

In Imaging

Pages 56

A compendium on the latest in radiology

JANUARY 2019



Phantom Healthcare

Leaders of Refurbished MRIs

Now Explore Advance Applications
with Refurbished Solutions

GE Signa HDxT Optima Edition (HD23)

GE Signa HDxT 3.0T MRI Scanner



Rochi Nargotra
(Director & CEO)



Brijesh Suneja
(Managing Director)

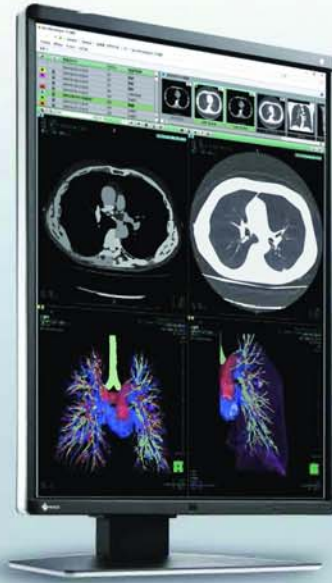
For Query Call Us Now : +91- 8368026252 +91 9899112423

Email : biz@phantomhealthcare.com

Plot No. 51, Sector 27C, Near NHPC Chowk, Faridabad, Haryana -121 003 (INDIA)

www.phantomhealthcare.com

Display Monochrome and Colour Together



RadiForce® RX360
54.1 cm (21.3") Colour LCD Monitor

extracting the essence.



Automatically Distinguish & Display as Monochrome
DICOM Part 14

Automatically Distinguish & Display as Color
Gamma 2.2

Improve Your Viewing Experience



Typically it's difficult to display both monochrome and colour images on the same screen with the ideal greyscale and gamma curve. For this reason, EIZO introduces the Hybrid Gamma PXL function, which displays each pixel at the ideal greyscale and gamma curve.

Monochrome pixels are displayed according to DICOM Part 14, and colour pixels are displayed with a mix of Gamma 2.2 and DICOM Part 14. This blended display format has been shown to improve colour image reading by 37%.

www.eizoglobal.com



Authorized
Distributor



Email : info@rsgsolutions.co.in
Phone : +91-11-40542110, 9310196635

INTERVIEW: DR K MOHANAN, PRESIDENT, INDIAN RADIOLOGICAL AND IMAGING ASSOCIATION (IRIA)

In Imaging

Pages 56

A compendium on the latest in radiology

January 2019



INSIDE

DR BHAVIN JANKHARIA
CHIEF RADIOLOGIST, PICTURE THIS BY JHANKHARIA

DR PK DASH SHARMA
HEAD, RADIOLOGICAL SAFETY DIVISION,
ATOMIC ENERGY REGULATORY BOARD

**EMBRACING
THE PATIENT FIRST
APPROACH IN
RADIOLOGY**

PRESENTING PUBLICATION

 **EXPRESS
HEALTHCARE**



ASCEND TO PEAK PERFORMANCE

*Ascend to new heights of performance –
at your own pace.*

Now you can reach the summit of X-ray imaging, with the CARESTREAM DRX-Ascend Family. Whether you're just beginning your journey with film, or are ready to move up to CR, DR or our industry-leading DRX systems, we can help you plan a safe and affordable route to the peak of imaging technology.

Best of all, you can ascend at the rate you choose, as your needs grow and your budget allows – minimizing the threat of technology obsolescence and protecting your investment, at every stage of your climb.

Start your Ascent today.



Carestream

For Enquiry Call: 1800 209 0190

carestream.in



EDITOR'S NOTE

IN IMAGING | JANUARY 2019



VIVEKA ROYCHOWDHURY, EDITOR
viveka.r@expressindia.com

What's new at IRIA 2019?

The 72nd Annual Conference of the Indian Radiological & Imaging Association (IRIA) to be held in Chandigarh promises to be yet another learning and networking experience for radiologists.

One hopes that IRIA 2019 will also discuss issues like the setting of more consistent dose standards to ensure patients are not exposed to unnecessary radiation risks. A recent study an international research team in *The BMJ*, analysed dose data for over two million CT scans from 151 institutions, across seven countries. They found that large differences in radiation doses used for CT scans are mainly due to how scanners are used by medical staff rather than differences in patients scanned or machines used. As an observational study, it can't establish cause but the researchers call for more education and international collaboration to set benchmarks for optimum target doses. Events like IRIA can set the ball rolling on this front.

According to Dr K Mohanan, President, IRIA at least 100 delegates will be from countries like Bangladesh, Nepal, Sri Lanka, Pakistan. He informs that they have been offered the same delegate fee as their Indian peers and he says that in the long run, they intend to include exclusive scientific tracks for international delegates.

Perhaps for the first time, IRIA will be engaging the host city's citizens in its events, with plans to organise a 'Run for the Girl Child' at Chandigarh's Sukhna Lake. As IRIA delegates along with city residents participate in this unique run, lets hope that IRIA will be able to raise public awareness about radiologists as well as female foeticide. Imaging majors are launching products with innovations tailored for India and many will be featured at IRIA this year.

The reason is clear. The diagnostic imaging market is forecast to be worth \$36.43 billion by 2021, clocking a CAGR of 6.6 per cent from 2016 to 2021 according to a report from MarketsandMarkets.

While North America is expected to hold the largest share of the market, followed by Europe, the Asia-Pacific market is expected to register the highest CAGR during the forecast period. Factors such as increasing incidence of chronic diseases, rising awareness of the benefits of early disease diagnosis, development of new healthcare facilities, growing medical tourism in APAC countries, and increasing government initiatives for the modernisation of healthcare infrastructure are driving the growth of the market in the Asia-Pacific region. For example, take the Somatom go. Top CT scanner from Siemens Healthineers. This CT scanner can be reportedly controlled on the move, while all computer

hardware that was till now located in the console room is now integrated into the gantry of the scanner. This benefits both the institutions with a flexible room concept that drastically reduces the installation costs. The patient benefits as all routine and advanced examinations including interventions can be handled via a tablet allowing the radiology technologists to stay close to their patients during the entire scan preparation process. This is a much more pleasant experience for patients, especially if they are children.

On the clinical side, it scores with a rotation time of 0.33 seconds and the exclusive Stellar detector technology, allowing the system to perform whole-body scans of up to 200 centimeters with a scan speed of up to 175 millimeters per second. According to the release, users can deploy the Somatom go. platform's mobile workflow in advanced clinical fields such as emergency medicine, interventional radiology and even cardiology. The system can deliver new levels of radiation dose personalisation due to its high power and low kV scanning mode and Tin Filter technology, along with automated tools that take the guesswork out of low-dose CT imaging. In addition to such exhibits, one hopes that IRIA 2019 will have meaningful discussions on topics like dose standards as highlighted in *The BMJ* study.

CONTENTS

IN IMAGING | JANUARY 2019

INTERVIEW



P13: Dr K Mohanan, President, Indian Radiological and Imaging Association (IRIA)



P15: Dr Bhavin Jankharia, Chief Radiologist, Picture this by Jankharia



P18: Dr Bharat Aggarwal, Director of Radiology Services, Max Healthcare



P20: Dr Vidur Mahajan, Associate Director, Mahajan Imaging, Head of R&D, CARING



P24: Dr Karthik Ganesan, Consultant Radiologist and Division Chief for Body Imaging



P26: Dr PK Dash Sharma, Head, Radiological Safety Division, Atomic Energy Regulatory Board



P28: Dr N Senthilkumar, Head & Consultant Radiologist, Royalcare Super Speciality Hospital,



P30: Dr Meinal Chaudhry, Head of Department, Radiology, Aakash Healthcare



P32: Dr S Hukku, Chairman & HOD, Radiation Oncology, BLK Super Speciality Hospital



P34: Dr Deepak Patkar, Nanavati Super Speciality Hospital



P36: Dr Sikandar, Consultant PET-CT & Radiology, Yashoda Hospitals



P39: Sushant Kinra, Managing Director, Carestream Health India



P41: Masahiro Ota, Corporate Vice President of Fujifilm Corporation & MD, of Fujifilm Asia Pacific



P43: Rochi Nagotra, CEO, Phantom Healthcare

Product Update

- 45** Carestream DRX Ascend System
Feature-Rich X-Ray Rooms, made affordable
- 49** Printer Perfect
- 50** Aeroscan Digital Ultrasound Systems
- 56** Sanrad Medical Systems:
Spreading Technology

MUSICA

HIGH GRADIENT

Next generation image processing



Intelligent tool for Digital Radiography workflow

- Multiscale Image Contrast Amplification algorithm with High gradient taste setting is developed for India.
- Specially tuned to meet the image quality requirements for skeleton and chest examinations.
- Extend tools for dose monitoring and potential dose reduction

Contact us for more details on:

Agfa Healthcare India Pvt. Ltd.

403, 4th Floor, Nitco Biz Park, Plot No. C/19, Road No. 16, Wagle Industrial Estate, Thane (West) - 400604. India.

Tel: +91 22 40642900/29 • Email: sales.india@agfa.com • Website : <https://medimg.agfa.com>

Connect us on:

 LinkedIn
www.agfahealthcare.com/linkedin

 Twitter
www.agfahealthcare.com/twitter

 YouTube
www.agfahealthcare.com/youtube

 Facebook
www.agfahealthcare.com/facebook

 Blog
www.agfahealthcare.com/blog

AGFA 



DR 100e compact, wheeled and so convenient!

Narrow corridors, restricted spaces – the DR 100e lets you take DR imaging right next to your patients who need it most. It's a compact, wheeled imaging system that makes high-quality DR examinations convenient and cost-effective. Despite its compact size, the DR 100e offers performance, versatility and comfort, for staff and patients. With this one solution, you can take, process and view X-ray images of the skeleton, chest, abdomen and other body parts on adult, paediatric or neonatal patients. The powerful X-ray generator results in shorter exposure times and sharper images. The double laser beam SID optimization helps to standardize the exposure conditions. So no more compromise on bed side x-ray imaging.

Contact us for more details on:

Agfa Healthcare India Pvt. Ltd.

403, 4th Floor, Nitco Biz Park, Plot No. C/19, Road No. 16, Wagle Industrial Estate, Thane (West) - 400604. India.

Tel: +91 22 40642900/29 • Email: sales.india@agfa.com • Website : <https://medimg.agfa.com>

Connect us on:



LinkedIn
www.agfahealthcare.com/linkedin



Twitter
www.agfahealthcare.com/twitter



YouTube
www.agfahealthcare.com/youtube



Facebook
www.agfahealthcare.com/facebook



Blog
www.agfahealthcare.com/blog

AGFA 

IMPRINTLINE

In Imaging

A compendium on the latest in radiology

JANUARY 2019

Chairman of the Board

Viveck Goenka

Sr. Vice President-BPD

Neil Viegas

Asst. Vice President-BPD

Harit Mohanty

Editor

Viveka Roychowdhury*

BUREAUS

Mumbai

Usha Sharma, Raelene Kambli, Lakshmi Priya Nair, Sanjiv Das, Prabhath Prakash

Delhi

Prathiba Raju

Design

Asst. Art Director

Pravin Temble

Chief Designer

Prasad Tate

Senior Designer

Rekha Bisht

Graphics Designer

Gauri Deorukhkar

Artists

Rakesh Sharma

Digital Team

Viraj Mehta (Head of Internet)

Photo Editor

Sandeep Patil

MARKETING

Douglas Menezes, Sunil kumar
Debnarayan Dutta, Ajanta Sengupta
E Mujahid

PRODUCTION

General Manager

BR Tipnis

Manager

Bhadresh Valia

Scheduling & Coordination

Arvind Mane

CIRCULATION

Circulation Team

Mohan Varadkar

Presented By



HEAD OFFICE

Express Healthcare® MUMBAI

Douglas Menezes
The Indian Express (P) Ltd.
Business Publication Division
1st Floor, Express Tower,
Nariman Point, Mumbai- 400 021
Board line: 022- 67440000 Ext. 502
Mobile: +91 9821580403
Email Id: douglas.menezes@
expressindia.com

Branch Offices

NEW DELHI

Sunil Kumar
The Indian Express (P) Ltd.
Business Publication Division
Express Building, B-1/B Sector 10
Noida 201 301 Dist.Gautam Budh nagar (U.P.)
India.
Board line: 0120-6651500.
Mobile: 91-9810718050
Fax: 0120-4367933
Email id: sunil.kumar@expressindia.com

CHENNAI

Sunil Kumar
The Indian Express (P) Ltd.
Business Publication Division
8th Floor, East Wing,
Sreyas Chamiers Towers
New No 37/26 (Old No.23 & 24/26)
Chamiers Road,
Teynampet
Chennai - 600 018
Mobile: 91-9810718050
Email id: sunil.kumar@expressindia.com

BENGALURU

Douglas Menezes
The Indian Express (P) Ltd.

Business Publication Division
502, 5th Floor, Devatha Plaza,
Residency road,
Bangalore- 560025
Board line: 080- 49681100
Fax: 080- 22231925
Mobile: +91 9821580403
Email Id: douglas.menezes@
expressindia.com

HYDERABAD

E Mujahid
The Indian Express (P) Ltd.
Business Publication Division
6-3-885/7/B, Ground Floor,
VV Mansion, Somaji Guda,
Hyderabad – 500 082
Board line- 040- 66631457/ 23418673
Mobile: +91 9849039936
Fax: 040 23418675
Email Id: e.mujahid@expressindia.com

KOLKATA

Ajanta Sengupta
The Indian Express (P) Ltd.
Business Publication Division
JL No. 29&30, NH-6, Mouza- Prasastha &
Ankurhati, Vill & PO- Ankurhati, P.S.- Domjur
(Nr. Ankurhati Check Bus Stop)
Dist. Howrah- 711 409
Mobile: +91 9831182580
Email id:
ajanta.sengupta@expressindia.com

AHMEDABAD

Nirav Mistry
The Indian Express (P) Ltd.
3rd Floor, Sambhav House,
Near Judges Bungalows, Bodakdev,
Ahmedabad - 380 015
Mobile: +91 9586424033
Email Id: nirav.mistry@expressindia.com

Important: Whilst care is taken prior to acceptance of advertising copy, it is not possible to verify its contents. The Indian Express (P) Ltd., cannot be held responsible for such contents, nor for any loss or damages incurred as a result of transactions with companies, associations or individuals advertising in its newspapers or publications. We therefore recommend that readers make necessary inquiries before sending any monies or entering into any agreements with advertisers or otherwise acting on an advertisement in any manner whatsoever.

Coming soon : 2nd edition of Radiology and Imaging Conclave

Several leaders will converge to converse and contemplate on key drivers shaping the future of radiology

Radiology as a medical discipline has evolved tremendously in India. Right from the first X-ray machine which was installed at Lady Hardinge Hospital in 1918 in Delhi to several artificial intelligence research centres for imaging diagnostic these days being established across the country, the progress that the Indian radiology fraternity has witnessed is stupendous.

In keeping with this progress, The Indian Express Group and the Radiology Education Foundation have designed, The Radiology and Imaging Conclave with a vision to prepare the radiology fraternity for future developments within the sector.

Industry veterans like Dr PK Dash Sharma, Head, Radiological Safety Division, Atomic Energy Regulatory Board (AERB); Dr Bhavin Jhankaria, Chief Radiologist, Picture This; Dr Arjun Kalyanpur, Chief Radiologist, Teleradiology Solution; Dr Sumer Sethi, Founder, DAMS & Telerad Providers; Dr Bharat Agarwal, Head of Radiology, Max Hospitals; Dr K Mohanan, IRIA President, Dr Prashant Warier, CEO, Qure.ai; Dr Vidur Mahajan, Associate Director and Head of R&D, Mahajan Imaging; Rohit Sathe, President, Philips Health Systems; Vivek Kanade, CEO, Siemens Healthineers; Dileep Mangsuli,



THE TWO DAYS OF THE RADIOLOGY AND IMAGING CONCLAVE 2019 WILL BE A SHOWCASE FOR EXEMPLARS OF EXCELLENCE, EXPERIENCE, INNOVATION AND KNOWLEDGE IN RADIOLOGY

Chief Technology Officer, GE Healthcare, South Asia; Pankaj Tandon, AERB; Dr Nobhojit Roy, National Advisor, NHSRC; Tishampati Sen, Advocate, Supreme Court; and many more attended the first edition in 2018, held at Hotel Radisson Blu Plaza, Delhi Airport. They deliberated on subjects ranging from AI in radiology, policies and regulations, business models, educations and patient care techniques that are key to future growth of the sector.

Informative panel discussions saw leaders debating on various technical and business related challenges faced by radiologists. For instance, the panel discussion on AI in radiology touched upon how radiologists can facilitate in creating an ecosystem for AI. Panelists in

this session discussed ways to use AI to create more opportunities for radiologists and patient care. This discussion also highlighted that affordability, accessibility, accuracy, acumen are the essentials for the success of AI in radiology.

The event witnessed some interesting dialogues between leading radiologists, policy makers and equipment leaders on the next big thing in radiology and the big brother debate that pointed out the need for better governance in radiology in place, value systems need to be revised in order to build patient trust. The partners of Radiology and Imaging Conclave also came forward at the event to address the august audience and keep them updated about their solutions and services for radiologists.

This year too, the conclave will have several leaders of India's diagnostic imaging sector and medical technology providers come together to converse and contemplate on key drivers shaping the future of radiology.

The event will also honour radiology heroes, game changers and front runners in this industry through Express Medical Imaging Awards 2018 for their invaluable contributions to healthcare in India. Thus, the two days of the Radiology and Imaging Conclave 2019 will be a showcase for exemplars of excellence, experience, innovation and knowledge in radiology.

MRI effective for monitoring liver fat in obese patients

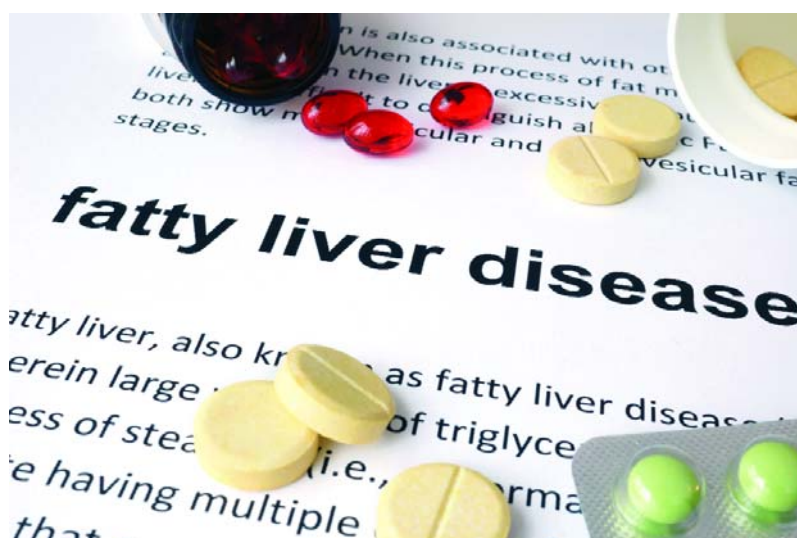
The new study assessed liver fat before and after bariatric surgery through a promising noninvasive imaging option known as quantitative chemical shift-encoded MRI (CSE-MRI)

OAK BROOK, Ill. – MRI provides a safe, noninvasive way to monitor liver fat levels in people who undergo weight loss treatments for obesity, according to a new study published in the journal *Radiology*.

Obesity is a major US public health issue, with more than two-thirds of American adults considered overweight or obese. Non-alcoholic fatty liver disease is common in obese patients. The condition can progress to cirrhosis and is associated with a higher risk of liver cancer.

Bariatric surgical procedures such as gastric bypass or sleeve gastrectomy have proven to be effective weight loss interventions in patients with obesity. However, not much is known about the relationship between overall weight loss achieved by these treatments and decreases in liver fat content. Liver fat is difficult to measure noninvasively, and biopsy's invasiveness makes it unfeasible for monitoring changes in the liver over time.

The new study assessed liver fat before and after bariatric surgery through a promising noninvasive imaging option known as quantitative chemical shift-encoded MRI (CSE-MRI). The technique produces a



measure of liver fat called a proton density fat fraction (PDFF).

“CSE-MRI allows us to represent the measurement of liver fat as a percentage,” said study coauthor B. Dustin Pooler, MD, adjunct assistant professor at the University of Wisconsin School of Medicine and Public Health and radiologist at Madison Radiologists, S.C., in Madison, Wis. “Each patient can get an assessment of fat throughout the liver that is easy for them to understand. The numbers also allowed us to perform comparisons with liver fat measurements from surgical and

biopsy specimens.”

Dr Pooler and colleagues studied CSE-MRI in 50 obese patients who underwent bariatric surgery for weight loss. The patients went on a low-calorie diet before the surgery, an approach that has been shown to increase the safety and efficacy of the surgery.

The researchers performed CSE-MRI twice before surgery and then multiple times in the year following the procedure. They also compared liver fat changes as determined by PDFF with changes in body mass index (BMI), weight and waist circumference.

By six to 10 months following surgery, mean PDFF in the study group decreased from 18 percent to about 5 percent—normal range is 5 percent or less—and mean BMI decreased from 45 to 34.5. The mean estimated time to PDFF normalisation was approximately five months. The initial PDFF was the only strong predictor of both liver fat loss and time to normalisation.

The results suggest several potential roles for CSE-MRI in the management of obese patients with fatty livers. PDFF measurements could help in the selection of patients for bariatric surgery because of the strong correlation between liver fat reductions and pre-treatment liver fat content. In addition, since decreases in liver fat content were only weakly correlated with starting weight and overall weight

loss, monitoring liver fat with MRI following bariatric surgery, independent of monitoring weight loss, would be useful. The greatest potential benefit could be for patients with fatty livers regardless of their starting weight or weight loss.

Dr Pooler said the CSE-MRI technique could have applications beyond monitoring the effects of bariatric surgery.

Study reveals higher mammography rates in coastal cities

The number of women getting screening mammograms has increased significantly over the past 30 years, said Eric Kim, MD, diagnostic radiology resident at NYU Langone Health

According to data from the National Center for Health Statistics, utilisation of screening mammography has increased from 28.7 per cent of women 40 years and older in 1987 to 65.3 per cent in 2015.

However, millions of women in both rural and urban areas are still not receiving mammographic screening. Breast cancer remains the second leading cause of cancer-related deaths among women in the US.

“We can still do better,” Dr Kim said during an RSNA 2018 presentation.

He said screening mammography rates for women 40 years and older in 2004 varied from 71.1 per cent in rural areas to 75.4 per cent in metropolitan areas. While researchers have

identified a lack of access to care providers and other physical barriers as factors affecting the lower rate of mammographic screening in rural areas, less is known about urban areas.

“Studies thus far have focussed on rural disparities in screening utilization,” he said. “City-level screening mammography disparities have been less evaluated, although more than 30 million adult women live in the 500 largest U.S. cities.”

To evaluate disparities in screening mammography utilisation at the city level, Dr Kim and his colleagues conducted a descriptive study using public data from the 500 Cities Project, which reports city-level data on 27 chronic disease measures in more than 103 million

people. The project includes survey data on health risks; the utilisation of screening mammography by more than 127,000 women; and data from the US Census Bureau including income, educational attainment, race and employment. The research team matched screening mammography utilisation to variables expected to impact screening in the 500 Cities Project data. According to the statistical analysis, the mean utilisation rate for city screening mammography was 77.7 per cent, with the highest utilization (82.7 per cent) in the New England cities and the lowest (73.6 percent) in cities in the mountain states, a north-south corridor stretching from Montana, Idaho and Wyoming to Arizona and New Mexico.

A learning platform for budding radiologists

Dr K Mohanan, President, Indian Radiological and Imaging Association (IRIA), in a candid interview with **Prathiba Raju**, elucidates his work as the president, and shares updates about the upcoming 72nd annual conference - IRIA 2019 event in Chandigarh

How will 72nd IRIA 2019 be different from previous editions? What is the vision and mission of this year's conference?

It is an annual get-together of radiologist community pan-India. Out of 16,000, about 4,000 radiologists will be attending the conference. It will focus on disseminating high-quality education and skill upgradation in areas like foetal imaging, cardiac imaging, paediatric imaging, musculoskeletal imaging, chest imaging, onco imaging and interventional radiology. We have 300 faculties who will be talking about varied topics and over 10 international faculties will be sharing their experiences, and it will be a good learning experience for the budding radiologists. Multiple workshops will be conducted where hands-on training will be given. Although we had international faculties in our previous edition, this year, we are focussing more on neighbourhood Asian countries' participation. At least 100 delegates will be from neighbourhood countries like Bangladesh, Nepal, Sri Lanka, Pakistan and they have been offered same delegate fee as



Indians. In the long run, we will have exclusive scientific tracks for the international delegates.

What all are your responsibilities as IRIA president? How do you plan to execute it?

I'm involved into the overall

operations of the event and will be presiding the inaugural session. With prior experience in organising the large-scale IRIA event, the requirements and responsibilities associated with it are known. We are likely to initiate an IRIA research educational collaborative programme.

Can you elaborate on IRIA research education collaborative programme?


IRIA research educational collaborative programme will be a national level programme. For example, we can do research on a particular subject like birth weight of a new born on 20th week. We can collect data from pan-India and thousands of ultrasounds can be collated and used for a multi-centric research. Similarly, many data can be compiled and analysed. Many diseases we face in our country are unique to us and the imaging features of the same will have to be documented by us. All these are possible if we are willing to undertake research. The outcome of this kind of robust research will be critical in the healthcare segment as a whole. The Radiological Society

of North America (RSNA) comprises such comprehensive research units. On the sidelines of the IRIA event, the RSNA and South Korean faculties will have brainstorming discussions on how to proceed with such research educational programme. However, this research programme needs funds, so the association has already created a separate account for it. We are seeking funds from NGOs and government institutions, so that educational and research activities, once initiated, can be continued without hindrance.

What have been your major achievements as the president of IRIA?

Female foeticide incidents are still occurring in some parts of India and usually the sonologists, sonography technicians and quacks are committing this crime. We, the qualified radiologists, also wanted to ensure that each and every such individual causing or helping the crime of female foeticide is caught and put behind the bars. So, I thought we should create a proactive programme to protect the female gender—the foetus, and under my supervision, we launched the programme ‘Raksha’. A part of the money we collected in our annual conference is used in this programme where we provide toilet facilities and sanitary pad vending machines in girls’ schools pan-India. We have conducted workshops pan-India and a national-level conference on foetal imaging in Kochi.

How does every edition of IRIA conference help contribute to



IRIA RESEARCH EDUCATIONAL COLLABORATIVE PROGRAMME WILL BE A NATIONAL LEVEL PROGRAMME. THE OUTCOME OF THIS KIND OF ROBUST RESEARCH WILL BE CRITICAL IN THE HEALTHCARE SEGMENT AS A WHOLE

radiology practice?

As a young radiologist way back in 1988, I attended my first IRIA annual conference in Hyderabad. It was a significant moment in my career as I was introduced to the latest technology advancements, which were not even a part of curriculum. By participating in the conference, I realised how big is the imaging industry. Similarly, it is a golden opportunity for the PG students as they are exposed to the latest technological advancements, about the industry players in the market, and the knowledge imparted in the scientific workshops by the faculties in four days is enormous.

What kind of recommendations you would like to put in place for the central government and the state government as the president of IRIA?

Recently, the government announced that medical device approvals will be conducted by the Drugs Controller General of India DCG(I) who will also be responsible, oversee and control the equipment in the imaging industry. We in IRIA wrote to the Ministry of Health and Family Welfare (MoH&FW) that a technically competent person be it engineers, physicists, radiologists should be there to inspect the machine and IRIA should be a member of it. The ministry has accepted and they have informed that both IRIA and Atomic Energy Regulatory Board (AERB) will be a part of it.

Radiation safety is a big issue among radiologists. Is there any safety guidelines to be formulated by the industry?

I would like to inform that more than radiologists it is the cardiologists, orthopaedics who are exposed to radiation. As they are not well trained on radiology safety. A well trained radiologist will know how to handle the radiation exposure. Many specialist are not aware of the stochastic or nonstochastic effects of radiology. Every radiologists carry a personal monitor to check the radiation exposure. Similarly every specialist who handle such equipment should have a monitoring system and intensive training on radiation exposure should be made mandatory. Also, all high-end radiology machines should be purchased by hospitals if only a qualified radiologist is available.

prathiba.raju@expressindia.com

Radiology in 2044 – Why technology will change everything including radiology?

Future imaging technologies can make a traditional radiologists' job redundant, if they do not adapt and evolve with changing times.

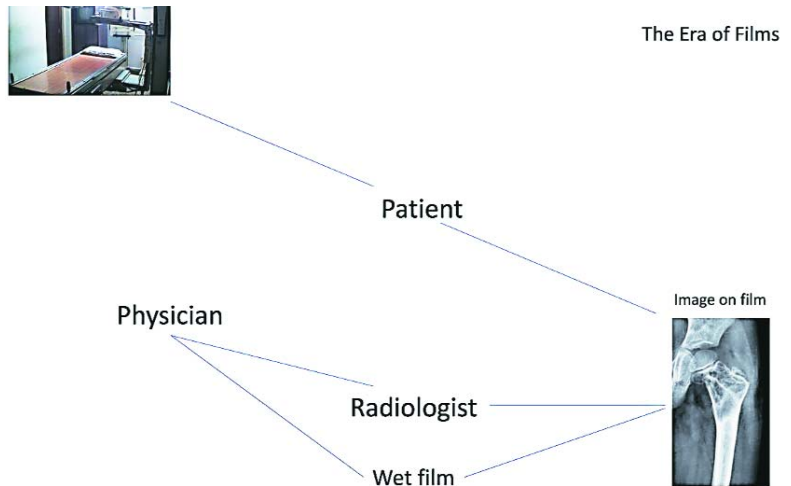
Dr Bhavin Jankharia, Chief Radiologist, Picture this by Jankharia gives a contrarian view



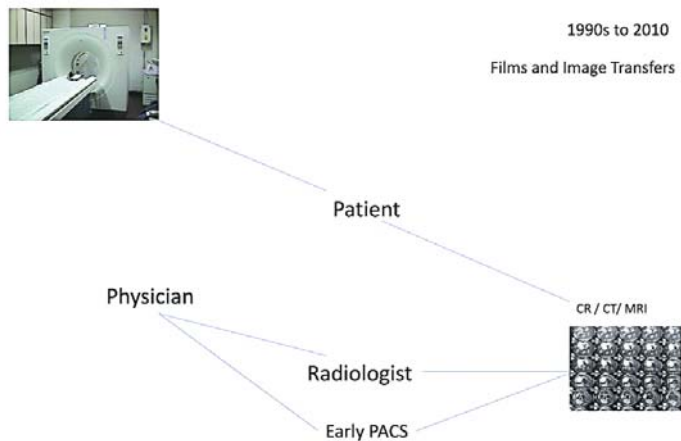
It is always tough to predict what the world will be like in 25 years. It is already so tough to predict what the world will look like in the next 1-2 years, that 25 years almost seems like science fiction.

There are however, some inexorable changes that are already happening that tell us to expect a sea-change in the way we practice medicine, not just radiology, 25 years from now.

The big buzz word these days in radiology is artificial intelligence or AI



The radiologist was in total control and everyone was dependent on the films to make a diagnosis



The radiologist was in significant control and the majority were still dependent on the films to make a diagnosis

CONTRARIAN VIEW

for short, that according to engineers will replace radiologists in the next 5 years. Radiologists of course believe that AI will be a great enabler, reducing the mind-numbing nature of routine tasks and leaving us free to be of greater help to clinical colleagues in decision making for better patient management.

For instance, we already have algorithms that can look at bone age with an accuracy level surpassing that of even the best pediatric radiologist....and this is a task that most radiologists are more than happy to give up to a computer.

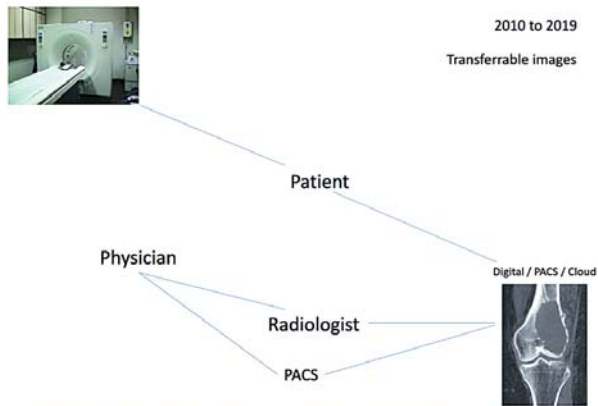
The same will happen with detection of fractures and dislocations once the AI algorithms have enough training...and then with bone tumours and infections and congenital anomalies...will there be anything left?

But this does not even scratch the surface.

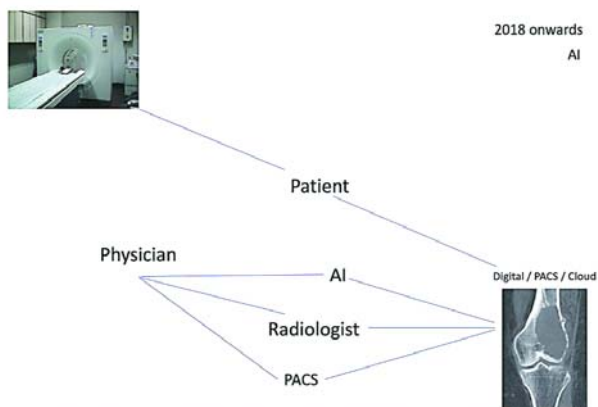
Let us talk about radiology without images. Diagnosis without the need to look at physical images on a workstation or films. When AI algorithms become powerful enough, why would we need to reconstruct images from the data that is generated by digital X-ray, CT scan, MRI and PET scanners? Once the scan is done, the entire raw data will be fed into the AI and the AI will come out with a set of findings and perhaps even the diagnosis. Images will be created based on the need of the referring doctor, only if required.

Do you remember Dr McCoy from the Star Trek series with his tricorder scanning the injured or ill patient, getting a diagnosis and then using the same tricorder to heal and treat the patient?

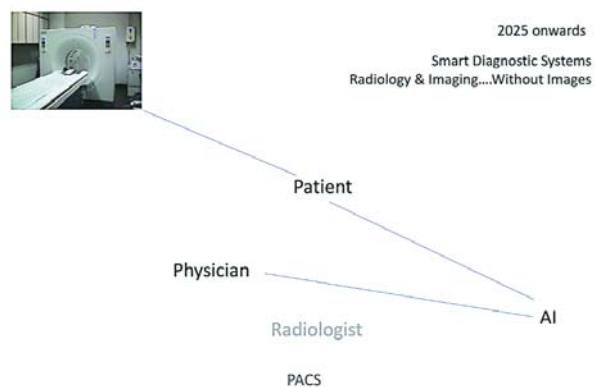
So, imagine a scenario where a



With images directly available to many doctors especially in hospitals directly on PACS systems, the radiologist becomes less relevant in many instances

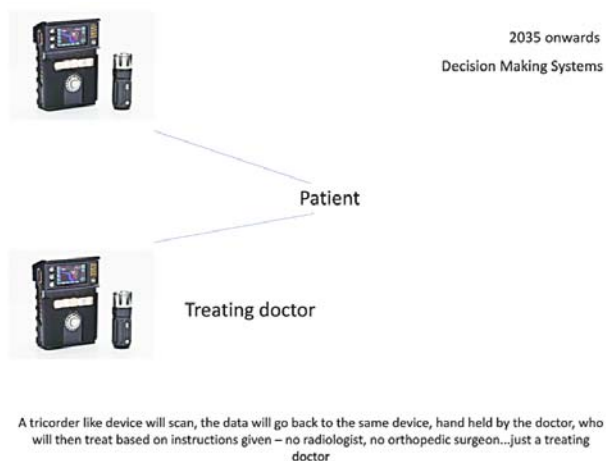
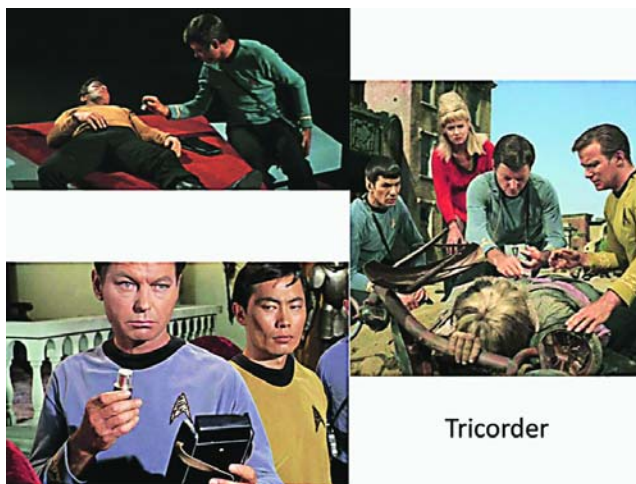
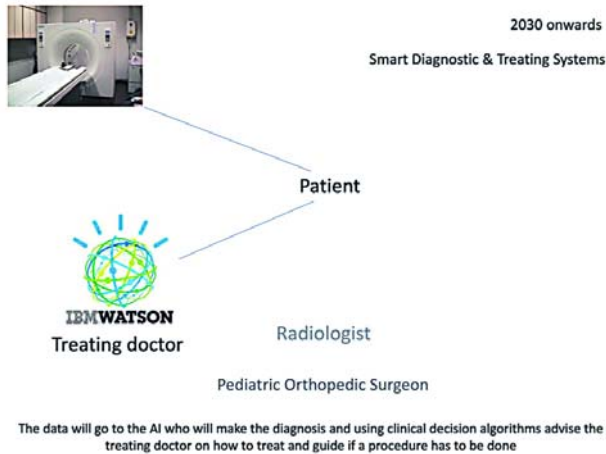


Images are directly available and artificial intelligence (AI) can also generate some direct reports e.g. bone age, fractures, etc direct to the PACS and to the surgeon...the radiologist even less relevant



The imaging data without creating of images goes straight to the AI and a report is made and given straight to the referring doctor, eliminating the radiologist and partly the PACS

CONTRARIAN VIEW



child has a suspected supracondylar fracture. A radiograph is obtained, perhaps with a tricorder like portable machine, which sends the data back to the AI, which is in the machine itself, which then spits out the diagnosis and then based on the current guidelines, recommendations and the latest clinical decision-making tree, tells the treating doctor the best mode of management and guides the doctor step by step in how that treatment has to be administered.

If you thought, this spells the death-knell for radiologists alone, think again. Slowly...think this through!!

You won't need to be a pediatric orthopedic surgeon anymore to manage this patient. Any qualified doctor who has been trained on how to use the 'tricorder' and knows how to go about managing patients, will be able to perform even the most complex of surgeries and follow management protocols with guidance.

What we will see then is the rise of the generalist, aided by technology, managing patients. A back to the future scenario where the family physician is the only really important doctor as far as patients are concerned.

Paediatric orthopaedic surgeons and radiologists will remain, but will be few and far between, ensconced in academic institutions, working to create better guidelines and decision trees for the rest of the doctors to follow.

Good? Bad? Scary?

God only knows. We just need to evolve with the times.

Those who do will survive. Those who resist will die.

As the cliché goes. Change is the only constant.

Can embracing technology lead radiology to the epicentre of patient care?

Dr Bharat Aggarwal, Director of Radiology Services, Max Healthcare, gives an insight on why radiology providers should invest in information technology driven workflows to allow faster and higher quality reporting for patients

Like with other spheres of modern life, adoption of technology in healthcare, and specifically radiology is mandatory: from creating a major improvement in patient outcomes, to bringing efficiencies in the provider organisation.

Between the 1980s and 2000s, radiology in India saw a huge impact due to advances in medical equipment, with increased precision, resolution and speed of all imaging modalities - from X-rays, where DR technology brought in higher resolution and efficiency to Multi-slice CT scanners which allowed precise evaluation of the coronary arteries. The advancements in ultrasound and MRI technology also saw newer diverse applications and improved sensitivity of disease detection. This made radiology the fulcrum of patient care pathways, helping clinicians understand, treat and monitor diseases precisely and improve the overall patient care.

While all traditional biomedical



devices are now in steady state of advancements, with minor incremental improvements and introduction of low-cost and scale solutions, the three big gaps in technology adoption in the Indian context are (1) Standardisation of workflow and image distribution tools; (2) Integration of deep learning tools to the diagnostic algorithm and (3)

Enabling regulatory environment which should mandate to some extent patient data digitisation/portability and usage for research but also allow clinical reporting via AI tools to supplement and aid radiologist reporting

Radiology Information Systems (RIS) and Picture Archival and communication systems (PACS) have been available for many decades. These have been looked at by hospital management and doctors as expense items, due to which, they are always de-prioritised in the investment cycle of all healthcare players.

At Max healthcare, we looked at RIS-PACS as an investment, and deployed a multi-location enterprise solution across all MHC locations in 2015-16. This was linked to the Electronic Medical Record (EMR) system already deployed in the hospital and the Hospital Information System (HIS). A mobile solution was also made available to radiologists to review cases along with the option of logging on to the system remotely from home. The

deployment brought close to one million radiology examinations being done at MHC available to a pool of about 90 radiologists to provide timely, accurate and time-relevant radiology reporting. There was a dramatic reduction in the reporting time, greater specificity of reporting and most importantly, an increase in the quality of reporting. The patient's entire radiology journey is now available irrespective of location of scanning, on a single repository that was linked to his /her unique ID - also giving the radiologist access to clinical data while making the report. The technology also gives the referring clinician to review the reports and images from any location within the hospital network. A mobile solution will soon be provided to the referring doctors to allow them similar access from anywhere.

It is the responsibility of all radiology providers of any scale (small or big) to ensure that they invest into information technology driven workflows to allow faster and higher quality reporting for patients.

Deep learning, machine learning and artificial intelligence are the new buzz words in radiology. These are data driven, self learning applications which are now using technology similar to facial recognition, to help improve the sensitivity and specificity of radiological diagnosis. While some of the solutions are commercially available, a vast majority are in the pre-clinical final stage testing process. These tools help the radiologists in various day to day clinical problem-solving, including pre-reading of chest X-rays, lung nodule detection on CT, diagnosis of stroke and intracranial haemorrhage and detection of fractures. MHC has identified a few such Indian companies and is engaging



them to help develop solutions that can be integrated in the RIS PACS to help radiologist improve the diagnostic process, helping the patient with an early and accurate diagnosis.

While traditional radiology modalities are being technologically improved constantly, there are attempts being made to evaluate the role of other techniques like thermal imaging, impedance imaging, photoelectric imaging to try and bring about a shift of the existing radiological

paradigm.

These continued technology adoptions will only enhance the role of radiology in the existing landscape of healthcare delivery, making it a central pillar in clinical decision making and giving the radiologist a crucial role in impacting the outcome of patient care. This along with an enabling regulatory environment would significantly boost the necessary awareness and adoption to really show the impact on ground in the years to come.

Imaging + Genomics = Integrated diagnostics is it the future of diagnostics?

Having the ability to first use genomics to identify appropriate treatments, and then radiology to appropriately follow-up on its improvement will give us a unique opportunity to serve patients in a way that far exceeds the West. **Dr Vidur Mahajan**, Associate Director, Mahajan Imaging, Head of R&D, CARING throws more light

The term radiogenomics came into academic circles in early 2000s, when the advent of advanced computing made it possible for researchers to try to find features within radiology images (radiomics) which could give clues to the genomic status of such lesions. One example is that of predicting EGFR status of lung cancer simply from thin slice chest CT images – hence, radiogenomics. The genomics community calls this process phenotype – genotype correlation, implying that there are phenotypic features (radiological, histopathological or even observational) that can give clues to the underlying genomic status of a person, or even a lesion. It is of course a



known fact that our genes control who we are and presence of certain mutations (eg. BRCA1/2) increases the risk of certain diseases (breast and ovarian cancer), but there is a new thought process that advocates a combined approach, i.e. combining the disciplines of radiology, pathology and genomics to give an even more personalised approach to prevention and treatment of disease.

Picture this, in future at birth, a baby's whole genome is sequenced and we find out exactly what all the baby is at risk of (assuming that we haven't already fixed those mutations using CRISPR!) and let's say the baby comes to be at high risk for colon cancer, heart disease and mental illness – it is then possible to simply follow-up the child with appropriate

Sanrad

MEDICAL SYSTEMS

Introducing Soon

NEW

CT SCANNER
MRI SCANNERS

THE MOST

TRUSTED

& RELIABLE

BRAND IN

MEDICAL IMAGING DEVICES

Sanrad

MEDICAL SYSTEMS

www.sanrad.in

PRE-OWNED
WHOLE BODY CT & MRI SCANNER



THE MOST
TRUSTED
& **RELIABLE**
BRAND IN
MEDICAL IMAGING DEVICES



We make Relationship for Life...

An ISO 9001:2015 and 13485:2016 certified company



tests at appropriate periods of time since the at birth risk of the child is clearly defined. While this sounds trivial and easy, it is tremendously hard. Firstly, we would need population level data to even ascertain the significance of the child's mutation – what is significant for one population might be totally harmless for another. Secondly, what are the ethical connotations of telling someone that their child is at risk for certain disease – how does knowing that one is at the risk of something change how they live? And thirdly, is the question of actionability – let's say we do tell the parent that their child will develop dementia at the age of 40, so what? Is there anything that they

THERE ARE REAL ACTIONABLE INSIGHTS ONE CAN DRAW IN THE FIELDS OF ONCOLOGY, REPRODUCTIVE MEDICINE AND EVEN PEDIATRIC NEUROLOGY USING THE LATEST NEXT GENERATION SEQUENCING EQUIPMENT

can do to prevent it? These are all hard questions and those which will need to be figured out.

At CARING, we have recently invested in the world's best Next Generation Sequencing equipment with the view to start answering some of these questions in a small way. There are real actionable insights one can draw in the fields of oncology, reproductive medicine and even pediatric neurology. We hope that having the ability to first use genomics to identify appropriate treatments, and then radiology to appropriately follow-up will give us a unique opportunity to serve the patients of our country in a way that far exceeds that in the West.



Radiomics: Advancing radiology through innovation, research and education


Radiomics is a new branch of medicine, which has the potential to improve medical education and accelerate precision medicine. An insight by **Dr Karthik Ganesan**, Consultant Radiologist and Division Chief for Body Imaging, Sir HN Reliance Foundation Hospital

According to Forbes, medical images comprising of computed tomography [CT], Magnetic Resonance Imaging [MRI] and Positron Emission Tomography [PET] account for approximately 90 per cent of all stored medical data. Presently, majority of the clinical decision making is restricted to visual assessment of imaging data-sets, or what we call qualitative imaging. Qualitative imaging biomarkers are used for the screening, staging, stratifying, planning management and for predicting treatment outcomes. The future is quantitative imaging. Rapid innovations and research in the field of medical imaging technology and data analytics have led to the development of processes for the extraction of quantitative information that result in the conversion of images into mineable data and the subsequent analysis of these data for decision support - this is termed as "RADIOMICS".

Radiomics is an extension of computer-aided diagnosis and



detection (CAD) systems; however it defers from CAD which is typically focussed towards delivering a specific requirement [single answer such as number of breast or lung nodules]. Radiomics requires the need to process large volumes of data through complex computer algorithms and encompasses numerous steps including image acquisition, preprocessing, volume of interest (VOI) identification, lesion segmentation, feature selection, extraction and qualification, building databases, machine learning, predictive modelling and validation of these models. This process extracts a number of quantitative features from digital images, consisting of first, second and third-order statistical information not visible to the eye, each of which provides an insight into tumor biology, genomic correlates, and, cellular information. Quantitative image features based on intensity, shape, size, volume, texture, wavelet etc., offer information on tumour phenotype and habitat that is distinctive. This information is complementary, and when combined with relevant patient specific clinical information would allow the



THE ULTIMATE GOAL OF RADIOMICS IS TO PROVIDE INDIVIDUALISED PRECISE MEDICAL DECISION-MAKING BY PROVIDING CRITICAL INFORMATION FROM THE ANATOMIC TO THE GENOMIC LEVEL

development of key decision support tools. Radiomics has been initiated in onco-imaging, keeping in mind that most neoplasms are heterogeneous at the genomic, phenotypic and functional level, and, also seem to evolve with time. Mining of radiomic data to detect genomic patterns and correlations is called radiogenomics. Critically, the genomic heterogeneity within tumours and metastases leads to treatment

failure and emergence of therapy resistance. Radiogenomics offers important clues in the assessment of intratumoral and intertumoral biology and heterogeneity, monitoring treatment efficacy and optimisation as well as surveillance. Radiomics is a new branch of medicine, which has the potential to improve medical education and accelerate precision medicine; however numerous challenges exist including the following: will access to big data provide key insights into the disease fundamentals or is it a double edge sword; repeatability and reproducibility of the process; complexity of sharing of data and metadata across numerous clinical sites; and standardisation of techniques and processes across the world.

In conclusion, the ultimate goal of radiomics is to provide individualised precise medical decision-making by providing critical information from the anatomic to the genomic level, establish reliable models to stratify clinical care pathways and therapeutic outcomes, precisely assess risk - reward trade-offs, and, help better predict outcomes and overall prognosis.



Should we worry about radiation while practicing diagnostic radiology?

In order to avoid the harmful effect of radiation, while drawing the immense benefit from it, the only option is to reduce radiation exposure to patients. **Dr PK Dash Sharma**, Head, Radiological Safety Division, Atomic Energy Regulatory Board, gives an insight

Diagnostic radiology is an integral part of modern medical practice. It is widely used and has been around us since the discovery of X-rays in 1895 by WC Rontgen. Most of us have undergone one or more diagnostic examinations involving X-ray radiation. In the last few decades, the pace of innovation in medical imaging has increased, starting with the introduction of computed tomography (CT) in the early 1970s. In recent years, many surgical procedures have increasingly been replaced by fluoroscopically-guided interventional procedures (FGI) as catheters are guided into the arteries under X-ray fluoroscopic guidance to perform angiography.

But should we be worried about these low level of radiation exposure from these practices? Let us look at the radiotherapy practice, in which high amount of radiation is delivered to cancer patients to kill tumour cells. Thus, it is well known that radiation can



kill cells or cause cell mutation, which may cause deleterious effect on our health. In order to avoid the harmful effect of radiation, while drawing the immense benefit from it, the only option is to reduce radiation exposure to each individual to the extent possible. Being a professional working in the field of radiation, one should not forget

that a patient may receive radiation a few times in his lifetime but fraction of exposures received by all patients is accumulated by associated staff.

Being aware of harmful effects of radiation, the question arises about methodologies for protection of individuals. As we are aware of the basic principles for protection from ionising radiation is to be followed – ‘time’, ‘distance’ and ‘shielding’ i.e. spent less time in radiation area, remain as far away as possible from radiation source and remain behind shielding barriers.

In most of the radiology practice safety can easily be achieved by operating the X-ray equipment by standing behind the lead barrier or operating CT unit remotely from control room having lead glass and brick wall. However, in case of fluoroscopic procedures (practice with maximum radiation risk in radiology) i.e. while operating C-ARM or interventional radiology units, the staff have to remain near the patient and the

option available for protection is to wear protective gears such as lead apron, lead goggles etc., and the mantra is 'minimise exposure to patient in order to protect nearby staff'.

Atomic Energy Regulatory Board (AERB), having a mission to ensure that the use of ionising radiation in India does not cause undue risk to the health of people, strive for radiation safety of each individual. However, it must be borne in mind that role of AERB does not diminish the role of employer as 'the prime responsibility to ensure safety lies with the employer of the radiation facility'.

In order to address radiation safety AERB takes various steps which include:

- ❖ Stipulate regulatory requirements and issue guiding materials (refer

BEING A PROFESSIONAL WORKING IN THE FIELD OF RADIATION, ONE SHOULD NOT FORGET THAT A PATIENT MAY RECEIVE RADIATION A FEW TIMES IN HIS LIFETIME BUT FRACTION OF EXPOSURES RECEIVED BY ALL PATIENTS IS ACCUMULATED BY ASSOCIATED STAFF

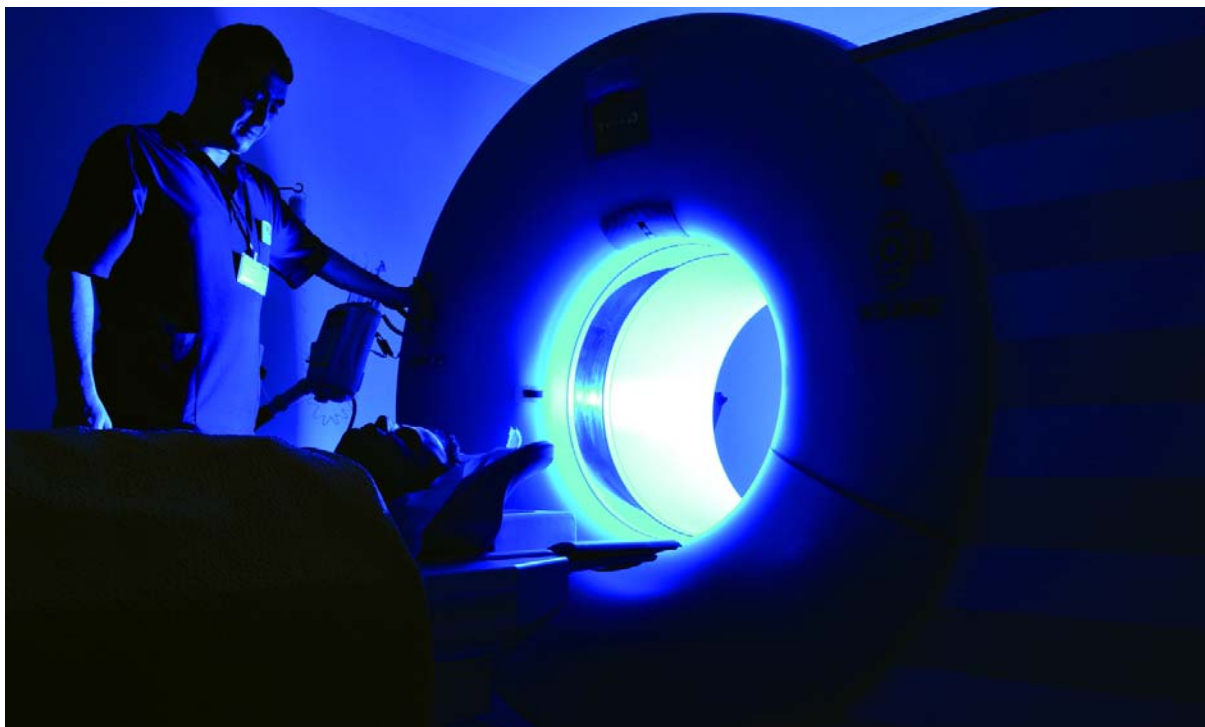
www.aerb.gov.in).

- ❖ Issue license for operation of X-ray equipment, which is mandatory for all

using X-ray equipment, through online AERB web portal eLORA (free of cost) by ensuring compliance to safety requirements.

- ❖ Issue type approval certificate to vendors, for the X-ray equipment designed to offer radiation safety. So always buy type approved equipment.

It may be concluded that while drawing immense benefit from the use of X-ray radiation and having aware of its harmful effect, one should deal it with care not with fear. To ensure radiation safety, use type-approved X-ray equipment, verify that appropriate shielding is provided all around the unit, ensure periodic quality assurance test of X-ray equipment, ensure availability of valid license from AERB, and last but not the least have trained person to operate X-ray equipment by following safe work practice.



Is digital radiography the future?

Dr N Senthilkumar, Head & Consultant Radiologist, Royalcare Super Speciality Hospital, Coimbatore, talks about on how DR is the future of radiography with its superior image quality, faster turn around times for both fixed and mobile systems and superior dose efficiency

Radiology emerged after the discovery of X rays in 1895 by Wilhelm Conrad Röntgen, a German mechanical engineer and physicist. Plain radiography (X rays) was the only imaging modality available during the first 50 years of radiology. Due to its availability, speed, and lower costs compared to other modalities, radiography is often the first-line test of choice in radiologic diagnosis.

Age old screen-film radiography is gone and replaced by two digital imaging options, computed radiography (CR) and digital radiography (DR).

CR is an indirect form of digital imaging, using analog technology to take X-ray exposures with CR cassettes (with photostimulable phosphor plates) in place of traditional film cassettes. The CR reader system scans the image into digital format.

CR is the most common method of producing digital radiographic images and the first technology that was commercially available.



Advantages of CR

- ❖ Low initial investment
- ❖ Compatible with a wide range of traditional systems
- ❖ Effective for clinics or small hospitals
- ❖ Multiple sizes allow for greater flexibility

Disadvantages of CR

- ❖ Doesn't speed up the workflow
- ❖ Risk of overexposure

DR, also known as direct digital radiography, uses X-ray-sensitive plates that directly capture data during the patient examination, immediately transferring it to a computer system

without the use of an intermediate cassette as is the case with CR. Commonly referred to as plates, these flat panel detectors use a combination of amorphous silicon detectors with cesium or gadolinium scintillators that convert X-ray to light which is ultimately translated by thin film transistors into digital data.

Advantages of DR

- ❖ Faster image acquisition
- ❖ Better quality images
- ❖ High volume capacity
- ❖ Greater dose efficiency (CsI panels)
- ❖ Dust and water resistant panels with antimicrobial coating.
- ❖ Disadvantages of DR
- ❖ More expensive initial costs
- ❖ Less flexibility
- ❖ Involves high replace costs for flat panel detectors

Standard features in newer high end DR systems

Some of the new generation high-end DR systems are fully automated with auto collimation , auto tracking and auto positioning.

Auto positioning in some of the systems can do more than 500 exam

positions.

Chest radiographs with the option of bone suppression are available with new DR systems without additional exposures.

Automated long length smart stitching is another wonderful tool with DR.

With ongoing technological advancements and the significant reduction in price, DR is rapidly becoming the preferred choice.

Newer additional tools in DR

Dual Energy Subtraction (DES)

DES process captures two images at different X-ray energy levels, then subjects them to subtraction processing to produce three resulting images: traditional, bone only, and soft tissue only views.

Digital Tomosynthesis

DT is an advanced radiography application that produces multiple tomographic slices from a single sweep

MIGRATING TO DR TECHNOLOGY GIVES US ALL THE BENEFITS THAT IMMEDIATE, HIGH QUALITY IMAGES PROVIDE. BUT REPLACING OUR EXISTING EQUIPMENT IS A COSTLY AFFAIR. WITH NEW DR RETROFIT SOLUTIONS FROM MULTIPLE VENDORS, WE HAVE A SMART, SEAMLESS AND BUDGET-FRIENDLY PATH TO CAPITALISE ON THE ADVANTAGES OF GOING DR

of the X-ray tube. Through reconstruction of the cross section areas of interest, digital tomosynthesis provides radiologists added dimension of image 'depth', removing overlying structures that may otherwise obscure pathology.

Retrofit DR systems

Nowadays, we can easily upgrade our existing X-ray modality to direct radiography (DR) while protecting our current investment. From X-ray rooms to mobile analog units, it's just the addition of DR flat panel detector with accessories for going digital.

Advantages with DR retrofit

- ❖ An affordable upgrade to DR and leveraging your investment for the long term
- ❖ Cassette-less DR workflow
- ❖ Dose reduction potential through Cesium Iodide (CsI) wireless detectors
- ❖ Easy to install and service
- ❖ Wireless detectors that are ideal for mobile use

Migrating to DR technology gives us all the benefits that immediate, high quality images provide. But replacing our existing equipment is a costly affair. With new DR Retrofit solutions from multiple vendors, we have a smart, seamless and budget-friendly path to capitalise on the advantages of going DR.

Finally to conclude, DR is the future of radiography with its superior image quality, faster turn around times for both fixed and mobile systems and superior dose efficiency. For clinics and small hospitals CR still holds a value because of its low initial investment cost, cheaper maintenance and less cost involved in replacing CR cassettes, but multiple retrofit DR panel options is changing the scenario.



Embracing the patient-centric approach in radiology

Dr Meinal Chaudhry, Head of Department, Radiology, Aakash Healthcare talks about ways by which radiologists can provide patient centric services and build a healthy doctor-patient relationship

Radiologist who were conventionally labelled as 'Doctors for Doctors' which meant they provided their services for the doctors who used to manage the patients illness have now evolved with changing times within the healthcare sector. With the surge of digital technology and teleradiology this facet of radiology might have evolved due to fear of commoditisation. Also, as healthcare around the world has become more patient driven and the trajectory of healthcare is moving toward increasing patient self-reliance, radiologists must change the perception that they are merely consultants and become more active participants in patient care by embracing greater patient interaction. Not just radiologists, each and every person working in the department of radiology should have patient centricity at its core.

Few dimensions of patient centred care in radiology would encompass good communication, patient awareness and information, family awareness and their role in patient treatment, physical comfort,




emotional support and allaying anxiety.

In any radiology department, technologists play a central role and many of their responsibilities depend on effective communication with patients: verifying patients' identity and the procedure to be performed, taking histories, screening for safety, providing instructions and ensuring that patients understand all instructions brining about good image outcomes and coordinating patient care with efficient and effective use of resources. To achieve all this and keeping an anxious patient engaged needs good soft skill trainings which has never been a part of their curriculum.

Radiologists who have contact with patients should develop behaviours that provide emotional support and convey a genuine sense of caring and concern. Radiologists and technicians should promote behaviours such as expressing concern an understanding of the nature of the problem, calmly accepting the problem, and expressing optimism or hope patient awareness in a structured manner leads to decreased anxiety and

good trusted relationship with the doctor. Today, patients anyway rely a lot on the web-based learnings for their conditions which may or may not be scientific. So in the interest of the patient and also for the doctors trust it is a good idea to provide them with scientific literature that will be easy for them to understand and interpret.

As radiology and painful procedures go hand in hand, radiologists and technicians should set the pain expectations right and also strive for a good pain cover for all the procedures. General strategies that can improve pain management include educating patients about their right to pain relief; encouraging patients to take an active role in communicating and managing their pain; making pain assessment data more visible to caregivers; and educating staff about pain control protocols, which should include a discussion of misconceptions about



FEW DIMENSIONS OF PATIENT-CENTRED CARE IN RADIOLOGY WOULD ENCOMPASS GOOD COMMUNICATION, PATIENT AWARENESS AND INFORMATION, FAMILY AWARENESS AND THEIR ROLE IN PATIENT TREATMENT, PHYSICAL COMFORT, EMOTIONAL SUPPORT AND ALLAYING ANXIETY

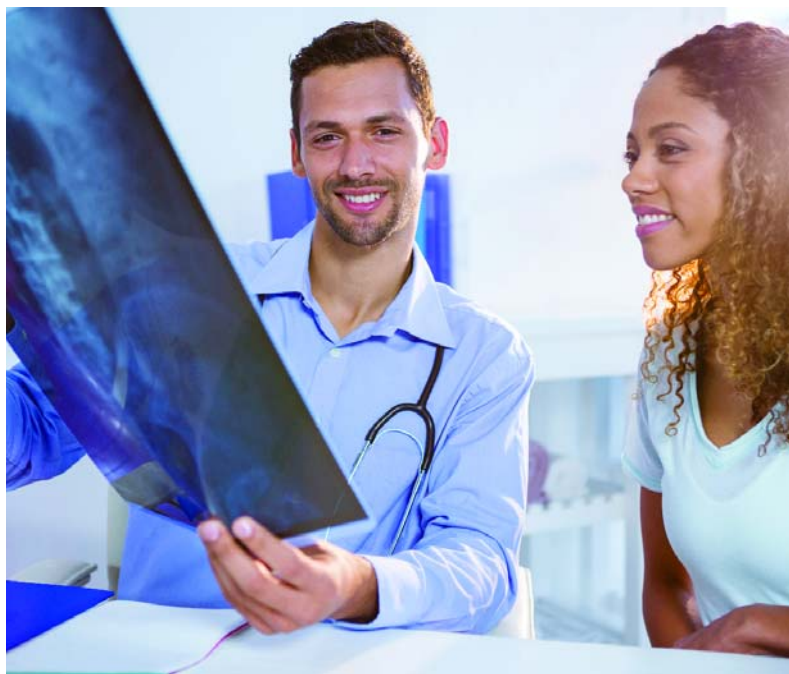
narcotics and their risks and benefits.

Radiologists should also promote family involvement in a patient's care by including family members while providing information about imaging procedures or discussing any abnormal findings. This shared decision making is an opportunity for family members to provide information about the patient and ask questions in turn encouraging healthy communication.

Bringing aesthetics to radiology department also helps in comforting the patient. Displays with plants, water and other nature scenes in the waiting room and also during the exam or procedure.

Reducing patient waiting time before the examination, sticking to the schedules and providing accurate report goes a long way in achieving patient centred care and increasing the satisfaction score of the patient. The five key factors that determine customer satisfaction for a given service are reliability (the ability to provide the service that was promised and to do so dependably and accurately), responsiveness (the willingness and ability to help customers promptly), assurance (the sense of confidence, competence, and courtesy that providers offer), empathy (the degree of caring and attention to individual customers), and tangibles (the physical appearance of facilities and the quality of the equipment).

This transition requires great efforts from the leaders and support from the management, but the potential benefits include improved patient safety, better quality, improved patient outcomes and hence reduced healthcare costs, and greater patient and provider satisfaction.



Tomotherapy: An accurate and precise way to treat cancer

Dr S Hukku, Chairman & HOD, Radiation Oncology, BLK Super Speciality Hospital speaks about the tomotherapy system called Radixact 9 installed at his hospital and how it has been instrumental in detecting and treating cancers

Traditional radiation therapy is undergoing a big transformation with technological innovation and research.

Tomotherapy is the newest addition to the advanced radiation therapy techniques which helps in treating cancers. Now tomotherapy system is being used by radiation oncologists worldwide. Compared with traditional radiation therapy its unique design results in superior treatment plans and improved clinical outcomes with lesser side effects. An innovative and precise tomotherapy system called Radixact 9 has now come to India.

At BLK Super Speciality Hospital, the most advanced version of the therapy will be available very soon. Although it has been in use since the beginning of this century, but the introduction of its most advanced version in India is regarded as a ground-breaking development in the healthcare space of the country. Tomotherapy is an all in one advanced form of cancer treatment that combines Intensity Modulated Radiation Therapy (IMRT) with the



accuracy of Computed Tomography (CT) scanning technology (IGRT Image Guided Radiotherapy). In this system the radiation is delivered slice-by-slice.

Image guided Intensity Modulated Radiation Therapy (IMRT) delivered by this system is very different from IMRT delivered by conventional linear

accelerators. The main difference between the two processes is that in tomotherapy machine, a narrow intensity modulated pencil beam is delivered from a rotating gantry while the patient is continuously being moved through the bore, compared to the much wider intensity modulated beam and static patient in conventional IMRT. Hence, the tomotherapy units are able to target treatment sites throughout the body without going through multiple steps like pausing for the patient to be moved and set-up differently.

The scanning technology in tomotherapy provides a 3D image of the treatment area before every treatment, so the radiation beams can be targeted according to the size, shape and location of the tumour(s) on the specific day of treatment.

The new approach treats tumours one layer at a time. As the radiation used in this process is much lesser as compared to the conventional one, the side effects to the healthy tissues and organs also often gets reduced. Tomotherapy supports the specialists to customise treatment plans to each

patient's unique needs, and relies on integrated imaging to verify the exact location of the tumour to ensure precise delivery of radiation by reducing exposure to the surrounding healthy tissues, resulting in fewer side effects. Hence Tomotherapy can be an effective radiation treatment option for all cancers. It may be used as the only treatment, or in combination with surgery and/or chemotherapy.

Adaptive radiotherapy techniques can easily be used with this system unlike conventional linear accelerators. Adaptive radiotherapy helps the radiation oncologist to continuously reduce the treatment fields over the entire duration of radiotherapy based on the tumour

THE NEW APPROACH TREATS TUMOURS ONE LAYER AT A TIME. AS THE RADIATION USED IN THIS PROCESS IS MUCH LESSER AS COMPARED TO THE CONVENTIONAL ONE, THE SIDE EFFECTS TO THE HEALTHY TISSUES AND ORGANS ALSO OFTEN GETS REDUCED

regression during treatment.

The greatest advantage of adaptive radiotherapy is that the radiation dose to the surrounding normal tissues is drastically reduced resulting into very low side effects. It has come as a boon for those who need precise radiation therapy.

The machine is designed like a CT scanner and it uses its integrated imaging to enhance treatment accuracy and a unique beam to improve treatment precision. Tomotherapy can be used for any cancer which may need radiation therapy, including those involving large tumours, multiple tumours, or tumours near critical body structures throughout the body.



The increasing importance of clinical data in radiology


Dr Deepak Patkar, Nanavati Super Speciality Hospital shares insights on the significance of clinical data in providing patient centric care

Clinical data has been playing a critical role in radiology as it helps radiologists to reduce care delays and improve quality. Radiologists need to find, extract, and interpret patient reports. The process is time-consuming and difficult when done manually. Cloud based clinical data, on the other hand, can do that both automatically and on-demand, according to a clinician's specific needs and areas of inquiry. Radiologists require immediate access to the structured and unstructured data common in radiology reports, as well as the analytical algorithms to incorporate into their workflows with best practices, clinical intelligence, and actionable insights. Clinical data has been shown to decrease length of stay by up to three days for patients needing interventional procedures. By tracking data on inpatient recommendations and facilitating care coordination, radiologists are better equipped to give accurate reports. Radiologists can use that data to document clinical outcomes.

Analytics are basically used to simplify and automate the billing and compliance requirements as part of the radiologist's normal workflow. Clinical



data automatically extracts follow-up recommendations from reports and creates detailed, consistent profiles. It makes it easier for radiologists to formulate follow-up recommendations and identify overdue examinations. Majority of the studies have proven that follow-up recommendations is a failure. It can be a reason for delays in patient care, increased medicolegal risk, as well as lost revenue opportunities for radiology practices. Clinical data ensures that patient receives appropriate and timely care based on their imaging findings. It is widely admitted that the data identifies ways to increase revenues. Physicians and administrators can explore and monitor under-served vulnerable sections of the populations based on industry standards/benchmarks and clinical outcomes from across the



CLINICAL DATA ENSURES THAT PATIENT RECEIVES APPROPRIATE AND TIMELY CARE BASED ON THEIR IMAGING FINDINGS. IT IS WIDELY ADMITTED THAT THE DATA IDENTIFIES WAYS TO INCREASE REVENUES

industry. Clinical data helps medical practitioners deliver effective and efficient clinical care whenever and wherever it's needed. Clinical analytics also reduces unsuitable or redundant imaging, which is much better for patients. The data mining algorithms can pick out outliers, oversee quality improvement efforts, and eliminate unnecessary ordering of images; all based on documented outcomes and industry best trends and practices. Most imminent problems in the field of radiology and healthcare at large can be tackled with clinically excellent solutions which are available in recent times. It is a big advancement in overcoming the practical issues that tie up valuable resources and get in the way of the main goal of every physician, which is to provide utmost care to patients.



Expectations from IRIA 2019

IRIA 2019 will have advances in radiology especially PET- MRI, nanoimaging, robotic imaging, molecular imaging and artificial intelligence related topics which are the new concepts in imaging and creating a lot of interest in radiologists minds. **Dr Sikandar**, Consultant PET-CT & Radiology, Yashoda Hospitals; Assistant Professor, Dept of Radiology, Shadan Medical College; Adjunct Assistant Professor, Dept of Biomedical Engg. IIT Hyderabad reveals more

The 72nd Annual National IRIA Conference scheduled at PGIMER Chandigarh is the largest Radiology Conference in India. IRIA has around 16,000 members. This is a premier conference with various simultaneous sessions planned across four days. Various ICRI and IRIA orations and scientific sessions in all the specialties of radiology, like basics, journalism, and advances in radiology will be covered at the conference. There are multiple parallel sessions in various halls including plenary sessions, scientific sessions, scientific papers and posters and educational exhibits.

The expectations of a radiologist attending this conference will be on learning about the advances in radiology especially PET-MRI, nanoimaging, robotic imaging, molecular imaging and Artificial Intelligence related topics which are the new concepts in Imaging and creating a lot of interest in radiologists minds. Artificial Intelligence is one of the most sought topic with a lot of apprehension on radiologists role in



the future.

Artificial Intelligence is the most demanding and curious technology which radiologists are very keen about. There are presumptions that technology will advance to the extent where the role of radiologists will be lost in coming years. But, this is a misconception. Technologies operate on softwares which will be set according to various diagnostic

algorithms. For example; the diagnosis of stroke. The categorisation will be solely dependant on the history of the patient or some times no history if patient is unconscious or doesn't have any attender. Here, the study will be done as per protocol and the diagnosis will be done with the help of artificial intelligence. But, here again the role of the radiologist is of prime importance for better and precise findings, correlating clinical history and giving the final diagnosis. Sometimes, the stroke infarct will resemble edema and, if misdiagnosed, will lead to great blunder. Thus, various protocols will be developed in a phased manner to overcome the fallacies of one protocol.

Same is the doubt in robotic imaging or the role of robotics in radiology or interventional radiology. Software programmes will be more focussed and precise in diagnosis or therapeutic applications. The role of radiologist has to be there for planning, correlating the findings and executing the task.

Nanoimaging is another entity which follows similar algorithms. It is

still in infancy and not as advanced as Artificial Intelligence.

Thus Artificial Intelligence, robotic imaging and nanoimaging are more advanced which will have an impact on the practice in the future but again this technology in India is in infancy and a lot of research and algorithms needs to be set before full fledged application in clinical practices. This technology is not like it will grow in one go and will be accepted in India easily. The main drawback will be the cost factor which will be a major deciding factor. After the launch of PET-MR not many machines have been installed in India the reason being cost factor. Apprehensions will

be cleared by attending this conference where the role of radiologists will be primary and use of technology will be secondary. IRIA 2019 conference will be focussing on the above mentioned topics and spread awareness amongst fellow radiologists about the technology and how to blend human aspect and technology together for the betterment of patient care which is better than individual approach.


Benefits of attending various editions

This being the largest national radiology conference multiple topics from basics to advances will be

covered. It provides an excellent platform for learning for everyone from resident level to practicing consultant. By attending this we will be gaining knowledge which we don't have and will be revising the knowledge which we already practice. We will be having a lot of social interaction with our own colleagues who practice in different corners of India and make new colleagues and friends also.

Message

This is the best annual academic feast with social interaction which a radiologist should attend to gain more knowledge.



EXPRESS HEALTHCARE
www.expresshealthcare.com

EXPRESS HEALTHCARE
+ Strategy
TB control in India: Role of private sector
Out of the clinic: Reaching new life into medical education in India
HEALTHCARE LEADERS
Champion Women
The Government's new policy
Express Healthcare presents the thoughts of some leading women who have made a name for themselves in healthcare. Our exclusive interviews reveal powerful leadership roles in the green.

For any queries, call 022-67440002 or email at healthcare@expressindia.com



THE AID FOR THOSE WHO AID THE HEALTHCARE SECTOR.

When it comes to nourishing this sector, experts prescribe a regular diet of Express Healthcare. The magazine has been the source of a healthy dose of expert information, incisive category analysis and remedies for industry ailments since 20 years, thereby earning the trust of industry professionals. It's no wonder then that the finest in the field trust the foremost in the field.

Understanding economics helps deliver value in healthcare

Radiologists need to be more aware of — and involved in — the economics of healthcare as a whole, and their speciality in particular, especially as it relates to efforts to provide value

That was one of the messages of an RSNA 2018 presentation by Dr Yoshimi Anzai, MD, University of Utah Health.

Whether the issue is one involving payment reform, reimbursement or changes in the health insurance landscape, radiologists need to be aware of what's happening, Dr Anzai said, particularly younger residents and radiologists who may become leaders one day. She added that it's also important that young radiologists comprehend the principles of value, and why that concept has become so important in health care.

Dr Anzai also said that costs associated with healthcare are increasingly being transferred to patients. "Health insurance used to cover everything," she said. "But now, many employers have identified healthcare as being a huge cost to them, and they are shifting costs to the patients." The result, Dr Anzai said, is that patients are often faced with selecting health care plans that have very high deductibles.

"Patients have higher out-of-pocket expenses on top of higher premiums," she said, adding that this not only has implications for a family's pocketbook,



but also dissuades patients from seeking needed medical care, preventive care and screenings.

Better cost management delivers efficiencies

Since patient costs are clearly associated with those of the health system — direct facility and professional costs — it is critical for those health systems to understand the real costs of providing health care if they want to contain costs.

Dr Anzai referred to a study published last year in *Academic Radiology*, in which she and her colleagues 'dissected' the costs of performing an abdomen and pelvis CT, and identified ways to improve efficiency in delivering this service.

That study found that 80 per cent of

the direct costs of abdomen and pelvis CT are related to labor, with radiologists' interpretations accounting for 40.1 percent of those costs.

Consequently, Dr Anzai said, radiology departments or practices should be doing everything possible — whether it's embracing machine learning to improve workflow, or reducing "dead time" in the patient preparation time — to increase radiology's efficiency and reduce costs.

"This is something we should embrace, rather than fear," Dr Anzai said.

Finally, Dr Anzai also noted that since patients are covering more of the costs associated with their healthcare, they want more price transparency.

She pointed out that her home institution, the University of Utah Health, has an online price transparency tool that can tell a patient, for example, what a CT exam of the abdomen with contrast might cost, depending on whether the patient is insured or is self-paying, and if insured, what type of insurance the patient has.

"We have to work toward that direction, because otherwise you have this inaccurate information floating around on websites or blogs," she said. "The public is demanding it."

‘The progress in technology is pushing us to think beyond our comfort levels’

Sushant Kinra, Managing Director, Carestream Health India talks about the company’s plans for the future

How was the year 2018 for Carestream India? Which product categories have seen a growth in 2018?

The year 2018 has been a phenomenal year for Carestream. We are proud to share that we have gained market share in all our product segments, particularly in our Digital Radiography (DR) portfolio. Carestream’s Digital Radiography portfolio offers a quick, easy and affordable way to transition to digital radiography and this has led to a significant growth in this segment. We have our installations at premium sites including important government sites as well. Everything we’ve innovated within our digital portfolio has been very popular and this has definitely been our success factor.

Carestream India has earned the certification of a “Great Place to work”. Could you please elaborate on this certification?

Yes, for a second year in a row we have been recognised and certified as a “Great Place To Work®” based on a rigorous assessment conducted by



the global research and consulting firm, Great Place to Work® Institute. The assessment primarily evaluates two parameters, the Trust Index© and the Culture Audit©. Together, these parameters reflect the trust the employees have in the organisation and its management, the camaraderie, and pride in what the company does and what their contribution is to the big picture

I have always firmly believed that you are as good as the people in your team and those you work with, and our Great Place To Work® certification is a validation for the same. We are extremely proud and will continue our drive towards excellence.

With the appointment of David Westgate's as the new CEO for Carestream Health how does he picture Carestream India on the global map?

David Westgate was named the new Chairman, President and CEO of Carestream Health in July 2018. Since then, his focus is to deliver innovation that is life-changing—for patients, customers, employees, communities and other stakeholders—and to grow our business for long-term success. On his visit to India David had the opportunity to meet our team and some key stakeholders which gave him an in-depth understanding on the future of health care in India. He also learned about the various opportunities being presented by the Indian government in the Healthcare Industry, Ayushman Bharat being a great example of this. He was happy to see Carestream India right on track. India is surely a land of

opportunity and his visit to India provided valuable inputs on how to align India with the global strategy.

What are the innovations that you wish to bring to India in 2019? Tell us about your latest innovations?

We are extremely excited to launch our Healthcare IT Solutions in India. Carestream Health globally has earned top ratings from healthcare IT and radiology professionals for its Carestream Radiology module of the Clinical Collaboration Platform, Carestream Vue Radiology PACS. KLAS, an independent research organisation that monitors healthcare vendor performance has named Carestream as the 2018 KLAS Category Leader for Global PACS - Asia and Oceania for the second year in a row.

Our Vue Clinical Collaboration Platform is a powerful enterprise imaging solution that allows providers to consolidate, manage and seamlessly share images and data across the enterprise. The Clinical Collaboration Platform features: efficient diagnostic tools and native multimedia interactive reporting for improved clinical productivity; intuitive communication and collaboration tools to streamline operations; and advanced workflow orchestration techniques and analytics to optimise cross-enterprise resource utilisation.

We also have a new software being launched this year the Carestream ImageView Software. This software offers robust functionality with Carestream's most advanced image processing in a single platform –

resulting in ease of use and image quality that can take productivity and patient care to new levels.

Needless to say, we're consciously investing a lot in the Indian market. In today's rapidly changing environment—where the mandate to provide better outcomes has never been greater—we add value by delivering personalised, affordable and practical options to help our customers advance.

What is your vision for Carestream India in the next few years?

My vision for the years to come, is to always be the leading service provider and best in the mind share of the customer when it comes to imaging solutions.

The progress in technology is pushing us to think beyond our comfort levels and we must be more adaptive to these dramatic changes. We at Carestream will undoubtedly aim to be ahead of the game. We offer affordable digital imaging solutions that meet the needs of healthcare providers of all sizes, with targeted solutions not only for radiology but also for clinical speciality practices such as orthopedic, chiropractic and veterinary clinics. Our scalable mini-PACS solutions delivers image access, management and storage capabilities well suited for all these environments and is a fantastic workflow solution for our customers in India.

We see an unparalleled opportunity to meet the growing needs of our customers in India and we are committed to providing the best customer experience with all our products, systems and services.

Fujifilm wants to build robust Indian medical diagnostic space

Masahiro Ota, Corporate Vice President of Fujifilm Corporation & Managing Director of Fujifilm Asia Pacific, shares his views on how Fujifilm is strengthening its presence in the Indian medical devices market

How are the business prospects for Fujifilm in the APAC region and how does it look at its growth in India?

Currently, our main business areas in the Asian region are healthcare segment, digital imaging and graphic imaging, and we are growing over 10 to 20 per cent. Medical imaging is one segment, which is growing exponentially in Thailand, Singapore, Malaysia and Eastern Korea. So, we are trying to implement the same in India as well. In Thailand, we are the number one players and we have high market share in other mentioned countries too. We now expect to improve our market share in India.

Can you throw light on the digital mammography solutions Fujifilm offers?

Mammography is the most powerful tool for detecting breast cancer, and early detection is the key to improve survival rates. We are bringing innovative solutions like digital mammography to help women detect the disease early. I am proud and pleased to say that as of now, we have more than 3,400 happy users of our digital mammography solutions across the world; among them, 26



installations are in India. We are also making efforts to create awareness among women about breast cancer and promoting campaigns such as the Pink Ribbon to promote the early discovery of breast cancer. We need a holistic, comprehensive and life-course approach to improve women healthcare.

Where does India stand among the Asia Pacific countries, particularly China?

In Asian countries like Thailand and Indonesia, demand is huge but the

market is shallow. In India, cities like Mumbai, Bengaluru and Chennai are growing fast and thus these are our priority regions in the country. I worked for almost 10 years in China. So, I would say that India is 20 years behind China when it comes to infrastructure like airport, highway, high-speed railway systems and infrastructure. India needs to disrupt.

What are your focus areas?

We have a lot of scope in medical business in India. This sector will definitely have lots of opportunity — endoscopy, IVD, ultrasound and healthcare IT, for instance. Fujifilm brand always lays emphasis on improving the quality and the affordability of healthcare.

What are the specific innovation/techniques brought in for the Indian healthcare requirements by Fujifilm?

Keeping in mind the Indian requirements, we have developed the CR system Prima T. We are selling around 3,000 to 4,000 units in India every year. This model digitises the X-ray waves and was developed based on the inputs taken from India.

INTERVIEW

We have installed CR machines in many government hospitals which do not even have doctors and hospitals in tier II and tier III cities. For example, in Assam, we have installed 100 CR systems in remote areas. The machines have digitised X-rays where it is connected through the tele-radiology system; so, a doctor sitting in Delhi can examine the reports and they can diagnose immediately. The CR system can be easily installed in limited spaces, is user friendly and requires less electricity. It is a robust system which brings upon a smart workflow. For this, we have tied up with KRSNAA Diagnostics. They have acquired CR machines from us for their project in Assam. It is a high-quality service at a low cost.

How do you see the new technology disrupting the medical segment globally? Any new products/ services scheduled to be rolled out?

We are entering in an era of Artificial Intelligence (AI) and Internet of Things (IOT), and Fujifilm is already working together with Japan's top doctors to improve diagnosis with the latest technology. We hope to continue

the same with other countries, as it improves patients and the community. For example, when a doctor is performing mammography, he can miss certain minute details. However, if an AI-based machine is being used, it can assist the doctor more accurately and faster. Fujifilm is further developing AI-enabled X-ray and endoscopy machines. We are also planning to launch Fujifilm SILVAMP TB LAM for the detection of tuberculosis (TB) in people living with HIV (PLHIV) in 2020.


Can you explain about Fujifilm's newest mammography solution Amulet Innovality? How will it help patients?

Fujifilm's Amulet Innovality uses advanced tomosynthesis technology which enables the conversion of digital breast images into a 3-D reconstruction of the breast, in contrast to the flat images produced by traditional 2-D digital mammography. The advanced tomosynthesis technology reveals the internal structure of the breast, thus simplifying the detection of lesions that get overlooked in a routine mammography. The latest 50 micron

3-D mammography enables technician to obtain a clearer view of the breast tissue, facilitating identification of early-stage breast cancer and reducing the need for additional tests and biopsies. With this new technology, we take care of doctors' concerns in terms of resolution, operators – in ease of use and for patients, it is the comfortability offered. We have done 26 installations in India — majorly in cancer hospitals and cancer centres and it is one of the best mammography solutions. It facilitates early detection of cancer and the patient undergoes less radiation exposure even than a standard chest X-ray.

What are the CSR activities of Fujifilm?

By using our technology, and affiliation with big hospitals, we are creating awareness among people about non-communicable and communicable diseases. We are trying to make the common public aware of the breast cancer and TB and how early stage of diagnosis and screening helps. Such practices are conducted by the US, Japan and European countries.



When it comes to nourishing this sector, experts prescribe a regular diet of Express Healthcare. The magazine has been the source of a healthy dose of expert information, incisive category analysis and remedies for industry ailments since 20 years, thereby earning the trust of industry professionals. It's no wonder then that the finest in the field trust the foremost in the field.

EXPRESS HEALTHCARE
www.expresshealthcare.com



EXPRESS HEALTHCARE
Strategy
TB control in India: Role of private sector
Champion Women

For any queries, call 022-67440002 or email at healthcare@expressindia.com

Phantom Healthcare – A revolution of refurbished MRI market

Rochi Nagotra, CEO, Phantom Healthcare speaks about the company's journey and the growth of refurbished medical equipment market in India

India's medical imaging equipment market has been on a constant rise since a long time. Large population size, increasing spending capacity of the population, expanding network of private hospital chains and growing penetration of private standalone diagnostic services are major factors that have influenced the increase in establishments of healthcare units including hospitals and diagnostic centres.

Be it any region, the diagnostic and imaging facilities have a direct correlation with growth in number of hospitals and clinics. Not only in metros and big cities, but also in smaller cities and towns, the number of new hospitals and clinics are increasing. Increase in the number of patients have created a need for low cost yet advanced imaging equipment in the market. Due to high cost of new medical equipment, it is not always possible to provide the latest medical facilities. Refurbished medical equipment have solved this problem to a large extent. Being able to buy top branded medical equipment at an affordable price is the basis for refurbished medical equipment market in India.

An alternate perspective for the



OEMs could be not to see refurbished systems as “cannibalizing” the market for new systems but rather as an additional market at lower price points. The refurbished medical equipment market gives the equipment a longer revenue-generating lifespan while creating a steady market for state-of-the-art

equipment.

The refurbished medical equipments not only help in providing increased access to healthcare facilities in market and handling cost pressures but also generate economic benefits from extending the lifecycle value of manufactured equipment and creating new jobs, growth and

VALUE ADD

investment in the country.

When we talk of an Imaging Center, MRI is the largest equipment category in terms of sales revenue. A refurbished MRI has the ability to offer high speed scanning combined with high image quality and that too at an effective cost. Refurbishment is defined as “a systematic process that ensures safety and effectiveness of the medical equipment without significantly changing the equipment’s or system’s performance, safety specifications and/or changing intended use as in its original registration” .

Although a cost-effective refurbished MRI may seem as an ideal opportunity to increase the medical facilities but a strategic and cautious planning is required to choose the right vendor for it. A considerable amount of time should be spent with a vendor understanding the refurbished process and evaluating the options.

Phantom Healthcare is a global market leader for refurbished GE 1.5T and 3.0T MRI scanners in India, with 130+ satisfied clients. In the last eight years, we have worked with many healthcare providers and thus very well understand the economic challenges faced by our potential and existing clients. At Phantom Healthcare, our team views the clients as family and thus truly believes in 'Client success is our reward.'

Over the years, the name 'Phantom Healthcare' has become a synonymous with price competitive products coupled with reliable services for medical imaging equipment in India. Right from understanding the requirements from beginning of a project to handover of the equipment on site, our team is



very attentive and receptive to client concerns. Our attractive pricing options enables clients plan more than one diagnostic centre rather than planning a single centre with new equipment.

Being a quality conscious organisation, we not only aim at providing giving high quality equipment but also responsive after sales service. Our equipment are well covered with maintenance warranty and upgraded with latest software. Be it the inspection of the equipment before procurement or check on software upgradation status or identification for defective parts (including decals buttons and knobs) along with its service history and maintenance records, every step is performed professionally. Our equipment undergoes a complete overhaul from cleaning, replacement

of defective parts and functionality testing. We at Phantom, ensure that our refurbished MRI machine can function effectively like a new machine without any compromise

Phantom Healthcare has support of all leading banks and NBFCs. Our flexible financial packages and wide variety of options ensure that client's needs are met. As a favoured specialist organisation, we always aim to grow long haul associations with our clients. Our clients do experience many advantages by associating with us as compared to other service providers.

Thus, Phantom Healthcare will always be a trusted partner in your business journey whether it's a purchase of refurbished GE 1.5T or GE 3.0T MRI Scanner, an upgrade of existing equipment or implementing an extended service contract on new or used equipment.

DESIGNED WITH THE FUTURE IN MIND: **FEATURE-RICH X-RAY ROOMS- THE BEST ROUTE FOR YOUR IMAGING FUTURE**

At Carestream, imaging innovation is not a goal – it is an ongoing process. Products designed with the future in mind, are scaled to grow with the evolving needs and also offer protection against technology obsolescence. A perfect example of this is the CARESTREAM DRX Ascend System and the CARESTREAM DRX-Evolution, which makes the world see medical imaging in a brand new light.

CARESTREAM DRX ASCEND SYSTEM FEATURE-RICH X-RAY ROOMS, MADE AFFORDABLE

The CARESTREAM DRX-Ascend is just the right option to meet the most pressing needs of the present, with a clear upgrade path for the future. The Ascend Family's offerings, allows one to enter the imaging continuum at the levels of performance and cost that are best for them; from time-proven, cost-effective analog systems...through work-flow-accelerating CR-based solutions...all the way up to the state-of-the-art, wireless DRX technology.

The Ascend's feature-rich solutions, scalable design and modular components can be configured as per individual requirements and budget. The DRX Ascend system offers an ultra high frequency generator with a wide range of longitudinal and transverse travel which allows easier positioning and better workflow. The image quality is exceptional and the positioning flexibility for all major exams is great, resulting in accelerated workflow and enhanced patient care.



CARESTREAM DRX-EVOLUTION PLUS ONGOING EVOLUTION

The Carestream DRX-Evolution Plus has set a benchmark for imaging performance in hospitals around the world. It also features a modular design to fit each individual space, workflow and budget and offers protection from technology obsolescence with its future-proof design. The imaging solution in the DRX-Evolution Plus is designed around the remarkable X-Factor wireless detector platform. This allows the same detector to work seamlessly across the entire lineup of DRX products – and slides right into the existing equipment. This makes it easy and affordable to convert, replace or expand current systems.

The DRX-Evolution Plus helps optimise use of space to fit in an average-size room. This flexible DR System offers exam capabilities ranging from manual to fully automated. The automated overhead tube is designed for positioning convenience and efficiency.

The system offers a single space-saving console that controls all imaging functions and processing of images with a touch screen that can be customised to match the workflow. The ergonomically designed wall stand saves space, is easy to use and simplifies patient positioning. The bucky tilt allows horizontal positioning for upper-extremity studies or positioning under a moveable table.



THE SYSTEM OFFERS A SINGLE SPACE-SAVING CONSOLE THAT CONTROLS ALL IMAGING FUNCTIONS AND PROCESSING OF IMAGES WITH A TOUCH SCREEN THAT CAN BE CUSTOMISED TO MATCH THE WORKFLOW

The DRX-Evolution Plus features include a table with higher weight capacity, enhanced paediatric capabilities, extended tube column range for sites with high ceilings. This system can capture a wide range of vertebral and long bone images and automatically aligns captures and stitches the images for fast and convenient imaging, enhancing patient care.

Whatever your existing modality right now, and wherever you need to go in the future, Carestream has the upgrade strategy to get you there – seamlessly and cost-effectively.

SANRAD MEDICAL SYSTEMS: SPREADING TECHNOLOGY



OVER THE past 18 years, the name Sanrad has become synonymous with affordable and reliable services for medical imaging equipment in India. Sanrad is a pioneer in the industry for services of CT & MRI equipment and is widely acclaimed by the medical fraternity for its excellent customer relationship. Sanrad has installed more than 370 refurbished Toshiba CT scanners in India, with highest uptime and cost effective services.

The name Sanrad is a well-recognised brand for medical imaging equipment. It has also become synonymous with low maintenance cost concept. This concept embraces a range of customer support protocols that has been designed for cost conscious customers of India.

Sanrad maintains the largest inventory of CT scan parts and it is probably the biggest in Asia. With

service bases equipped with tools, technical backup of available spare parts and a skilled and efficient team of engineers we are able to provide excellent quality service to our customers.

With its high end products like the recently introduced Refurbished Toshiba 1.5T MRI System and highly efficient Refurbished Toshiba 64 Slice CT System, Sanrad takes technology



“MOST OF THE DIAGNOSTIC IMAGING EQUIPMENT BUSINESS IN OUR COUNTRY WAS CONTROLLED BY THE MULTINATIONALS. TODAY, WE ARE PROUD THAT WE DICTATED THIS CHANGE AND BROUGHT THE STATE OF ART TECHNOLOGY WITHIN THE REACH OF EVERYONE. CUSTOMERS THOSE WHO HAVE EXPERIENCED US, WOULD SWEAR BY OUR PURPOSE AND EXISTENCE”

- RATISH SNAIR, CEO

and its accessibility to greater levels.

Sanrad maintains the largest inventory of CT scan parts and it is probably the biggest in Asia. With service bases equipped with tools, technical backup of available spare parts and a skilled and efficient team of engineers we are able to provide excellent quality service to our customers.

NEWLY INTRODUCED REFURBISHED TOSHIBA 1.5T MRI SYSTEM

Sanrad has taken a forefront in supply and maintenance of MRI systems. With and already existing product range of permanent MRI systems, Sanrad has recently introduced yet another product in this category that is The Refurbished Toshiba 1.5T Super Conducting MRI.

- ▶ Silent magnet with painissimo technology that reduces sound by 90 per cent.
- ▶ Patient comfort taken to next level with the additional features of wide bore, patient camera monitoring and user friendly interface.
- ▶ Optimum scanning technique and high image quality



THE REFURBISHED 64 SLICE CT SCANNER

THE refurbished Toshiba Aquilion 64 slice CT scanner is a multi-slice helical CT system that supports whole body scanning and comes with work flow enhancing software that delivers unsurpassed image quality, improved dose management and superior patient care.

- ▶ Selectable slice thickness for accurate diagnosis.
- ▶ Optimum for cardiac scanning with Breath holding techniques and ECG gating available.
- ▶ Applications of sure technologies available in the software, allow feasible options in the scanning.
- ▶ Dose reduction technologies and high image quality.



Contact: Sanrad Medical Systems; 1, Manek SV Road, Santacruz (West), Mumbai-400054, India
Ph: +91-22 26006060, 26494702 Email: info@sanrad.in Web: www.sanrad.in

Printer Perfect

Konica Minolta Healthcare India now brings you a world class colour printing solution from DNP, Japan, introducing Fotolusio range of printer model DS 820. DNP has revolutionised dye sublimation printing with DS 820 printers

DS 820 PRINTERS are compact, desktop, high-speed, high-quality printers, which can be connected to any imaging modality. The first thing to consider when thinking about DS 820 printers is its outstanding print quality, which helps to offer excellent prints. DS 820 offers unparalleled reliability and ergonomic design for easy access and front loading of media which makes maintenance easier and less time consuming.

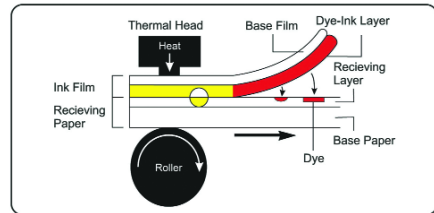
DS 820 printers use an exclusive internal print method that safeguards the paper from exposure to dust and other contaminants. The printers feature a cartridge-based ribbon supply that makes loading fast and easy. DS series printers are competitively priced, high-resolution printers that produce rich print quality that display full colour details and smooth gradation. The lamination layer on the media provides resistance to fading, fingerprints, water, ozone, and dust. The best part of owing DS 820 is that it is a complete dry process printer. Unlike other printing solutions it does not use any kind of ink or cartridges that require frequent replacement and does not offer consistent print quality. DS 820 printers offer the same reliability print quality for years together since it requires very low

Dye Sublimation Printing Technology

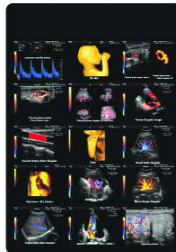
Ink ribbon : A thin polyester film coated with ink, in a sequence of yellow, magenta, Cyan, and Overcoat.

Paper : An exclusive receiving paper.

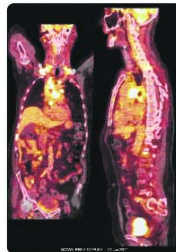
The dye ink is transferred to the paper, according to the amount of heat applied from the thermal Head.



Ultrasound Imaging



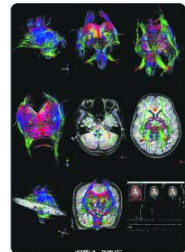
PET CT Imaging



Cardiac CT



MRI



maintenance and needs no replacement of ink cartridges.

DS 820 printers offer seamless connectivity in a network to all the imaging modalities. It gives the flexibility to format prints directly from the available modality workstation with just a print command. It is so simple that within

less than a minute the print is ready to be delivered. Especially for ultrasound applications, DS820 is ideal as it offers direct connectivity to an ultrasound system using USB. So, as a standalone printer it can be just connected to your ultrasound system.

Contact:

Konica Minolta Healthcare India Pvt. Ltd
Office No. 201, 2nd Floor,
Atirum-2, Andheri-Kurla Road,
Chakala, Andheri-East,
Mumbai-400093, India.

Aeroscan Digital Ultrasound Systems

KONICA MINOLTA Healthcare India with their Digital Ultrasound AeroScan range caters to variety of segments in Radiology, Gynecology, Cardiology, & General Imaging. With Aeroscan, Konica Minolta Healthcare India can boast of providing the best in class imaging systems at affordable cost. These systems are created for excellent Image Quality & Color pick-up, Stable & Robust hardware.

Greater Confidence in General Imaging

AeroScan's advanced ultrasound platform provides superb image quality, intuitive user interface & fast scanning response. It provides high image resolution & good penetration. User-friendly interface simplifies the daily work-flow. Features like Micro-Scan, Compound Imaging, and Panoramic Imaging give better precision in imaging practices.

Safeguarding the Heart

With high resolution, modern interface & quantification tools help customers for cardiac studies. AeroScan range offers extraordinary color & sensitivity that enhances the user's confidence in Cardiac Imaging. Features like TVI, TDI and easy Stress Echo workflow help offer the best in Cardiac Imaging.

Reaching out to Every Point-of-Care

AeroScan's premium high density linear probes give users an indispensable tool for point-of-care applications which include Regional

Nerve Block, Musculoskeletal & Rheumatology. A high frequency platform up to 18 MHz allows superficial image quality to be perfect and makes flow quicker & easier.

Protecting Investments

Konica Minolta's widespread service team also ensures quick & flexible solutions along with upgrade of imaging parameters keeping one updated with the latest Imaging Techniques.

The AeroScan range offers smart entry-level B/W models, B1 & B2 digital imaging systems with 12" & 15" LCD displays. Their Color Doppler Segment offers Portable as well as cart-based models. In mid-range segment, Konica Minolta offers CD30 that comes with high density probes offering excellent imaging, wide angle TVS probe with 200° field of view, easy GUI with quick selection on 8" touchscreen LCD display, Panoramic Imaging, Elastography & 3D/4D imaging.

In high-end range, Konica Minolta offers AeroScan CD45, which is equipped with powerful 4D functions, intelligent workflow which perfectly helps to meet a wide variety of GI needs. It is equipped with latest features like SonoNT & SonoAVC follicle supporting in TV Volume probe, Elastography on the high frequency probe.



Contact:

Konica Minolta Healthcare India Pvt. Ltd
Office No. 201, 2nd Floor,
Atirum-2,
Andheri-Kurla Road,
Chakala,
Andheri-East,
Mumbai-400093, India.

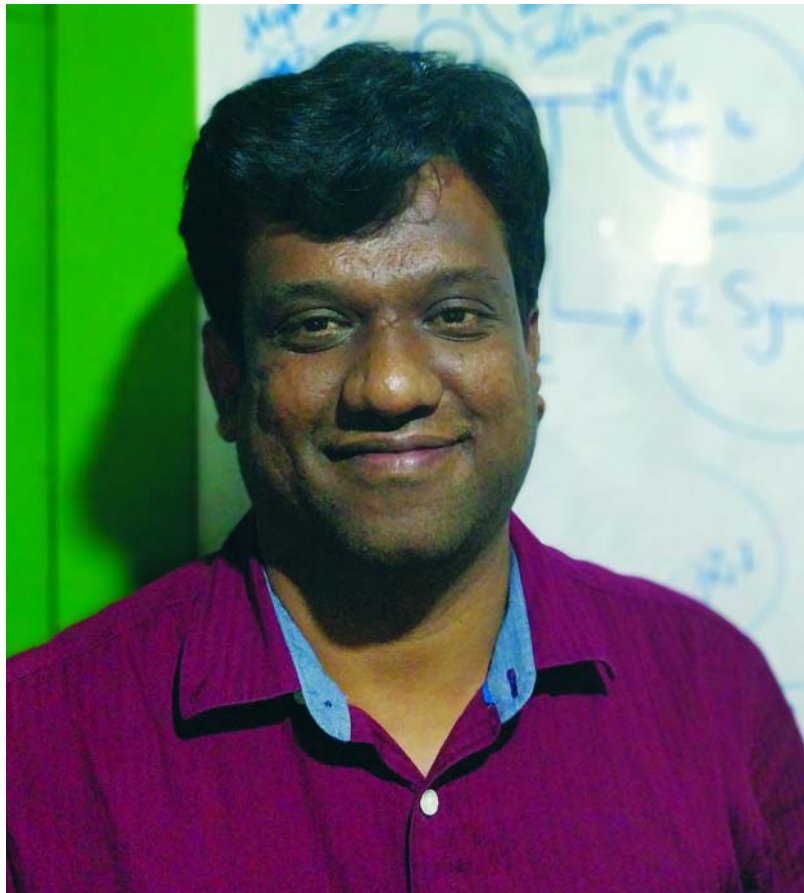
Multi-institute collaboration for cutting-edge research and development

Dr Vasantha Venugopal, MD, Medical Imaging Lead, CARING, Mahajan Imaging, New Delhi, showcases three examples on collaborations turning into successful research / product stories

In January 2018, Dr Harsh Mahajan, Founder and Chief Radiologist of Mahajan Imaging, finally realised a long-held vision and dream of bringing together engineers, scientists, radiologists and pathologists under one roof to break the silos in which they traditionally operate with the singular goal of helping develop clinically relevant diagnostic solutions. Thus, was born CARING – the Centre for Advanced Research in Imaging, Neuroscience & Genomics.

In less than one year, CARING has managed to break many traditional barriers and achieve significant short-term success – a paper in the Lancet, 18 papers at the Radiological Society of North America conference in 2018 and about 30 at the European Congress of Radiology in 2019 and co-developed more than 15 artificial intelligence algorithms, one of which was launched at RSNA with great fanfare.

But the single greatest achievement



which has truly enabled this is the fact that CARING relies entirely on multi-institute global collaborations – currently at about 23. The most important aspect of developing any meaningful collaboration is to establish one's niche and work within that niche ONLY. It is critical to realise that the moment you start getting into your collaborators turf, it becomes hard for the collaborator to trust you.

Example 1

- Large medical device company: GE healthcare
- World's first on device radiology AI solution for detection of Pneumothorax on Chest X-Ray

GE Healthcare recently launched a portable X-Ray machine with an inbuilt AI algorithm which can alert for the presence of pneumothorax. CARING and Mahajan Imaging were an integral part of the development of this device. The collaboration covered the entire development pipe line, right from ideation and designing the training protocol for AI, to data curation, annotation and validation of the algorithm performance. The automated chest cavity and lung segmentation protocol devised during the development of this algorithm will be presented during a scientific session at the upcoming European Congress of Radiology. A video describing the collaboration is at bit.ly/CARING-GE.


Example 2

- Artificial Intelligence Startup: Qure.ai
- First paper on AI in the Lancet – Automated Detection of Critical Findings on Head CT

We partnered in the retrospective

validation of an AI algorithm developed by Qure.ai, based in Mumbai. This algorithm can automatically identify intracranial bleeds on head CT scans. We provided the data for validation and scrutinised the performance of the algorithm on individual cases and helped hypothesize the reasons and scenarios for failure. This work was published in *The Lancet* in October 2018. This is the first research article exploring the role

CARING performed MRI scans on 100 illiterate women who were taught how to read/write and do basic math over a period of six months. The MRI scans included both resting state and activity based functional MRI, DTI and structural imaging using multi-band sequences, which were provided by Philips Healthcare for the study – the first such instance in India. Researchers from MPI defined the technical protocols and did the



IN LESS THAN ONE YEAR, CARING HAS MANAGED TO BREAK MANY TRADITIONAL BARRIERS AND ACHIEVE SIGNIFICANT SHORT-TERM SUCCESS – A PAPER IN THE LANCET, 18 PAPERS AT THE RADIOLOGICAL SOCIETY OF NORTH AMERICA CONFERENCE IN 2018 AND ABOUT 30 AT THE EUROPEAN CONGRESS OF RADIOLOGY IN 2019 AND CO-DEVELOPED MORE THAN 15 ARTIFICIAL INTELLIGENCE ALGORITHMS, ONE OF WHICH WAS LAUNCHED AT RSNA WITH GREAT FANFARE.

of artificial intelligence on Radiology published in a leading international medical journal. Subsequently, we have validated their Chest X-Ray algorithm to delineate normal – abnormal Chest X-Rays, work which we are presenting at ECR in February.

Example 3

- Academic Institutes: Jawaharlal Nehru University (JNU), Max Plank Institute (MPI)
- Large Medical Device Company: Philips Healthcare
- Studying the impact of literacy acquisition on the brain

analysis, researchers from JNU conducted psychometric tests and coordinated the entire effort, and CARING performed the neuroimaging. The data is currently being analysed and we expect some unique insights into the functioning of the brain!

While there are many such collaborations and one can go into a lot of depth in all, it is important to note that in each collaboration there is a target defined at the start and each player has a specific role to play. We believe that this is the future of high-end translational research and continue to push forward!

New age healthcare solutions from Fuji Films

Chander Shekhar Sibal, Sr Vice President at Fujifilm India, details how the company is continuously innovating-creating new technologies, products and services that inspire and excite people everywhere



Fujifilm has leveraged its imaging and information technology to become a global presence known for innovation in healthcare, photo imaging, graphic arts, recording media, industrial products, optical devices, highly functional materials and other high-tech areas. The company is continuously innovating-creating new technologies, products and services

that inspire and excite people everywhere.

Its products are best in terms of image quality. The major difference is quality and reliability of its products. They have computed radiography (CR), digital radiography (DR) and digital mammography, Synapse Picture Archiving and Communication System (PACS), Endoscopy, Dry Chemistry analyser. The company also has over

30,000 plus installation base across India.

The company's Full Field Digital Mammography - Amulet Innovality is the future of Mammography and certainly has much scope considering the rapid increase in the number of breast cancer cases going undetected in India. In order to provide timely diagnosis, Fujifilm has installed Amulet Innovality in several healthcare centers across the country.

In addition, the development of Tomo biopsies has a fundamental role in early detection the disease. Tomo-guided biopsy can be beneficial in situations such as lesions can only be seen on tomosynthesis, lesions visible in only one view, and presence of subtle masses and asymmetries.

With rising cases of breast cancer in women, there is a pressing need to raise awareness about early cancer detection at grass-roots level. The company believes that innovations in healthcare technologies will definitely empower and strengthen its efforts, but the imperative today is to strengthen its reach with a shared vision of helping people fight this growing menace.

The company has been making concerted effort to raise awareness and

promote early detection and treatment of breast cancer in India. It had held several roadshows across the country to create awareness of the disease and consistently supported the pink ribbon campaign via Pinkathon. The company has tied up with more than 25 hospitals to raise awareness and promote early detection facilities. Fujifilm firmly believes that with precise treatment and correct knowledge India can save many lives.

Fujifilm has recently organised a symposium with the message, 'Evolving Trends in Breast Imaging', in association with IGMC, Shimla and Government Medical College,

Aurangabad. The event reached and impacted the minds of more than 300 radiologists/oncologists across North and West region. Fujifilm has also partnered with the Indian Cancer Society to provide practical knowledge and quality screening for women of Delhi and NCR who cannot afford quality treatment. Under the partnership, Fujifilm is conducting medical camps to generate awareness about breast cancer and breast self-examination. Free breast cancer screenings will be organised for women above 40 years. It is an endeavour to utilise Fujifilm's state-of-the-art technology for the betterment of people

at large.

During December 2018, the company successfully organised its First User Meet on Digital Mammography in Delhi. The purpose of the meeting was to create a family of users. The voice and premiers of this industry who can fight against breast Cancer. And that's why the Program was named as Amulet TAB. TAB meaning-Together Against Breast Cancer. The company received overwhelming support for the same. "We pledge that we would relentlessly continue our CSR initiatives and support the noble cause: Fight against Breast Cancer Program," promises the company.



For any queries, call 022-67440002 or email at healthcare@expressindia.com

THE BOOSTER FOR THOSE WHO BOOST THE HEALTHCARE SECTOR.

When it comes to nourishing this sector, experts prescribe a regular diet of Express Healthcare. The magazine has been the source of a healthy dose of expert information, incisive category analysis and remedies for industry ailments since 20 years, thereby earning the trust of industry professionals. It's no wonder then that the finest in the field trust the foremost in the field.



THE LARGEST
CONGRESS ON
ADVANCED
DIAGNOSTICS



Coming
Soon
**FUTURE OF
DIAGNOSTICS**

AWARDS | CONFERENCE | EXHIBITS

Join the doyens of diagnostics as they strategise to
serve unmet needs in healthcare.

Watch this space for more.

FOR MORE INFORMATION

Content: Raelene Kambli - Mobile: +91 9819614430, Email: raelenekambli@gmail.com, Prathiba Raju - Mobile: +91 9810514618, Email: prathijourno@gmail.com

FOR SPONSORSHIP & EXHIBIT

MUMBAI/AHMEDABAD/BENGALURU: Douglas Menezes - +91 9821580403, douglas.menezes@expressindia.com,

Nirav Mistry - +91 9586424033, nirav.mistry@expressindia.com, **DELHI-NCR / CHENNAI / KOCHI / COIMBATORE:** Sunil Kumar - +91 9810718050, sunil.kumar@expressindia.com

HYDERABAD: E Mujahid - +91 9849039936, e.mujahid@expressindia.com, **KOLKATA:** Ajanta Sengupta - +91 9831182580, ajanta.sengupta@expressindia.com

FOR DELEGATE REGISTRATIONS: Vinita Hassija, Email: vinita.hassija@expressindia.com

NEVER STOP

TRANSFORMING THE FUTURE OF PATIENT CARE

We've spent 80 years
creating value from innovation

FUJIFILM
Value from Innovation



www.fujifilm.in

FDR Solutions | FCR Solutions | Mammography Solutions | Dry Imagers | SYNAPSE (PACS) | Endoscopy | DRI-CHEM

Fujifilm India Private Limited, Unitech Cyber Park, 8th Floor, Tower C, Sector 39, Gurugram 122001.

Contact Number : +91 124 4325500 | Fax : +91 124 4325555 | E-mail : medical@fujifilm.com