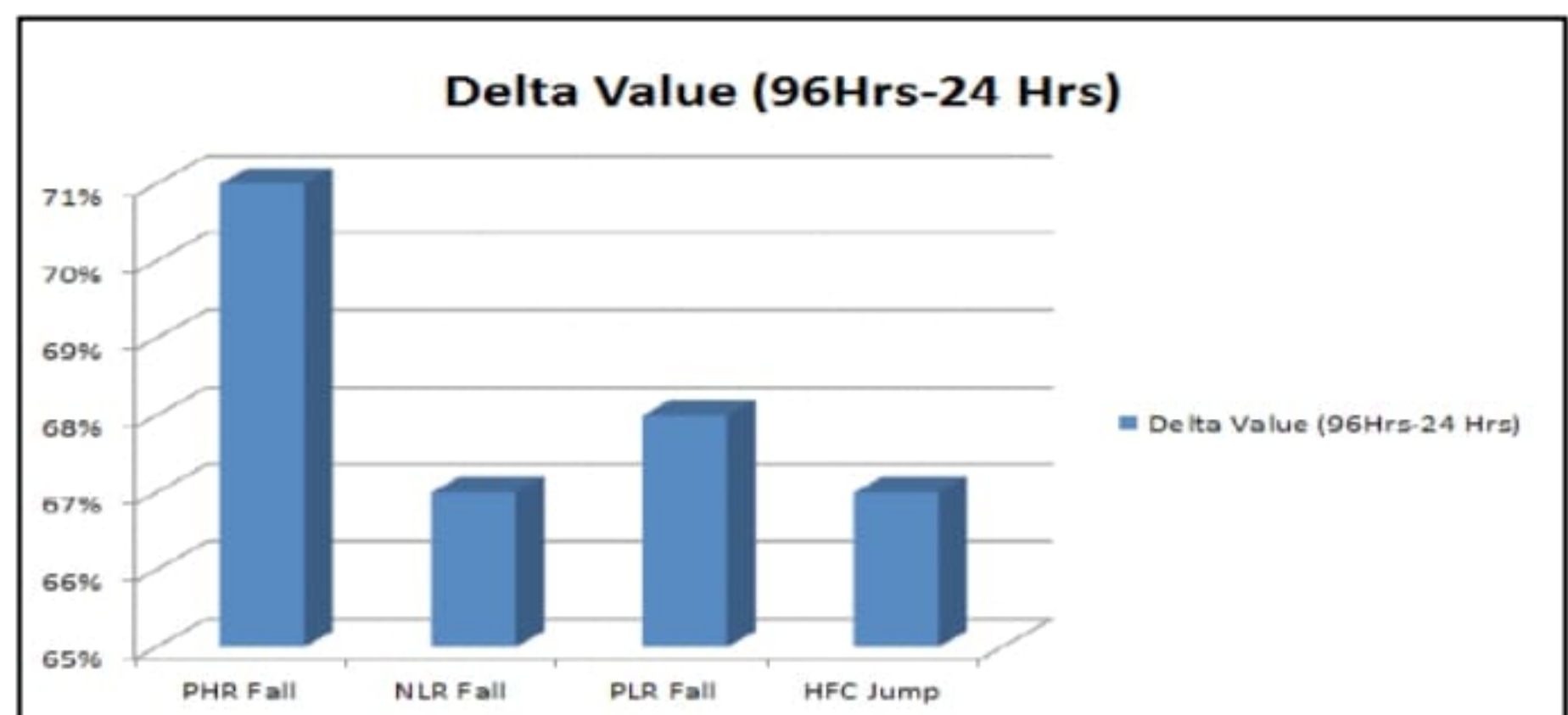
BC-6200
Auto Hematology Analyzer
High Performance for ALL

PLATELET HFC RATIO (PHR)

PHR decreases as the platelet count decreases and reaches a trough/nadir point and then increases with rise in Platelet count. However the PHR fall is a better predictive marker than PHR as vast majority of patients show platelet recovery within 48-72 hours from PHR fall.



PHR Trough & PHR Fall are the best predictor of platelet recovery amongst PEAK/Trough and Rise/fall parameters respectively. PHR trough had a delta value of 52% and PHR Fall had a delta value of 71%. These predictive markers used alone or in combination can prevent lot of unwanted admissions and transfusions in thrombocytopenic dengue patients. They help in not only reducing the economic burden on society but also help in better utilization of limited resources available to deal with the dengue endemic in India.



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Auto Hematology Analyzer

SHEAR WAVE ELASTOGRAPHY

- A NON INVASIVE TECHNIQUE
TO FIGHT CLD



A ccording to data published by WHO in 2017, deaths due to Liver diseases in India reached to more than 250,000, amounting to about 3% of total annual deaths in the country and making liver diseases amongst the top 10 most common clinical causes. The primary reason for such high numbers can be attributed to lack of awareness and timely diagnosis.

In the evolution of chronic viral and non-viral liver diseases, liver fibrosis is a very important factor associated with diagnoses and eventually prognosis. Hence, a precise evaluation of the severity of fibrosis is necessary in those patients, in order to perform a correct staging

and, eventually, to take a decision regarding the treatment.

Currently, liver biopsy seems to be the optimal method to evaluate changes in fibrosis over time. Nevertheless, liver biopsy (LB) has its shortcomings: the intra- and inter-observer variability, the sampling variability and, last, but not least, the fact that LB is an invasive method, with morbidity and mortality greater than zero. Considering all these facts, noninvasive methods for the evaluation of liver fibrosis have become pivotal and were developed in the last few years, in order to reduce the number of LB.

Taking into account the limitations



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of liver biopsy, a non-invasive method namely shear wave elastography, has proved to be an extremely efficient method of evaluation for liver fibrosis staging, and Chronic Liver Disease (CLD) studies.

The underlying assumption using Shear Wave methods is that liver disease progression is associated with changes in tissue strain that can be measured by elastography/stiffness. In general estimation of liver stiffness terms, strain is a measure of tissue deformation due to an imposed force (stress). It represents the fractional change from the original or unstressed dimension (Lagrangian strain), includes both lengthening, or expansion (positive strains) and shortening, or compression (negative strains). This can be easily accomplished by providing the strain by ultrasonic compression/stress.

Mindray Medical, after its acquisition of Zonare, has not only developed unique Shear Wave technology, but has also eliminated the existing lacunae in current Shear Wave Elastography Techniques.

Despite all of its benefits Industry Shear Wave Elastography has its many pit falls, namely, Inter-user and Intra-user variations, Patient position, Patient BMI, Scan Depth, Probe Position, and most importantly repeatability. Mindray's new and improved Shearwave technologies STQ and STE provide a numerous solutions to overcome the above gaps.

Motion Stability index (M-STB) and Reliability Index (RLB Map) both help to reduce the Inter-user and Intra-user variations, but also help the user optimize result by obtaining reliable and correct data every time.

STQ or Sound Touch Quantification is industry's first real time point quantification, which also allows clinicians to adjust ROI size according to target area. Being a real time technology allows users to check for micro-variations in liver parenchyma, and also check for repeatability. Various statistical data results like, mean, median, STD, IQR, IQR/Median etc also allow for detailed statistical analysis.

STE or sound touch Elastography is also industry's fir real time 2D elastography available on both Convex and Linear transducers. Color map based real time 2D shearwave elastography provides clinicians the privilege to view the subtlest of changes in liver parenchymal diseases.

Mindray is confident that with the new generation of Shear wave elastography, it will surely add to the early diagnoses of liver diseases and reduce the number of deaths due to CLD in India.

DIGITALIZATION IN HEALTHCARE



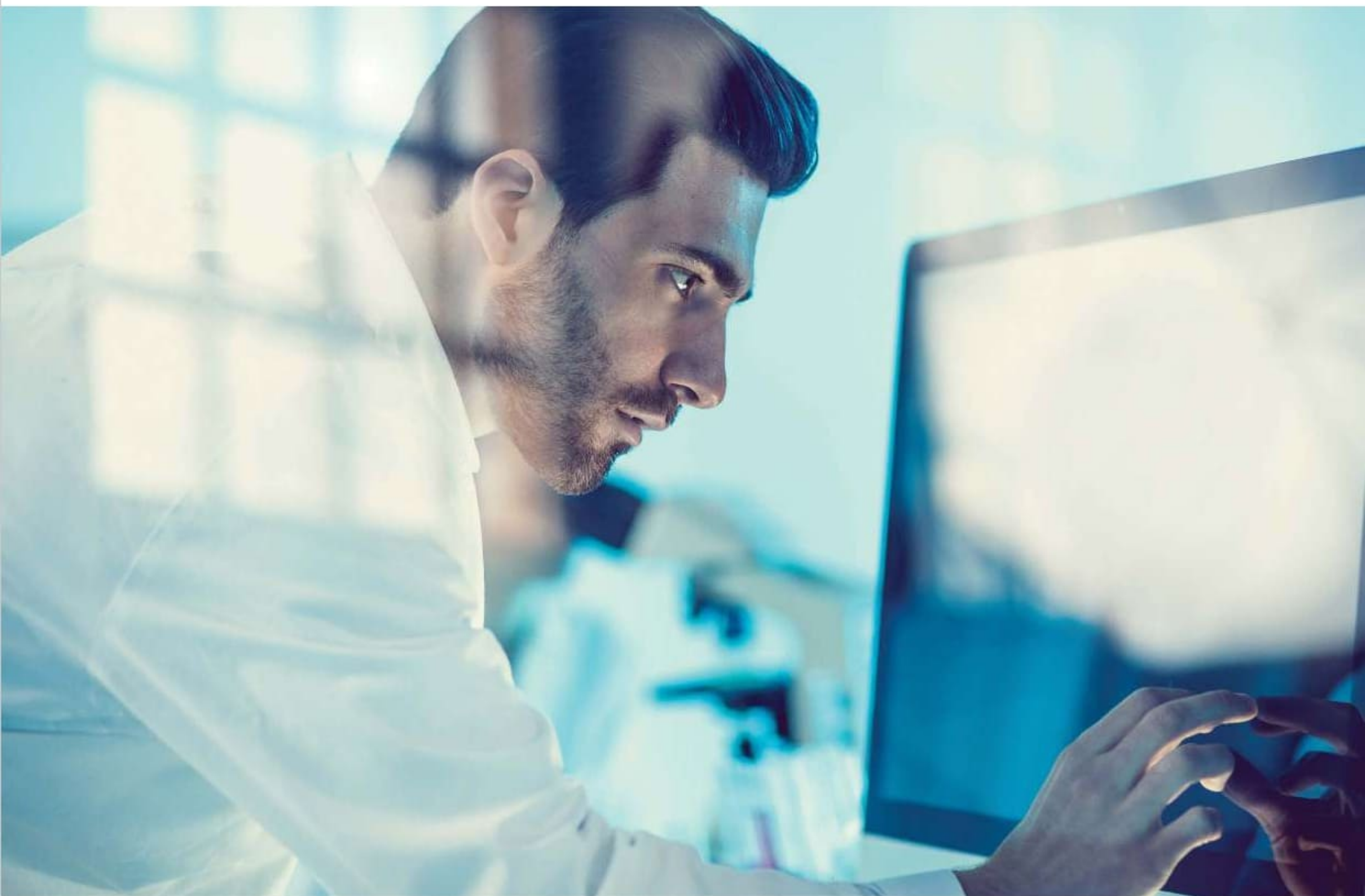
Mr. Phani Kumar Vadlamani
Business Head – West Region
Mindray Medical India Pvt. Ltd.

The digitalization of healthcare is a rapidly evolving movement. Given the sensitive information involved in the healthcare industry, there are a number of factors to consider when digitizing elements of medical monitoring, recording, assessment making and sharing. Digital transformation in healthcare is the positive impact of technology in healthcare. Telemedicine, artificial intelligence enabled medical devices, and electronic health records are just a few concrete examples of digital transformation in healthcare.

Last couple of year's integration of medical equipment data, video & images demand has been increasing continuously. Doctors, administrators & patient or patient relatives demand reports in digital media which can easily accessed and also serve as a quick solution to be shared in any corner of world in this era of internet. High level digital integration will make patient records accessible not only in the hospital but can be shared even outside hospital. It has also greatly reduced paper or filing work and life of storing data has also increased.

NUMEROUS DIGITAL PROGRAMS HAVE BEEN ACTIVATED THAT ARE CURRENTLY REVOLUTIONIZING HEALTHCARE IN INDIA AND PROMISING THE BEST CARE





Hospitals of more than 200 beds should go for complete digitization of patient data which will increase efficiency as well as it will enable transfer of patient data via different online means. Telemedicine helps to optimise accessibility to surgeries from anywhere & perform more live surgery which is more successful with help of expert opinion; thereby it saves a lot of time, money and energy. We need to bring multiple functionalities onto a single platform, including all data from multiple sources like patient monitors, ECG machines, Defibrillator, Endoscopy, Pumps, Biochemistry & Hematology Analyzers, Ultrasound, Imaging Modalities, clinical information systems (HIS & PACS) etc.

Last couple of year's integration of medical equipment data, video & images demand has been increasing continuously.



Mindray BeneHeart C Series Automated external defibrillator (AED) Smarter and Faster

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The first shock can be delivered in less than 8 seconds - the shortest time ever, greatly increasing the chances of successful defibrillation.





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**"If adversity was truly bad,
warriors wouldn't rise from it."**

-Matshona Dhiwayo

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