SPECIAL REPORT

AGFA HealthCare

March 2013

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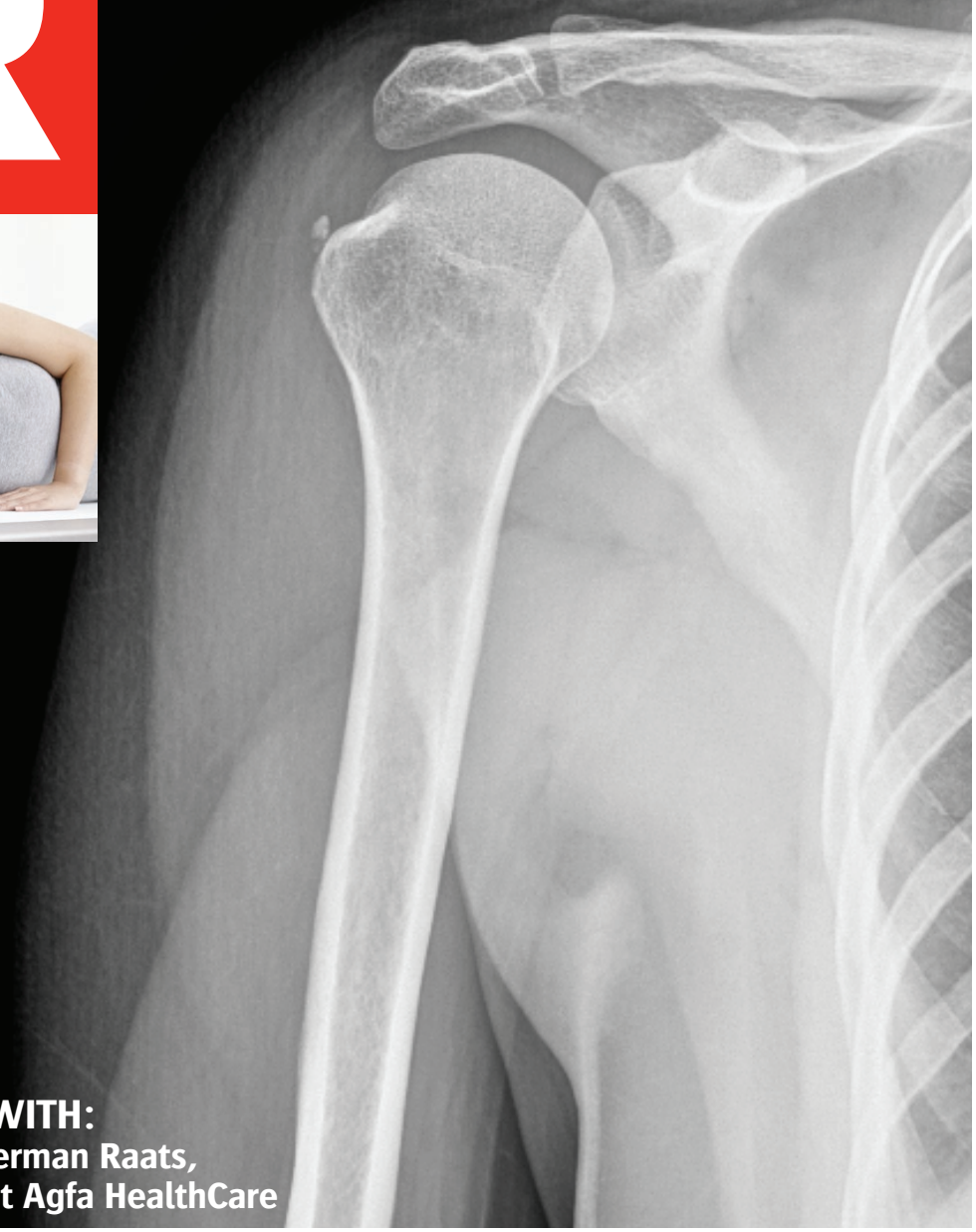

INTERVIEW INSIDE WITH:
» **Dirk Debusscher & Herman Raats, Imaging Executives at Agfa HealthCare**

Direct Radiography: in focus and on track

What will the hospital of the future look like? State-of-the-art technology is allowing us to move healthcare forward at an amazing pace. Would a doctor from five years ago recognize his hospital today? Probably not! But one thing that has and will remain the same is the commitment of healthcare providers to continually improving patient care – and the commitment of Agfa HealthCare to supporting that goal with solutions that use state-of-the-art technologies, like Direct Radiography (DR).

DR technology provides a host of benefits to hospitals, caregivers and patients – which in the end, all translate to better care. Excellent image quality, lower costs, smoother workflow, more efficient use of resources and infrastructure, the potential for lower radiation dose… These are just a few of the benefits from DR.

All over the world, radiologists are using DR to solve their own, unique challenges. By bringing everything together in this Special Report, we can give DR the focus it deserves. And we can shed some light on its future: what is in development, what are the next steps, what can you expect from this technology going forward?

As an imaging specialist with more than 100 years of healthcare experience, Agfa HealthCare has an important role to play in the changing world of the hospital. This and other editions of the Special Report, each dedicated to a specific topic or technology, will allow us to provide transparency on the issues healthcare is facing today. We will focus the Special Reports on the needs of our customers, covering the topics that are relevant and critical for you, continuing to act as a partner supporting you in achieving your short- and long-term goals.

So read on, discover how your colleagues all over the world are experiencing the benefits of this important evolution in healthcare. And how we are helping them reach their objectives!

For more information on our customers, our products and our vision, don't hesitate to visit our website www.agfahealthcare.com and blog http://blog.agfahealthcare.com.

Good reading!

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SYDNEY ADVENTIST HOSPITAL, AUSTRALIA

Hospital moves to mobile DR to handle rising service demands

Major Australian hospital expands its clinical facilities including X-ray to meet an expected 60% increase in demand for services

INTERVIEWEES Andrew Featherstone, Section Manager, General X-ray and Theaters · Geoffrey Andrews, Director of Operations, Radiology

"Thanks to MUSICA^2, the continuous quality seen in all images means better diagnostic confidence for the radiologist."

ANDREW FEATHERSTONE,
Section Manager, General X-ray and Theaters

In a regional first, Sydney Adventist Hospital installs two DX-D 100 mobile DR solutions with wireless detectors to expedite images/data to PACS, HIS and beyond.

Its original name was The Sydney Sanitarium, which is why today's 500-bed Sydney Adventist Hospital is still known locally as "the San". Throughout the Asia-Pacific region, the San is highly regarded for its charitable work in developing nations with the 1986 launch of the HealthCare Outreach (HCO) Program. Since then, almost 100 HCO trips to 13 countries have been made with over 3,000 free surgeries performed.

In Sydney, the hospital's reputation focuses on cardiology (Australia's first integrated private cardiac center), orthopaedics including sports medicine, cancer treatment and support, and New South Wales' largest private emergency care service. About 2,200 staff and 700 physicians provide services to more than 50,000 inpatients and over 160,000 outpatients annually.

LIMITED SPACE AND AGING POPULATION IMPACT SYDNEY'S NEED TO GROW

While many nations feel the pinch of the global financial recession, Sydney's economy has remained strong. This has resulted in many new residents from within Australia as well as expatriates. Yet the city is bounded geographically by its famous harbor to the east, preserved national parkland to the north and south and mountains to the west.

"Go about 30 km in any direction and you reach the city's limit," says Geoffrey Andrews, Director of Operations for Radiology. "We can't grow outward anymore. Existing infrastructure and facilities have to adapt within these limits to handle the increasing population."

For the San, a major expansion of its original Clinical Services Building and adjacent structures is currently underway to meet an expected 60% increase in demand for medical services between now and 2026. "It is about more people living in our service area, especially the aged," he says. "Working faster and smarter means adopting new practices made possible by the latest advances in technology."

In radiology, this means new solutions to expedite workflow and disseminate information to keep healthcare processes flowing smoothly. But solving a vexing bottleneck at the San involved mobile radiology.

Says Andrew Featherstone, Section Manager, General X-ray and Theaters, "We've been using mobile CR to perform bedside exams throughout the complex, including surgical theaters, accident & emergency medicine, intensive care and neonatal care units. But after every procedure, exposed phosphor plates had to be walked back to radiology for processing before uploading on our IMPAX PACS. It could take 15 minutes to half an hour to complete this step."

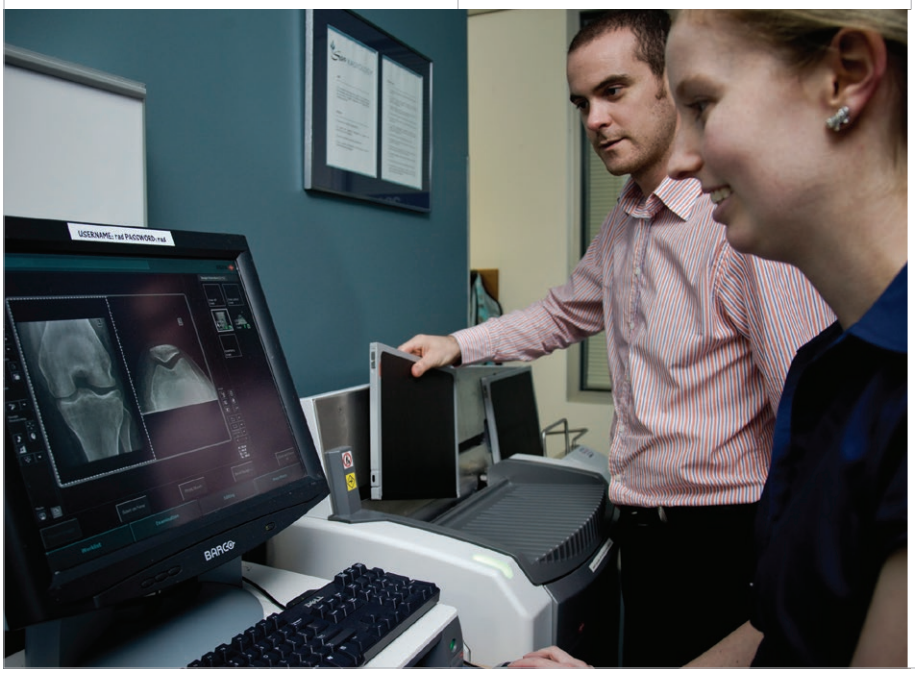
While attending a recent Radiological Society of North America (RSNA) exposition, Geoffrey Andrews and a team from the San saw a demonstration of Agfa HealthCare's original DX-D 100 mobile DR solution. With today's wireless connectivity, he and his team were intrigued by its ability to quickly link to IMPAX along with its excellent image quality. "Wireless linkage truly speeds mobile workflows thanks to the near-instant availability of images and data on IMPAX, uploaded right at the patient's bedside," Geoffrey Andrews says. "We saw great potential to schedule more mobile exams throughout the hospital because technologists didn't have to continually run back and forth to process plates."

CONSISTENT IMAGE QUALITY ACROSS MODALITIES A KEY MUSICA² BENEFIT

Another benefit is the mobile solutions' ability to run all images through MUSICA² image processing software. "All our image sources, from multiple, general procedure rooms to Agfa HealthCare's DX-G CR system, now display consistent image quality across exam types thanks to the high-quality uniformity this software adds," says Andrew Featherstone. "The DX-D 100 brings bedside mobile procedures up to this high level so all imaging has the same look, feel and detail regardless of its source."

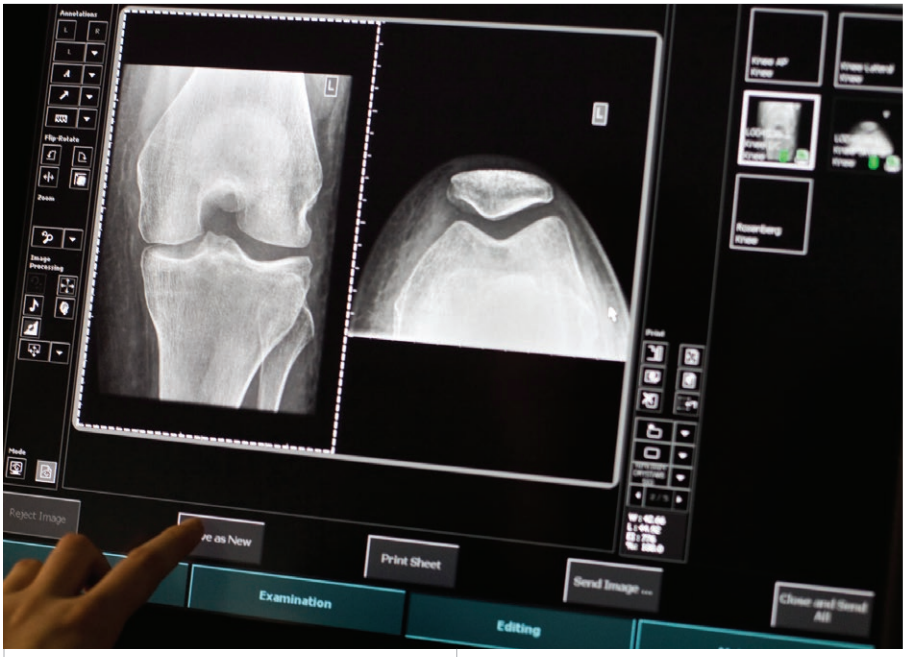
> "The DX-D 100 speeds mobile workflows thanks to the near-instant availability of images and data on IMPAX, uploaded right at the patient's bedside."
>
> GEOFFREY ANDREWS,
> Director of Operations, Radiology

The DX-D 100 was chosen following various on-site evaluations for image quality, connectivity, and user friendliness. One benchmark involved comparing image results from three different vendors.

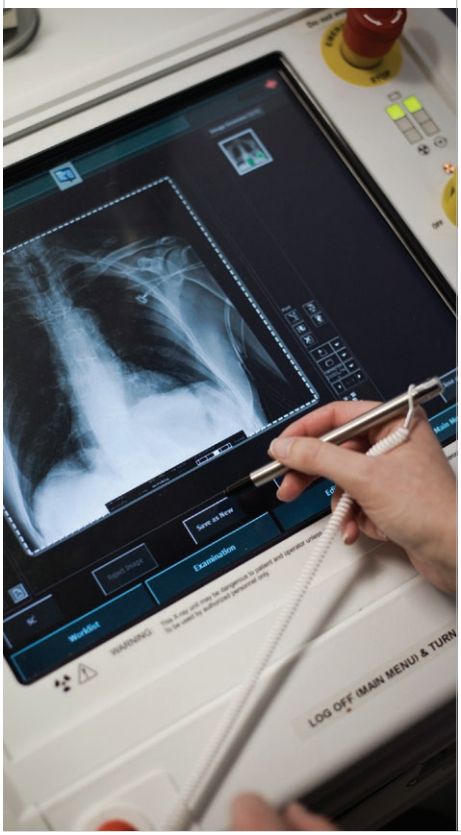


DID YOU KNOW...

- Dr. M. Kellogg, who founded the original Sydney Sanitarium, was the brother of Dr. John Harvey Kellogg, inventor of the corn flake breakfast cereal still sold under the Kellogg name.
- The San is first to have Agfa HealthCare's DR mobile units with wireless detectors, not only in Australia, but the entire Asia-Pacific region.
- The San's expanded Clinical Services Building will include space and facilities to support up to 14 new operating theaters, 180 inpatient beds, an Integrated Cancer Center and new patient arrival area. Estimated construction costs are 148 million euros.



"Images from the various solutions were sent to one of our radiologists, who reviewed them in detail," says Geoffrey Andrews. "We were already sold on the DX-D 100's light weight, easy mobility, user-friendly operation, and wireless IMPAX connectivity. Now, image quality would be the deciding factor." Reviews were conducted 'blind', meaning only a select few in radiology knew the source of the trial images.



"The image quality of the DX-D 100's needle phosphor plates was at the top of the range," adds Andrew Featherstone. "The contrast, latitude and detail in all images covering various exams mean better diagnostic confidence for the radiologist." Two DX-D 100 mobile solutions were deployed at the San in mid-January.

Almost immediately, management wanted to evaluate a novel time- and work-saving feature involving the DX-D 100 and the San's customized RIS.

Andrew Featherstone says, "We're now experimenting with registering new ward and emergency admissions directly to our RIS through the mobile DX-D 100. We're pushing the boundaries to see how much efficiency can be gained to meet the challenges ahead."

Overall, the department hopes to achieve a 25% productivity increase in performing mobile exams and dispatching radiologists' reports as a result of the DX-D 100's many time-saving features predicated on quick access to images.

Andrew Featherstone adds an underappreciated DX-D 100 benefit is actually quite valuable: the untethered cassette. "Not having a cable dragged about the floor and in contact with the patient's bed goes a long way to reduce potential tripping hazards, especially in emergency situations where everyone moves quickly. •

"Not having a cable dragged about the floor and in contact with the patient's bed goes a long way to reduce potential tripping hazards, especially in emergency situations where everyone moves quickly."

ANDREW FEATHERSTONE,
Section Manager, General X-ray and Theaters

SOLUTIONS

DX-D 100 mobile DR solution with wireless detector

» Fast assessment of images after exposure
» Improved patient and operator comfort
» Higher image quality for improved diagnostic confidence
» Cesium Iodide DR detector for higher sensitivity (DQE)
» MUSICA^2 image processing software for outstanding contrast detail and exam-independent, consistent image quality
» Excellent connectivity to PACS, HIS/RIS and imagers
» Wireless detector means no attached cable; improved flexibility

AGFA HEALTHCARE'S CONTRIBUTION

» The DX-D 100 mobile DR solution for bedside or emergency use performs a wide range of general X-ray studies, even for the least mobile patients. Short exposure time means images are immediately available for validation following acquisition. Its wireless functionality supports quick, seamless integration with RIS/PACS or HIS.

FRIEDRICHSHAFEN HOSPITAL, GERMANY

Continuing 100-year history of innovation with installation of new DR solution

DX-D 600 offers Full Leg / Full Spine* and features MUSICA² image processing software

INTERVIEWEES Johannes Weindel, CEO · Gerhard Blauert, Head Technologist

> "From the beginning of the project until operation started, we received great support from Agfa HealthCare including all questions and interfaces concerning hardware, software licensing, and more."
>
> JOHANNES WEINDEL, CEO

Friedrichshafen is the second largest city on the shores of Lake Constance, in the south of Germany. Over one hundred years ago, the hospital that would become Friedrichshafen Hospital was built here, in line with standards considered modern at that time. As a result of the city's expansion, it became clear in the early 1970s that further modernization of the hospital was necessary. Founded in 2005, Friedrichshafen Hospital continues to be the key provider of care in the area. The recent implementation of Agfa HealthCare's DX-D 600 direct radiography solution is the latest step toward the hospital's goals of diagnostic accuracy, optimized processes, and economic viability.

Patients today are very well informed, both about medical conditions and the progress medicine is making in science and routine practice, says Johannes Weindel, CEO of Friedrichshafen Hospital. "Patients demand the best quality care – and this is what we offer," he says. When it comes to making healthcare decisions, patients in the 21st century have more options than ever before. The medical technology in place at a hospital or clinic plays a central role for patients in making these choices.

The focus at the hospital is on ensuring the well-being of patients, at all stages in the treatment process. "They should be entering the hospital campus with a positive feeling, and leaving it again in a good state of health. We aim to provide more safety and comfort to patients, in every respect," says Weindel.

DX-D 600 MARKS FIRST INSTALLATION OF ITS TYPE IN GERMANY

In the context of these goals, when looking for a new DR solution, hospital administration at Friedrichshafen decided in favor of Agfa HealthCare's DX-D 600, a fully automated direct radiography solution. The price-performance ratio was a major factor in the decision-making process, recalls Weindel; as was the advanced state of its technology, and the hospital's positive experience with the Agfa HealthCare support and sales team.

Benefits the hospital expects to achieve with the DX-D 600 include high image quality, improved accuracy in readings, and optimization of processes in the areas of radiology, outpatient care, surgery, and post-therapeutic care. Other advantages are the ability to archive and share images, and the option of transmitting images electronically to referring physicians and post-therapeutic care organizations.

HIGHER LEVEL OF AUTOMATION ADDS CONVENIENCE TO DAILY ROUTINE

Compared to its predecessors, the new DX-D 600 offers a higher level of automation. In addition to horizontal and vertical auto-tracking, an auto-positioning function has been integrated: thanks to stored protocols, the DX-D 600 applies the correct acquisition position for the various types of exams. At the click of a button, all components are positioned automatically. Horizontal and vertical tracking supports technologists by maintaining the focus-detector geometry despite movements of the table or wall stand.

Further options include Full Leg / Full Spine with automatic image stitching. The intelligent self-adapting MUSICA² image processing software automatically analyzes the characteristics of each image and ensures consistency of image quality for mobile as well as fixed acquisitions. This characteristic, according to Head Technologist Gerhard Blauert, is offered only by Agfa HealthCare, and significantly enhances reading for radiologists.

FULL SUPPORT DURING INSTALLATION

During the installation phase, staff at the hospital experienced full support from Agfa HealthCare, says Weindel. "From the beginning of the project until operation started, we received great support from Agfa HealthCare, including all questions and interfaces concerning hardware, software licensing, and more."

"With a total of 400 full leg and 5,000 thorax acquisitions annually, the fully digital solution will act as our workhorse for routine exams."

GERHARD BLAUERT,
Head Technologist

"With a total of 400 full leg and 5,000 thorax acquisitions annually, the fully digital solution will act as our workhorse for routine exams," says Blauert. The technologists have adapted their workflows; now they define the required parameters and the suitable detector before each acquisition. Inserting and transporting cassettes is a thing of the past, and there is no longer any prolonged waiting time for image read-out. After 6 to 8 seconds, the preliminary image is available for a quality check. Image quality, says Blauert, is higher in comparison with existing cassette-based systems.

One of the key benefits is the added convenience for technologists, reports Blauert. Images are immediately available for processing or reading, and there are no unnecessary waiting times for staff or patients. Re-acquisitions due to any questionable image quality are no longer necessary. After the adaptation of processes, the solution has been embraced by the technologists; added time for interaction with patients, longer intervals between exams, and reduced stress are welcome improvements. There is also the potential to increase the number of exams performed, says Blauert.

NEEDLE-BASED DETECTOR PLATES FOR CONSISTENT QUALITY

A next step for management at Friedrichshafen will be to replace remaining plates with the most advanced needle-based detectors from Agfa HealthCare. "This will help us achieve consistent quality of legacy analog systems and images in comparison with the images from this fully digital solution," says Weindel. "There is a significant benefit from this also for referring physicians and post-therapeutic care organizations: they will no longer receive images of differing quality from an individual hospital or radiology department." •

SOLUTIONS

DX-D 600

» Higher level of automation
» Offers horizontal and vertical auto-tracking as well as an auto-positioning function which positions all components automatically for defined exam types

AGFA HEALTHCARE'S CONTRIBUTION

» MUSICA² image processing software automatically analyzes the characteristics of each image and provides consistency of image quality for mobile as well as fixed acquisitions, facilitating reading.
» The fully automated DR solution increases productivity; reduced exam and waiting times result in increased satisfaction on the part of staff and patients.

DID YOU KNOW...

» The hospital was inaugurated in 1892 under the name of "Karl Olga Krankenhaus". At the time, Friedrichshafen had 3,500 inhabitants. Today, approximately 60,000 people live here.
» Friedrichshafen used to be a hub for dirigible construction. Even today, companies with roots in that industry are the largest employers in the region.

* Not available in Canada and the United States.

VIJAYA DIAGNOSTIC CENTRE, HYDERABAD, INDIA

DX-D 300's rapid image display helps diagnostic center perform more exams

One of India's largest private X-ray centers has installed a state-of-the-art DR solution to modernize its practice and increase patient studies

INTERVIEWEE Dr. Surender Reddy, Owner & Managing Director

> "I consider the DX-D 300 an important tool that keeps our Centre at the forefront of diagnostics."
>
> DR. SURENDER REDDY,
> Owner & Managing Director

Hyderabad, at the crossroads of Northern and Southern India, is among the nation's fastest growing areas thanks to the flourishing IT, biopharmaceutical and media industries. With nearly 16 million people, it is India's sixth most populous metro area.

Healthcare is also flourishing, with a 10 percent annual increase in patients forecast over the next decade. Demographic expansion, rising incomes and an aging population translate into disease profiles shifting from chronic ailments like malnutrition and infectious diseases to lifestyle-related disorders, such as arterial and circulatory conditions, cancer and diabetes.

With 22 locations across South India, Vijaya Diagnostic Centre has been meeting the region's needs for radiology studies, as well as pathology and microbiology tests, for more than 30 years with a wide range of technologies under one roof. It was founded by Dr. Surender Reddy, who has been instrumental in bringing new, state-of-the-art imaging technologies to India. The main center in Hyderabad is equipped with 128 slice CT, a dual head SPECT gamma camera, PET CT, and a 3.0 Tesla high field MRI. The latest imaging innovation to be added to this roster is DR, performed in a newly renovated procedure room. The center serves a wide range of public and private sector clients including banks, airlines, factories and other prestigious organizations.

DR'S IMMEDIATE IMAGE DISPLAY ENABLES MORE EXAMS

"The area's recent affluence has contributed to more lifestyle diseases as well as increased demand for our services by new businesses wanting pre-employment testing, including chest X-rays," Dr. Reddy says. "And once hired, many companies pay for X-ray exams for an employees' immediate family, such as the employee's spouse or children. As a result, we've seen our practice dramatically grow from one location in 1981 to 22 sites today. The average, daily X-ray volume at each location is 200 exams spread across multiple modalities, so we're always seeking better ways to handle this growing patient workload."

But finding the right approach to faster exams without sacrificing diagnostic confidence is a key challenge.

Until last year, Vijaya Diagnostic Centre relied on a variety of dispersed digital modalities from multiple vendors throughout its many locations linked by a third-party PACS. A primary limitation of many of these modalities was a 4 to 6 minute delay for images

to display following acquisition. The technologist had to wait for each view to appear before proceeding to the next one, or releasing the patient. Over time, it severely limited the number of scheduled exams despite most locations being open 14 hours daily.

"When we upgraded a procedure room at our main facility, we saw an opportunity not only to advance to DR's excellent image quality, but also increase staff productivity and patient throughput thanks to its near-instant image display," said Dr. Reddy. At the same time, the doctor was impressed by DR's potential to reduce X-ray doses to the patient due to its Cesium Iodide detector*.

And with space always at a premium, the Centre decided a small footprint solution was desirable. Dr. Reddy and his radiology team asked to evaluate Agfa HealthCare's compact, floor-mounted DX-D 300 DR solution.

DX-D 300 PROVIDES AFFORDABLE PATH TO DR IN PRIVATE FACILITIES

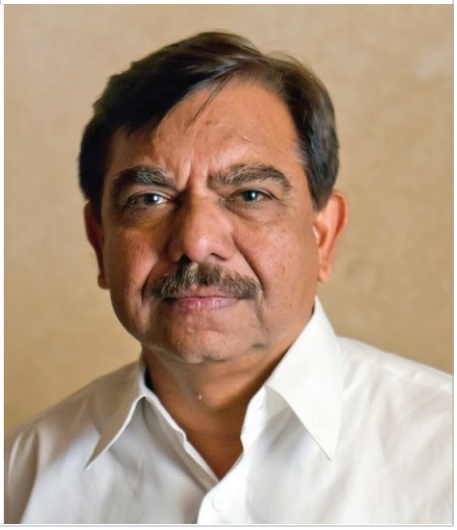
Radiology staff at Vijaya Diagnostic Centre found the DX-D 300 to be a straightforward, affordable solution offering many productivity benefits associated with going direct-digital. "Our radiologists felt it had the best blend of image quality with immediate image availability," Dr. Reddy says. "Its MUSICA[2] image processing software also provides a consistent display regardless of the exam type performed. The quality doesn't vary from one patient to the next, or between different technologists."

This consistency reflects positively on the Centre's professional reputation since physicians throughout India are often sent images for information or consultation. Also, because many foreign nationals now work in India on temporary visas, it is not unusual to send image files to home-town doctors in Canada, Australia, the UK or US.

Today, the main center's DR procedure room can accommodate 150 or more patients daily just for the DX-D 300 because of the shorter exposure-to-display time, which Dr. Reddy says helps make it cost-effective in the long run. Technologists in particular like the ability to stay with the patient at all times, along with shorter waiting intervals between procedures that the DX-D 300's fast image display fosters. The solution's fully-motorized U-arm makes

"The area's recent affluence has contributed to more lifestyle diseases as well as increased demand for our services by new businesses wanting pre-employment testing, including chest X-rays."

DR. SURENDER REDDY,
Owner & Managing Director



positioning easy even for difficult exams, such as those involving elderly or limited-mobility patients.

Dr. Reddy also believes the solution has the potential to reduce X-ray dose to the patient, a benefit he feels results from less peak kilovolt power (kVp) used for exams. "I consider the DX-D 300 an important tool in our range of modalities that keeps our Centre at the forefront of diagnostics."

"DR's ability to immediately display the image after acquisition increases staff productivity and patient throughput."

DR. SURENDER REDDY,
Owner & Managing Director

AGFA HEALTHCARE'S CONTRIBUTION

» The DX-D 300 is a versatile, highly affordable solution offering image quality and productivity benefits of Direct Digital. In addition to excellent image quality, its Cesium Iodide detector technology offers immediate image availability. MUSICA² image processing delivers consistency and excellent contrast detail.

DID YOU KNOW...

» Hyderabad was once a center for trading diamonds and pearls. Its new glitter is the Telugu language film industry, known popularly as Tollywood.

» Hyderabad has more than 1,300 IT companies and houses the Indian headquarters of Microsoft, Google and Facebook's only office in India.

SOLUTIONS

DX-D 300 floor-mounted DR solution

» Handles a broad range of general and specialty X-ray studies

» Flexible and affordable, combining a single detector with fully motorized positioning

» 'U-arm' allows lateral cross-table exams on rolling tables

» Cesium Iodide DR detector technology offers potential for dose reduction

* Note: Potential for dose reduction claim only applies to the DX-D 100, DX-D 300, DX-S, and DX-M (general radiography only) systems.

DR Services: the right level of care for your DR solution

By choosing a DR solution from Agfa HealthCare, you're creating a first-class working environment at your hospital, and enhancing your patients' feeling of comfort and peace of mind, too. DR Services help you protect these important advantages.

Services are an essential part of a total DR solution. Agfa HealthCare offers a full range of DR Services, designed to help you maximize the return on your equipment investment and ensure your peace of mind during the entire life-cycle of your DR solution.

DR Services are designed to offer you all the support you require. Reliability is delivered through inspections, maintenance, and spare parts. Enhanced functionality is provided with regular updates and hot fixes. Specialized maintenance and replacement and tube/detector warranties can help you to maximize uptime, and remote services are at hand when you need assistance.

CONSULTANCY SUPPORT AND MORE

Agfa HealthCare's DR Services provide first-class support. Services can cover project management, including consultancy advice on room design, staging, shipment and on-site installation of hardware and software, configuration of installed software, acceptance testing of hardware and software, and user training on installed systems.

Other professional and technical services might include adaptation of default parameters, RIS protocol codes configuration, image quality adaptations and optimization, interface with existing DICOM-compliant equipment, quality control and quality assurance, dose monitoring, and workflow analysis.

DR Services can help you increase your effectiveness, by increasing the efficiency of your DR solutions and maximizing radiography assets. Being more effective translates into a solid feeling of confidence across your daily operations.

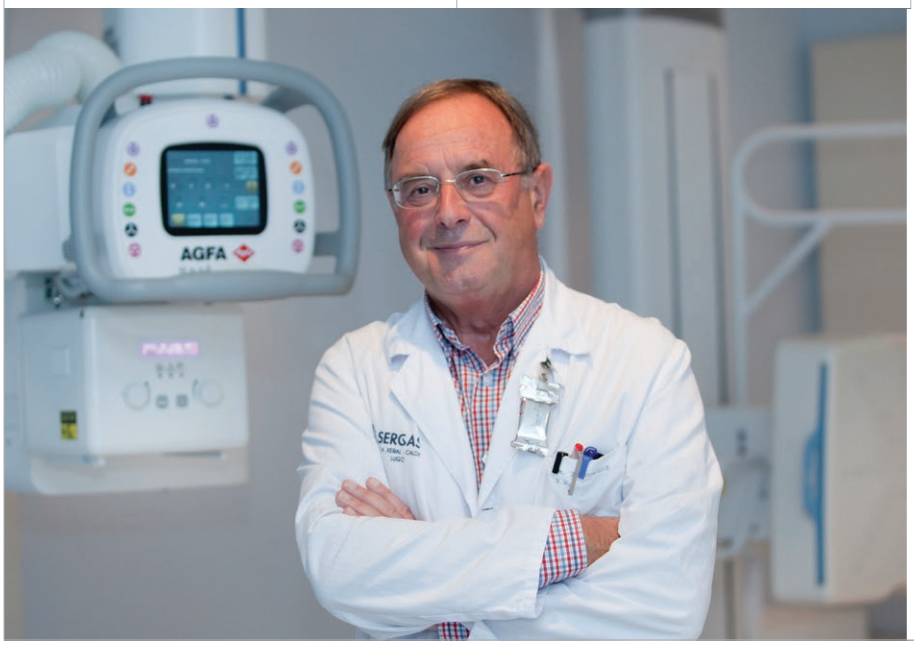
And our add-on Damage Assistance Program for portable detectors protects you in the event of accidental dropping or damages.

CUSTOMIZED TO FIT YOUR NEEDS

Agfa HealthCare offers several different packages of expanded services. Service packages can also be customized to your configuration and needs.

When you opt for expanded, proactive life-cycle support, you can accurately predict your solution's life-cycle costs, keep your configuration up-to-date, and keep uptime as close to 100% as possible.

Agfa HealthCare understands that DR systems require the right level of care. The experts on Agfa HealthCare's high-performance service team understand the technology, and also the environment in which it is used. They're able to anticipate your requirements, and provide you with the services you need to meet the challenges you face, in your department, and across your hospital. •



"DR systems are very demanding. So we need a company that can provide a high level of professional services – such as Agfa HealthCare. I've been working with them for 25 years now, and whenever I've had an issue with DR I've felt fully confident: Agfa HealthCare has a high-performance service team. Throughout all these years, they've met my quality and service requirements. That's why I rely on Agfa HealthCare."

DR. JULIO RODRIGUEZ,
Radiology Service Chief,
Hospital Lucus Augusti, Lugo, Spain

Agfa HealthCare delivers imaging excellence through a comprehensive DR portfolio

Driven by a need to achieve excellent image quality at lower cost and with higher efficiency, radiology organizations are rapidly adopting Direct Radiography (DR). Dirk Debusscher and Herman Raats of Agfa HealthCare outline the market needs, future trends and how Agfa HealthCare is uniquely equipped to help customers make the transition to DR.

Dirk Debusscher, Vice-President Imaging

With over a century of expertise in imaging technology, it was a natural fit for Agfa HealthCare to expand into Direct Radiography. With the DR market worldwide changing and adapting, as different regions move along different paths, Dirk Debusscher, Vice-President Imaging and Herman Raats, Marketing and Sales Director are excited about the possibilities for Agfa HealthCare. "Our expansion into this space makes a great deal of sense," says Debusscher. "We have developed a broad portfolio of products and solutions that meets the unique needs of the market worldwide."

Indeed, organizations of all sizes recognize the benefits of DR, from radiology departments at the largest hospitals to private radiology practices, and everything in between. While all would like to leverage DR to help them improve workflow and make the right diagnosis in the most effective way possible, market realities dictate what is actually possible.

DIFFERENT RATES OF ADOPTION

In emerging markets, such as Latin America and Africa, there are more likely to be constraints on capital investment. These markets are less concerned with workflow and dose management at this time, instead focusing on how digital technology can help them generate the best images possible. Many radiology practices here are taking advantage of the big improvements that Computed Radiography (CR) offers over conventional film-screen systems.

In established markets, like North America and Western Europe, there are pressures to reduce costs and radiation dose.* There is a growing expectation to perform imaging more efficiently, seeing more patients with the same infrastructure and staff. These markets are moving rapidly towards DR so that they can take advantage of both improved image quality and workflow efficiencies.

Agfa HealthCare DR solutions offer significant workflow benefits. "With DR solutions, the workflow is fully automated based on the fact that the detector is built right into the modality," explains Raats. "When customers make an exposure they immediately see the image on the screen of the NX workstation. Should the patient require repositioning and a second exposure, the technologist can do it right away. This smooth, efficient workflow means that technologists can perform imaging exams for more patients in a shorter amount of time without adding more modalities."

There is a way for all sizes of organizations across the different markets to experience these workflow and related benefits without totally replacing their analog modalities: Agfa HealthCare DR Retrofit.

MAKING DR ACCESSIBLE TO ALL

Agfa HealthCare's DR Retrofit solution allows facilities of all sizes to make the critical move from analog to digital. It's a cost-effective way to give a second life to older modalities that are still functioning well.

"Our DX-D Retrofit solution lets customers leverage their existing X-ray equipment investment to experience the benefits of Direct Radiography immediately," says Raats. "Essentially, it puts a DR detector into a cassette format that then fits into the analog modality. Within a couple of hours the customer is experiencing all the workflow and image quality advantages of DR without having to completely replace their CR and film-based X-ray equipment. This significantly lowers the barrier to DR entry for smaller facilities, private clinics and even non-medical customers like veterinary practices."

Even among customers who have completely moved from analog, many are still using a mix of CR and DR systems. This is where Agfa HealthCare's NX platform offers advantages. "We use the NX platform for all of our CR and DR products, including the DX-D Retrofit," says Raats. "This makes it very easy for our customers to transition between CR and DR systems. Once they are trained on one, they automatically know how to use

Herman Raats,
Marketing and Sales Director

the other. The interface and workflow are the same."

Mobility is also making DR more practical for many healthcare organizations. "Mobile DR solutions that allow you to bring the modality to the patient's bedside, rather than bringing the patient to the modality, are growing very strongly," says Debusscher. "Our DX-D 100 mobile DR system is fantastic in applications where patients can't be moved or when time is of the essence. You can add a wireless portable DR detector for even greater flexibility and it's motorized so any staff member can easily maneuver it."

"In mobile DR applications, high image quality can be difficult to obtain," says Raats. "You are dealing with patients who are difficult to stabilize or who might not be aware of what is happening. The repeat rate is high at around 20%. Since our mobile DR solution uses our MUSICA^2 image processing, you can get an excellent image the first time, reducing the repeat rate while increasing efficiency."

SETTING THE BENCHMARK IN IMAGE QUALITY

MUSICA^2 is Agfa HealthCare's gold-standard image processing software. The processing provides image visualization of excellent quality. First offered in their CR products, it was a natural fit to bring the benefits to their DR portfolio. "Our customers tell us that the image processing and quality with our MUSICA^2 software is the best they have seen." says Raats.

MUSICA^2 also provides optimal parameter settings. The software automatically detects what type of exam is being performed and then makes adjustments so the technologist doesn't have to change the parameters of the software visualization of the image.

Agfa HealthCare offers both Cesium Iodide (CsI) and Gadolinium Oxy-Sulphide (GOS) phosphor detectors in their DR products, with GOS offering a lower price point. When combined with MUSICA^2, the results that are always of excellent diagnostic quality with a positive impact on dose management.*

GOOD IMAGES FUEL LOWER DOSE

Image quality and radiation dose are inextricably linked. When images aren't acceptable, retakes become necessary, increasing radiation exposure for the patient.

"Capturing diagnostic images with conventional film is a cumbersome process," says Raats. "The retake rate is quite high, falling somewhere between 10% and 15%. With our DR solutions the retake rates drop to less than 1%. The high quality of our needle phosphor detectors combined with MUSICA^2 image processing reveals every detail that the radiologist needs in a single exposure. It costs less, it's more efficient and it keeps dose low."

And there is great potential to bring these image quality and low dose benefits to new applications in the future.

LOOKING AHEAD IN DR**

"Tomosynthesis offers the possibility to use a standard DR modality for 3D imaging," explains Debusscher. "By moving the X-ray tube at different angles you can take unique images and then bring them together in software to create a three-dimensional view. This would allow DR to accomplish some of the imaging typically done on CT scanners today, alleviating resource pressures by reserving the CT scanner for more dedicated types of exams."

Dual energy exams are another software enhancement technique showing great promise to broaden the reach of DR. They allow you to take images at two different energy levels, high and low, and then use the software to manipulate them. For example, in a chest exam, dual energy would allow you to use software to extract the bone structure and soft tissue from your image so that you could have a better view of the lungs.

Wireless is another big area for the future of DR. Results are transmitted in real-time so everyone has an up-to-the-minute view of the patient's state – an important capability when caring for critically ill patients. "It's very clear that although DR offers huge image quality and workflow advantages, the wire is an inconvenience," says Debusscher. "The drive in the industry is to go wireless."

DESIGNED TO MAKE A DIFFERENCE

While Agfa HealthCare certainly has their eye on the future of DR, it is well equipped to help customers on their journey to adopting this technology right now, with a full DR portfolio that includes everything from fixed applications and universal units, to mobile solutions, retrofits and dynamic image capture.

"Every product in our portfolio is built on state-of-the-art detectors and enhanced by MUSICA^2 to produce excellent image quality," says Raats. "With the evolution in detector resolution and the enhancements we are making to MUSICA^2, there is so much promise for further improving image quality, which will help to increase accuracy, improve diagnosis and reduce dose."

You can be sure that as they evolve their DR portfolio, Agfa HealthCare will consider the little things that make a big difference to the people using the technology. One only needs to take a look at their current products to see this attention to detail in action. In the meantime, Agfa HealthCare remains fully committed to giving customers exactly what they need in the areas of image quality, dose reduction, workflow and beyond.

"When you buy a DR solution from Agfa HealthCare, you aren't just buying technology to capture high quality images," concludes Debusscher. " You are investing in more than 100 years of imaging experience and excellence. We never stop striving for perfection. We are ready to embrace the future of DR, whatever it brings." •

* Dose reduction potential claim limited to the DR units DX-D 100 and DX-D 300; and the CR units DX-D (with CR needle-based detectors), DX-S and DX-G. ** Future projects, not currently available from Agfa HealthCare.

ALLEGIANCE HEALTH, JACKSON, MICHIGAN, USA

On-the-go bedside imaging brings better care to patients in ER and beyond

Moving technology to 'critical areas' as needed lets doctors and technologists obtain images and share results more quickly

INTERVIEWEES Robyn Pulliam, Director of Imaging Services · Dr. Samir Parikh, Vice Chief Radiologist · Amy Helton, Manager of Imaging Performance and Quality

Allegiance Health has played an integral role in south-central Michigan for more than 90 years, growing from a 100-bed facility to a full-service acute care community health system, now with 411 beds and a broad range of specialty departments. In its continuous effort to improve patient care and processes, Allegiance Health recently implemented two DX-D 100 mobile DR solutions from Agfa HealthCare.

Allegiance Health interprets 'community' broadly, extending the definition to include an emphasis on education, both on the medical side and community outreach. It will become a teaching hospital in 2014, bringing 140 new physicians to Jackson. The hospital also strives to educate its community through initiatives like the Speakers Bureau, offering experts to speak to groups on topics such as diabetes, health and wellness, or palliative care.

For imaging, this focus on education translates into a collaboration with local colleges. Allegiance provides a clinical experience for students of general radiology, ultrasound and nuclear medicine. "Having students in the department supports an atmosphere of professional growth for all of us," says Amy Helton, Manager of Imaging Performance and Quality at Allegiance Health. "They're able to learn in a variety of settings, on both older analog and the newest digital solutions."

Imaging services at Allegiance Health include about 170 staff members, operating 20 departments that include MRI, CT, general radiology, nuclear medicine and mammography, producing about 230,000 procedures each year.

IMMEDIATE ACCESS TO INTERPRET IMAGES FROM ANYWHERE

One of the key drivers in the hospital's decision to add mobile DR to this range of services was the need to receive and share images, especially in critical cases, more quickly. "It's important to have direct digital technology in critical areas, so that the image can be viewed and evaluated immediately," says Amy Helton. For Dr. Samir Parikh, Vice Chief Radiologist, the speedy image access that is enabled by the DX-D 100 solution is vitally important.

"The DX-D 100 solutions were the choice for us, meeting the criteria, providing overall value and ensuring the best use of our resources."

ROBYN PULLIAM, Director of Imaging Services

"My staff technologists like the MUSICA² image processing software, because they can make immediate adjustments improving efficiency, and the images are excellent."

AMY HELTON,
Manager of Imaging Performance and Quality

"The DICOM wireless connectivity is of great benefit," he says. "We have immediate access to interpret images from anywhere in the hospital, or even our offices."

One DX-D 100 is used in the emergency department, and the other is used on select patient floors. With its large servo-driven wheels, and narrow width, "it maneuvers easily throughout the building," says Amy Helton. "In addition, my staff technologists like the MUSICA² image processing software, because they can make immediate adjustments improving efficiency, and the images are excellent."

The 'gold-standard' MUSICA² image processing has been specially adapted for the DX-D 100 and tuned to further enhance the excellent DR image quality. Exam-independent, it provides consistent image quality and high-contrast detail.

IMPROVED IMAGE QUALITY AND DECREASED RADIATION DOSE

For Dr. Parikh, the image quality of the DX-D 100 is important as well. "In general, the quality is much better than conventional portable radiography, providing very sharp and detailed images. In addition, we are able to manipulate the contrast on PACS for better visualization of lines and tubes. There is also an external dose-measuring device that helps us control the dose."

The DX-D 100 features an integrated NX workstation, for an optimal workflow. When users select a specific type of exam, the appropriate X-ray settings are automatically transferred to the X-ray generator and displayed on the touch-screen console. NX adds the exposure parameters used to the digital image file, and communicates seamlessly with the hospital's PACS.

DX-D 100 TAKES THE LEAD IN STRINGENT REVIEW PROCESS

For this first foray into mobile DR, Allegiance Health conducted a stringent review, assessing three vendors' solutions against a long list of requirements, including how the solutions provided patient care, safety, quality, as well as cost, operational and technical factors, and efficiencies gained. "In the end, the DX-D 100 solutions were the choice for us, meeting the criteria, providing overall value and ensuring the best use of our resources," says Robyn Pulliam, Director of Imaging Services. "When we choose responsibly and use resources wisely, it allows us to make good quality healthcare accessible to as many members of the community as possible."

The hospital already had a level of familiarity with Agfa HealthCare, with an IMPAX PACS and CR from Agfa HealthCare in place. "Allegiance has enjoyed a strong business partnership with Agfa HealthCare for over 12 years. We've been pleased with their products, level of responsiveness, and customer service," concludes Robyn Pulliam. •

"In general, the quality is much better than conventional portable radiography, providing very sharp and detailed images."

DR. SAMIR PARIKH, Vice Chief Radiologist

AGFA HEALTHCARE'S CONTRIBUTION

- 100-years' experience in developing imaging solutions to meet full range of hospital requirements
- In-depth understanding of user needs, from technologists to radiologists through to hospital administrators
- Specialists in ergonomics and intuitive systems that are easy to learn and simple to use

SOLUTIONS

DX-D 100 mobile DR solution

- Efficient mobile bedside imaging solution provides improved patient comfort
- Handles broad range of general radiography X-ray studies
- Offers instant high-quality image capture; immediate image validation, transfer and access (HIS/RIS/PACS integration)
- Features specially-tuned MUSICA², for gold-standard image processing, and NX workstation, for smoother workflow

IMPAX PACS

- Foremost image management solution for healthcare providers around the world

DID YOU KNOW...

- The emergency department at Allegiance Health, which sees about 80,000 patients each year, was renovated in 2006, and features 40 private rooms, an on-site pharmacy, valet parking, and family waiting areas.
- Allegiance Health appears in many national rankings, including the CareChex Top 100 Hospital 2012 Medical Excellence Awards; the Distinguished Hospital Award - Clinical Excellence in 2012 for the third year in a row from HealthGrades; and an "A" Patient Safety Rating from The Leapfrog Group.

SINT-JOZEF HOSPITAL, BORNEM, BELGIUM

Quality of image processing software key in hospital's decision to implement DR

Sint-Jozef Hospital's radiology team decides on DX-D 300 and DX-D 800* direct radiography solutions based on MUSICA^2 image quality and innovative exam room concept

INTERVIEWEE Dr. Koen Vandenbroucke, Chief Radiologist

"Our radiologists particularly appreciate the dynamic image, with a wide bandwidth in contrast and brightness, and the constant quality of the images with similar examinations on different patients. Whether you are examining extremities or central parts, you always get the same image quality. You can look for better image quality solutions, but you won't find them."

DR. KOEN VANDENBROUCKE, Chief Radiologist

When the Sint-Jozef Hospital's medical imaging department decided to implement direct radiography with Agfa HealthCare, the team was persuaded primarily by the excellent image quality offered by its MUSICA^2 imaging software. The team was also impressed by the versatile examination room that's part of the DX-D 800 solution, which features an integrated video camera allowing optimal positioning of the patient without irradiation. This has reduced fluoroscopy runtime by 75%, reports Chief Radiologist Dr. Koen Vandenbroucke.

With two campuses in the Antwerp region, totalling some 300 beds and a team of 110 clinicians providing a wide range of services to patients, Sint-Jozef Hospital may not be the biggest of hospitals, but probably one of the most networked hospitals in the Belgian healthcare scene. In an effort to provide high-level care, the hospital has developed a collaboration model which extends its competence and capacity to that of surrounding tertiary centers throughout the region.

NETWORKING WITH TERTIARY CENTERS FOR OPTIMAL PATIENT WORKFLOW AND CLINICAL PATH

Departmental-based collaboration with Ghent, Antwerp and Brussels university hospitals in many clinical fields, such as hematology, nephrology, oncology and cardiology, allows patients to be referred to the best specialists without losing touch with their base hospital close to home. Clinicians from these tertiary care centers even have consultations on-site at the Sint-Jozef campuses.

optimizes the use and the versatility of the room," he explains.

With a reputation as a technology advocate inside the hospital, Dr. Vandenbroucke believes that vendor consistency and loyalty deliver excellent results, and does not prevent independence of choice and span of opportunities. "We have had an outstanding relationship with Agfa HealthCare for more than ten years now. We are convinced that Agfa HealthCare's gold standard imaging software, MUSICA^2, provides us with the best DR solution available for all our projection radiography examinations." •

"This collaboration supports our aim to implement the care paths that have been developed as best practices by the authorities," explains Dr. Koen Vandenbroucke, Chief Radiologist at Sint-Jozef Hospital, who was involved in developing this collaboration strategy as the hospital's medical director. Dr. Vandenbroucke is also the driving force behind some of the hospital's recent technology choices in the field of medical imaging.

The hospital is a long-time Agfa HealthCare customer. When researching options for DR, the radiologists put the MUSICA^2-based image quality of Agfa HealthCare's CR technology forward as a benchmark. "When we decided to go into direct radiography with Agfa HealthCare, we were mainly inspired by the excellent image quality offered by MUSICA^2 image processing software as we knew it from CR. During our analysis of the market, we realized that many offerings focused on the physical dimension of the DR solution, and were offering digital detection without a satisfactory image processing solution. We couldn't find the image quality anywhere that Agfa HealthCare offered us in CR and was now promising in DR."

"We are convinced that Agfa HealthCare's gold standard imaging software, MUSICA^2, will provide us with the best DR solution available for all our radiographic and fluoroscopic examinations."

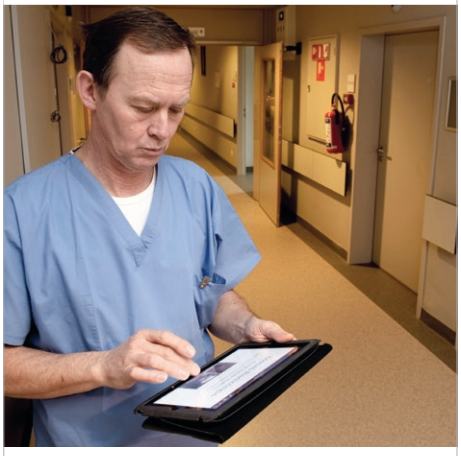
DR. KOEN VANDENBROUCKE,
Chief Radiologist

RADIOLOGISTS IMPRESSED BY MUSICA^2 IMAGE QUALITY ON DX-D 300 DR SOLUTION

Based on this research, Dr. Vandenbroucke and his team decided to install Agfa HealthCare's DX-D 300 and DX-D 800 direct radiography systems. "In our DX-D 300 room, we upgraded the existing equipment with Agfa HealthCare's imaging software. Our radiologists were immediately enthusiastic about the image results. They found it provided twice the image quality, at least. Radiologists particularly appreciate the dynamic image, with a wide bandwidth in contrast and brightness, and the constant quality of the images with similar examinations on different patients. Whether you are examining extremities or central parts, you always get the same image quality. You can look for better image quality solutions, but you won't find them."

LAYOUT OF DX-D 800 ROOM AS IMPORTANT AS IMAGE QUALITY

The radiology team was also impressed by the physical layout of the DX-D 800 room and the examination table. "Both in form and aesthetics, it felt like it was a new concept, not just a converted X-ray room. The table can be positioned as low as necessary and the patient can be reached from any side. Furthermore, the DX-D 800 also provides a safer environment for the patient. The remote-controlled table and video camera allow for positioning the patient without irradiation. Fluoroscopy runtime has been reduced by 75%," says Dr. Vandenbroucke. The head of the imaging department also opted to include an additional ceiling-suspended DX-D 600 X-ray tube in the room, in order to allow for patients that cannot be placed on the DX-D 800 table to be examined. "It



SOLUTIONS

- DX-D 300, DX-D 800, DX-M direct and computed radiography solutions
- Integrated MUSICA^2 gold standard imaging software

AGFA HEALTHCARE'S CONTRIBUTION

- Ergonomic and innovative concept for DR room
- Efficient DR solutions with wide range of radiographic and fluoroscopic examinations
- Reduced patient exposure with video camera for positioning
- Excellent image quality with MUSICA^2

* The DX-D 800 is not available in Canada and the United States.

PIUS HOSPITAL OLDENBURG, GERMANY

Wireless detector helps hospital address efficiency goals

Small device delivers big benefits including cost savings, seamless integration into workflow and sharing options for flexible use

INTERVIEWEES Priv.-Doz. Dr. Alexander Kluge, Director of the Institute for Diagnostic and Interventional Radiology · Jutta Juilfs, Head Technologist

> "Our staff is very satisfied with this detector, they appreciate the quality of the images as well as the significant workflow improvements."
>
> PRIV.-DOZ. DR. ALEXANDER KLUGE, Director of the Institute for Diagnostic and Interventional Radiology

Pius Hospital, located in the northeast region of Germany, serves a wide geographical area, providing both general medical services and highly specialized expertise. Over the last 10 years, Pius Hospital has gone through a process of complete refurbishment, including the hospital building as well as its medical technology. The introduction of a DX-D Retrofit solution fits into the hospital's goal of streamlining processes across the facility, especially in the ER.

The 400-bed hospital's major focus is on oncology, and it offers centers dedicated to breast, lung, colon and pancreatic carcinomas. Because of these specialty centers, the hospital performs more imaging and pathology exams than other hospitals of this size, which means productivity is paramount. Advanced imaging technology and PACS play a key role here in creating an efficient workflow for physicians' reports and study comparisons, and enabling a smooth interchange with clinical departments and referring physicians.

Previously, a cassette-based imaging system was in place, used for mammography and in the emergency department. "We decided to upgrade from imaging cassettes to a wireless detector, which would make workflows more convenient and faster, and also save on cassette costs," says Dr. Alexander Kluge, Director of the Institute for Diagnostic and Interventional Radiology.

The DX-D Retrofit solution allows healthcare facilities to upgrade to the benefits of Direct Radiography, without having to replace their existing equipment. The solution consists of a flat panel detector, a retrofit box and an NX workstation with Agfa HealthCare's gold standard MUSICA^2 image processing software, which provides excellent contrast detail and exam-independent, consistent image quality.

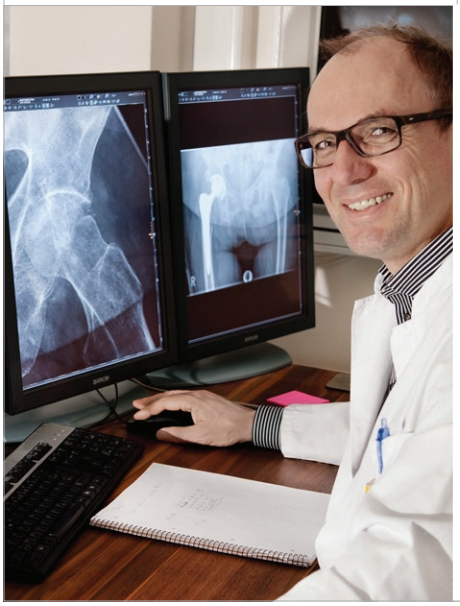
FAMILIARITY WITH AGFA HEALTHCARE SOLUTIONS, INTERFACES AND IMAGE QUALITY

Hospital staff were already familiar with imaging solutions and user interfaces from Agfa HealthCare, having worked with them for many years. After analyzing DR detectors in the market with regard to image quality, workflow and cost, Pius Hospital decided in favour of the WLAN-enabled DX-D Retrofit. "This solution has the added benefit of not requiring any significant training for our staff," explains Dr. Alexander Kluge. "Software and interfaces are from a single source, which is a great plus."

"Since September 2012, we've used the DX-D Retrofit to perform exams on approximately 30 patients daily on weekdays, and approximately 10-15 patients during weekends," says Head Technologist Jutta Juilfs. These patients had to be examined in a very short amount of time. Therefore, quick turnaround was a requirement. "The detector has significantly reduced staff workload for each patient."

Because it is wireless, the DX-D Retrofit offers enhanced flexibility. Demographic data is automatically fed to the detector from the PACS, and acquired images are transmitted directly onto the detector, streamlining workflow and speed of exams. Within seconds after the acquisition, technologists can pre-check the image, approve the technical quality, and transmit it wirelessly to the PACS. The detector fits into any standard bucky tray, and can be used in multiple X-ray modalities, meaning it can be shared among several rooms or modalities as needed, maximizing efficiency and keeping costs low.

As part of the re-organization, the CR system from Agfa HealthCare that was already in place was moved from the ER to the radiology department to be used for mammography, and to provide backup to the department. Featuring a team of 25 radiologists and technologists, the department carries out approximately 40,000 exams annually, including X-ray, 64-slice CT, MRI, high-end ultrasound, as well as mammography exams. Radiologists also work with PET/CT in the nuclear medicine department, and provide services for the ER, ICU, and the intermediate care department.



TECHNOLOGY INVESTMENT KEY TO HOSPITAL'S POSITIONING IN MARKET

"Investing in an infrastructure of advanced medical technology is a strategy fostered by our CEO, who clearly sees the necessity for this in the context of our positioning in the market. Our staff and our technology stand for diagnostic and therapeutic competence in complex cases," says Dr. Kluge.

In working with the DX-D Retrofit, radiologists at Pius Hospital typically aim to reduce dose by approximately 20 to 30 percent. "Our staff is very satisfied with this detector, they appreciate the quality of the images as well as the significant workflow improvements," states Dr. Kluge. Agfa HealthCare has been very responsive in regard to questions and with support, he says. "Patients profit from the investment by reduced queuing and more time spent with them by technologists," adds Jutta Juilfs.

INVESTMENTS THAT PROVIDE IMAGE QUALITY AND WORKFLOW IMPROVEMENTS NOW AND INTO THE FUTURE

Both the CR solution and the wireless detector technologies are economically forward-thinking investments, concludes Dr. Kluge. "DR detectors require a certain minimum number of exams to make sense financially, based on resource economies and productivity. In Oldenburg, a city with three hospitals providing in-patient care, Pius Hospital is well-positioned with its general scope, plus its focused expertise on oncology," he says. "Innovative, and still affordable, medical technology supports us in managing this mix of patients, which includes many complex cases, by providing advanced image quality and enabling swift turnaround times. The DX-D Retrofit is an excellent illustration of a solution which supports our goals." •

"Patients profit from the investment by reduced queuing and more time spent with them by technologists."

JUTTA JUILFS, Head Technologist

SOLUTION

DX-D Retrofit

- Offers the workflow and image quality benefits of DR
- Easy and quick to set up
- Wireless for enhanced flexibility
- Seamlessly connects to HIS, RIS, and PACS
- Single detector can be shared across different rooms, different modalities, maximizing efficiency and reducing equipment costs

AGFA HEALTHCARE'S CONTRIBUTION

- Enables cost savings and efficiency improvements
- Makes workflows more convenient and productive with technology that fits in seamlessly at all steps in the workflow process
- Develops technology that improves staff and patient satisfaction

DID YOU KNOW...

- Founded in 1871 as a charitable refuge for the poor, Pius Hospital has grown into an acute-care hospital with more than 400 beds, 1,000 employees, and 13 specialty departments.
- The European Medical School, newly established by Oldenburg University, integrates Pius Hospital as well as the two other hospitals in Oldenburg and local care providers into its research and teaching activities.

KYMENLAAKSO CENTRAL HOSPITAL, KOTKA, FINLAND

Faster diagnoses with new mobile DR solution

Immediate access to high-quality images at patients' bedside helps physicians diagnose conditions and commence treatment plans more quickly

INTERVIEWEE Dr. Timo Kallio, Chief of Diagnostic Imaging Department

Kymenlaakso Central Hospital faces many of the same challenges as other hospitals in Finland, and around the world: providing top-quality care while adhering to staff and budget constraints. With the introduction of the DX-D 100 mobile DR solution, the hospital is meeting the bedside imaging needs of patients within the intensive care unit, the cardiac care unit and emergency, and also gaining valuable staff time.

Kymenlaakso Central Hospital is a 260-bed district hospital in the city of Kotka, serving a regional population of about 175,000. In the hospital there are approximately 770 employees. Finland operates a three-level system of healthcare, where more specialized care is provided at secondary level facilities such as Kymenlaakso Central Hospital. The hospital's diagnostic imaging department performs some 75,000 exams per year, including X-ray, ultrasound, CT, MR, and angiography (excluding coronary angiography), and has six radiologists, 31 technologists, three assisting staff and five office personnel.

> "Now, everything happens at the bedside, the doctors can see the images right away, and the DX-D 100 is easy to take to other departments."
>
> DR. TIMO KALLIO,
> Chief of Diagnostic Imaging Department

NEED FOR A "GOOD AND FAST" SOLUTION FOR MOBILE IMAGING

One of the biggest issues for the hospital is one shared by many healthcare providers: not enough staff for the existing workload. "Our standards are quite high," says Dr. Timo Kallio, Chief of the Diagnostic Imaging Department. "So the costs of examinations and operations are going up all the time. As a result we have to be more efficient throughout the system. In this case, we needed a good and fast solution for mobile imaging."

The hospital's choice for a bedside imaging solution was the DX-D 100 mobile DR solution from Agfa HealthCare. The DX-D 100 is a compact, mobile unit designed to be operated by a single person, and to address a variety of imaging tasks.

BETTER PATIENT CARE COMBINED WITH COST SAVINGS

Improving the experience of hospital patients is another focus for Kymenlaakso. Agfa HealthCare's DX-D 100 DR solution also contributes to this goal. "With this kind of system we can provide better care for patients, and achieve cost savings too," says Dr. Kallio.

Kymenlaakso Hospital uses mobile imaging in the intensive care unit, emergency department, and the cardiac care unit. The system that they used before had serious limitations. "With our old system, we could take exposures at the bedside, but had to return to the X-ray department for processing. This flow would make us lose a lot of time in case retakes were necessary, for instance when the patient's position had to be corrected. Now, everything happens at the bedside, the doctors can see the images right away, and the DX-D 100 is easy to take to other departments," says Dr. Kallio.

DID YOU KNOW...

» The city of Kotka, in the Kymenlaakso region, is located on the coast of the Gulf of Finland at the mouth of the Kymi River.
» Kotka is a key port for Finland, serving Finland and Russia.

FULL INTEGRATION WITH IMPAX FOR MORE WORKFLOW GAINS

The hospital has worked with Agfa HealthCare for many years, and uses Agfa HealthCare's RIS/PACS solutions to manage diagnostic images and information, as well as Agfa HealthCare's computed radiography solution. The DX-D 100's connectivity with IMPAX makes it possible to wirelessly transfer the X-ray images.

The relationship with Agfa HealthCare extends to other hospitals nearby. Six facilities in the area, including two central hospitals, also use Agfa HealthCare's IMPAX and RIS. "We have a connection to the university hospital as well, which is very handy, so we can send images to other hospitals," says Dr. Kallio.

MAIN DIFFERENCE IS SPEED

For Dr. Timo Kallio, and for Kymenlaakso Central Hospital, the benefit of the technology from Agfa HealthCare, and specifically the DX-D 100 mobile DR solution, comes down to efficiency. "It is the speed of the work; you have the image immediately, that's the main difference," says Dr. Kallio. "But for staff, it is more efficient as well. It is now much easier to handle the work inside the department." •

"It is now much easier to handle the work inside the department."

DR. TIMO KALLIO,
Chief of Diagnostic Imaging Department

SOLUTIONS

DX-D 100 mobile DR solution
» Incorporates NX acquisition workstation touch screen
» Uses MUSICA² image processing, for excellent contrast detail
» Full integration with RIS/PACS
» Fully motorized for one-person operation; large wheels make maneuvering easy

DX-M solution
» Used for digital mammography
» Needle-based detectors deliver excellent image quality
» Integrated MUSICA² image processing technology

IMPAX 5.2
» Scalable, web-deployable image and information management solution

RIS
» Electronically manages radiology operations, and helps streamline workflow

AGFA HEALTHCARE'S CONTRIBUTION

» Understanding of full range of hospitals' imaging needs, from bedside solutions to dedicated exam rooms
» In-depth image processing knowledge for consistently high image quality
» Integrative expertise to provide seamless networking of different components and systems

The right dose of expertise:
How Agfa HealthCare is helping stakeholders balance "imaging gently" with quality imaging

In the days of film-on-a-lightbox, dose seemed easier to control. If you overexposed film, the image would turn black. If you underexposed, the image would be too light. These technical realities exercised subtle control over the range of dose that would produce a useable image. With the advent of digital imaging, those subtle nuances changed.

INTERVIEWEES Bruce Apgar, Application Lead for Imaging Services and Applications, North America · Rawa Al-Saigh, Dose Registration Global Solution Manager

"Recent studies have shown that CsBr needle phosphors in particular can reduce radiation exposure by up to 50%. It's a huge step towards effective dose management."

BRUCE APGAR, Application Lead for Imaging Services and Applications, North America

DIGITAL DOSE CREEP

Technologists soon learned that slight overexposure in digital imaging could create a better looking image. So there was a natural tendency for doses to slowly edge higher in the name of image quality. Add to this the steady increase of new types of modalities coming on line and the patient's potential for increased radiation exposure began to creep higher and higher.

These trends have given rise to intensified interest in dose management from both medical professionals and regulatory bodies. The industry has formed advocacy groups such as Image Gently, an alliance dedicated to raising awareness of opportunities to lower radiation dose in pediatric imaging. Government bodies are also becoming involved. In the United States for example, the State of California has passed legislation making it mandatory for imaging centers to record radiation exposure from CT exams.

As a leader in medical imaging, Agfa HealthCare has taken a key role in understanding and contributing to best practices for dose management. Teams have also developed new technologies and solutions that help reduce radiation dose on the front lines of imaging (while delivering high quality images) and provide intelligence to manage dose appropriately on the back end.

A SERIES OF DOSE MANAGEMENT FIRSTS

"Agfa HealthCare is all about achieving optimal image quality," explains Bruce Apgar, Application Lead for Imaging Services and Applications, North America. "It's a logical extension to apply that expertise to dose management, since image quality is a function of dose. If our technology can produce a higher quality image because it is more efficient, then there should be an opportunity for dose reduction, depending on the needs of the department."

Although dose reduction is universally important in all patient populations, it becomes even more important when applied to an area like pediatrics. For example, when you consider that a premature infant may receive 30 to 40 exposures over the course of their treatment, it's clear that finding ways to reduce radiation exposure makes sense for preserving long term health.

One way Agfa HealthCare is helping to reduce exposure is by introducing high efficiency needle phosphors – Cesium Iodide (CsI) for Direct Radiography (DR)* and Cesium Bromide (CsBr) for Computed Radiography (CR). Due to their higher X-ray absorption and conversion efficiency, needle phosphors have the potential to produce higher quality images at a significantly reduced dose.
"It is like installing technology that gives you twice the gas mileage from your car," explains Apgar. "In fact, recent studies have shown that CsBr needle phosphors in particular can reduce radiation exposure by up to 50%. It's a huge step towards effective dose management."

This needle phosphor technology is complemented by Agfa HealthCare's MUSICA^2, a leading tool for optimizing

"IMPAX REM collects disparate data and then stores it in a standardized format so that it can be easily shared and used for further analysis and reporting."

RAWA AL-SAIGH, Dose Registration Global Solution Manager

image quality. When you further add in the productivity and centralized dose monitoring capabilities of the NX Multi-Modality workstation, you have a powerful set of tools for dose management.

Another significant move towards stabilizing radiation dose was the introduction of the exposure index standard by the International Electrotechnical Commission (IEC) and the American Association of Physicists in Medicine. Agfa HealthCare was the first company to fully implement the exposure index standard in its modalities. Using this standard method for tracking exposure reduces the possibility for exposure errors, because technologists only need to remember one method for monitoring exposure changes, regardless of which manufacturer's technology is being used to capture the image. The exposure index has since become an industry accepted standard by manufacturers around the globe.

INTRODUCING VISUAL SAFEGUARDS

Agfa HealthCare complements the standardized exposure index with a color-coded exposure bar in the NX workstation. Apgar explains the significance: "The exposure bar appears green, yellow or red to indicate whether the radiation exposure is acceptable, slightly out of range or dramatically out of range. This technology, which we pioneered, provides a simple visual way for the technologists to verify that they have a good exposure when capturing the image."

Exposures can be tracked and monitored for trends, such as an overall drift up or down or even comparisons among technologists. "Quality control and monitoring tools help to verify that you don't have inappropriate dose in your procedures," says Apgar. "You need safeguards in place and Agfa HealthCare is providing the technology to help keep the dose appropriate."

LOOKING AT THE BIGGER PICTURE

Automating the collection of exposure data is an important next step in dose management. Agfa HealthCare's IMPAX REM** (Radiation Exposure Monitoring) is a soon-to-be-released solution that tracks, stores and performs analysis on radiation dose data from multiple modalities.

"Up until recently, dose wasn't something that was always automatically recorded," explains Rawa Al-Saigh, Dose Registration Global Solution Manager at Agfa HealthCare. "Innovations in technology and the introduction of standards are making this information more accessible than ever before so that we can perform patient dose tracking with ease. IMPAX REM is PACS and modality vendor neutral. It collects disparate data and then stores it in a standardized format so that it can be easily shared and used for further analysis and reporting."

The IMPAX REM product includes a data modelling tool that looks at the dose information in the system. It then applies statistical algorithms to determine if there are abnormalities that need to be highlighted in the dose levels at the patient, study, and machine or institute level. Built-in capabilities also allow easy comparison with dose management guidelines (when available). And simple integration with other radiology department systems means that dose history can be accessed from anywhere.

"We want to help staff to be able to react quickly, meet best practices and comply with mandatory regulations," says Al-Saigh. "The whole idea behind dose management is, if we can perform imaging studies with less radiation, then we should. IMPAX REM is an effort towards empowering imaging centers to establish that fine balance between imaging techniques and dose levels."

HELPING TO MAP OUT THE FUTURE OF DOSE MANAGEMENT

Agfa HealthCare stays closely involved with industry groups and alliances to understand the current realities and future of dose management while being a key part of the conversation. Working closely with the American College of Radiology, Agfa HealthCare teams work to develop technology solutions that meet and exceed the needs of the industry. They provide funding to the Medical Industry and Technology Association and sit on its Computed Radiography and Digital Radiography group. They participate in American Association of Physicists in Medicine meetings, providing technical guidance and support. The IMPAX REM software is born from a close collaboration between the National Research Council of Canada, McMaster University and Hamilton Health Sciences Corporation.

"I ultimately believe that dose management is going to become more comprehensive and automated," says Apgar. "There is a good chance that dose tracking will be mandated by legislation in the future. National Dose Registries will likely be the norm in the not too distant future. I can honestly say that Agfa HealthCare is very well equipped for whatever the future brings."

"Various teams within Agfa HealthCare are working closely together on a cohesive dose management strategy," concludes Al-Saigh. "We don't want to simply design solutions that satisfy the legislation or guidelines for today; we aim to anticipate future needs as well. Our philosophy is to advance efforts in the dose management arena because, ultimately, that could protect people's long term health." •

DID YOU KNOW...

- According to the International Atomic Energy Agency (IAEA) the use of CT has increased significantly over the last two decades.
- A premature infant could receive upwards of 30 or 40 radiation exposures over the course of their treatment.
- Agfa HealthCare was the first company to fully implement the IEC exposure index into their modalities.
- Agfa HealthCare's MUSICA^2 software lets you see bony detail, soft tissue and details in-between in a single image so you're less likely to overexpose.
- Automating the collection of radiation exposure data is an important next step in dose management.

* Potential dose reduction is indicated only for select DR units.
** REM is a works in progress.

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