Healthcare transformation, we'll take you...

THERE

AGFA HealthCare

INTERVIEW WITH

» **Dr. Stephen Abbott, Vice-President, Global Quality Assurance & Regulatory Affairs, Agfa HealthCare:** An end-to-end handshake

Excellence breeds confidence

Not many professional environments need to organize for peak performance like today's top cuisine. In a few hours, hundreds of restaurant guests make a wide range of choices and expect them to be carried out in every detail to perfection. The tough discipline in most top kitchens does not leave room for interpretation, and the point of care is coordinated in a meticulous way. Crucial to success are competence, the right tools and the right attitude.

In previous editions of THERE magazine, we focused on cities and their architecture to illustrate the values and working methods we hold high at Agfa HealthCare. Going forward, we'll be using world class restaurants and their renowned cuisine as a symbol for these best practices.

In this edition of THERE, we again show you some great examples of healthcare providers who have been seeking the same chemistry and organized for it. Imaging excellence is key to their success. It inspires clinical confidence and improves patient care. That is why we labeled RSNA 2010 as "Imaging Excellence, Clinical Confidence". Much like excellent cuisine which skillfully requires not adding too many ingredients to spoil the taste, clinical confidence achieves a similar result by not using too much radiation to produce the best diagnostic image possible. And like top restaurants, completely organized towards providing the best gastronomic experience, top care providers seek the most efficient workflow tools to confidently provide optimal care to their patients.

The technology partnership between care providers and industry can also lead to inspiring results, as you will learn from this issue of THERE. The healthcare handshake between both parties means industry defines how its technology should be used, and practitioners determine how best to deploy it to provide quality medical care.

Let's shake hands in Chicago and savor the stories in this issue.

HAPPY READING

ERIC MAURINCOMME
Chief Strategy and Marketing Officer
Editor-in-Chief THERE, Agfa HealthCare

EPIC Chicago: tight organization for consistent quality

With almost 20,000 restaurants in the Windy City, you need strong credentials as a newcomer to make it. Less than one year after its official opening, EPIC, Chicago's newcomer in River North, has gained the hearts of many Chicago foodies. In an industrial and refined multi-floor setting, it offers contemporary and traditional dishes with American and French elements.

With a staff of no less than 120 to 130, serving up to 350 tasteful meals on a regular Saturday evening, EPIC has developed a strict organization, which builds on very clear roles and tight discipline. Reservation staff allots places by blocks of 15 minutes, preventing customers from arriving all at the same time. Throughput is tightly organized, but that does not seem to spoil the experience, judging by the unanimously euphoric comments on the major culinary web blogs of Chicago.

From morning prep crew to late night dishwashers, everyone knows their responsibility and does it in the EPIC way, trained on the job and checked on the fly. Captains pass orders to the kitchen with a computer system, connected to four printers distributed in the kitchen, so that everyone has a check on what is ordered. This extremely intense environment is all about communication: keeping each other informed.

At EPIC, quality is daily work for the staff itself, but to no lesser extent for the restaurant's major suppliers. The Chef de Cuisine is in charge of ordering the menu ingredients on a daily basis. All of his 11 different provisioners offer the best quality ingredients at the lowest price. Twice a week he spends time meeting new suppliers, analyzing their offers. Only when these manage to amaze him, will he consider trying their ingredients and fitting them in the restaurant's menu.

EPIC monitors the pulse of its customers. The check comes with a comment card and a staff member daily scans traditional and social media to read comments of foodies that visited. All staff get constant updates about what people say about EPIC. The more we know about what our customers say about us, says EPIC's Chef de Cuisine, the better we become as a business.

If in town for RSNA, why not experience EPIC for yourself? To learn more, visit www.epicrestaurantchicago.com, or make reservations by calling (312) 222-4940.

Stephen Wambach, Executive Chef of EPIC

An end-to-end handshake

In today's increasingly complex hospital environment, the handshake between industry and the healthcare practitioner symbolizes their partnership: industry defines how their solution should be used, and their users determine how best to deploy it to provide optimal medical care, says Dr. Stephen Abbott, Vice-President, Global Assurance & Regulatory Affairs, Agfa HealthCare.

INTERVIEWEE Dr. Stephen Abbott, Vice-President, Global Quality Assurance & Regulatory Affairs, Agfa HealthCare

Healthcare increasingly depends on complex technology-based tools. It's up to the industry to provide effective solutions and assume 'cradle-to-the-grave' responsibility for these. "We provide reliable, integrated products and services, and assure they reliably perform as intended," explains Steve Abbott, responsible for Agfa HealthCare's worldwide regulatory and quality management since 2005.

INTEGRATED MANAGEMENT SYSTEM ALLOWS COMPLIANCE WITH GLOBAL STANDARDS

Companies like Agfa HealthCare proactively serve customers with state-of-the-art solutions and these offerings must conform to multiple regulations and varying global standards. This applies not only at the initial installation, but throughout a product's life cycle.

Says Steve Abbott: "As Global Healthcare regulation has evolved, it has increasingly been founded on international quality management standards, both general (ISO 9001) and for medical devices (ISO 13485), and globally, efforts continue to build on this trend, as exemplified by the activities of the Global Harmonization Task Force (GHTF). In fact, there is now a whole family of management system standards that are relevant to our sector. For example, ISO 27000 concerns information security and ISO 20000 deals with service management, both of growing importance to our Healthcare IT business. In the UK, Agfa HealthCare has recently obtained certification against both these standards and we plan to build on this achievement."

"We are committed to developing a single Integrated Management System (IMS) to allow us to comply with these standards and to fully meet

"Agfa HealthCare has taken the necessary steps to deal with increasing regulation."

DR. STEPHEN ABBOTT, Vice-President, Global Quality Assurance & Regulatory Affairs

our customers' requirements. This is an ongoing process of continuous improvement; it is never finished. Both customer and global regulatory requirements change very rapidly, and we need to adapt quickly to stay ahead."

INDUSTRY IS WORKING CLOSELY WITH REGULATORS

Industry needs to keep abreast of local differences in regulatory requirements, underscores Steve Abbott. "For example, consider the question: is standalone medical software subject to the same medical device regulations as software that is embedded in medical device equipment? Some regulators take the strict view that it should be while others are less stringent in their approach.

QUALITY ASSURANCE AND REGULATORY AFFAIRS AND HEALTH, SAFETY & ENVIRONMENT (QARAHSE)

The QARAHSE organization is responsible for:
» Ensuring that Agfa HealthCare consistently provides products, solutions and services that satisfy customer expectations, perform predictably in a safe and effective manner, and are fully compliant with stakeholders' expectations and all applicable regulations.
» Establishing a process-based Integrated Management System (IMS) that facilitates quality improvement and the measurement of business performance against annually established Agfa HealthCare targets.
» Safeguarding the health and safety of employees, customers and other stakeholders and minimizing the environmental impact of our products and activities.

> "We design for safety and effectiveness, but the 'driver' is equally essential."
>
> DR. STEPHEN ABBOTT, Vice-President, Global Quality Assurance & Regulatory Affairs

Through our active involvement in various trade associations, we are working closely with regulators to clarify this type of issue. In the European

Union responsibility for enforcement of directives in the healthcare sector is delegated to national competent authorities. So we need to be attentive to local differences when we are present in so many markets and adopt practices that are globally acceptable."

This is why Agfa HealthCare has organized its global Quality Assurance and Regulatory Affairs and Health, Safety & Environment (QARAHSE) function along two axes, explains Steve Abbott: One part of our team is embedded in the product divisions themselves. They are responsible for assuring pre-market product design compliance, and need to understand fully the input requirements from both

our customers and the regulators in the markets we wish to enter. The other part of the team works closely alongside our local sales & marketing groups to understand how our customers use our solutions and they build relationships with the appropriate regulators.

PRE- AND POST-MARKET RISK MANAGEMENT HELP TO MITIGATE HEALTH ISSUES

My organization's priorities are to assure our products are safe and effective, to support global regulatory compliance, to speed product introductions through timely regulatory clearances and registrations, and generally to increase the efficiency of management system processes across our enterprise. Agfa HealthCare is well-placed to deal with ever more demanding global regulations because it has taken the steps to put the necessary, underlying systems in place, Steve Abbott stresses. "Take our risk management processes as an example. Medical benefit is not without risk. We take medical risk management very seriously. We not only carefully consider our products' capabilities, but also how they will actually be used in the hospital. Of course, we make every effort to risk-proof our solutions optimally through careful verification and validation testing and by user education and training."

He adds, "However, should issues occur in the field, we have sophisticated post-market surveillance and risk management processes that involve both medical practitioners and technical experts. In this way, we can identify and mitigate any residual risk, improve our product performance and, if appropriate, report back to the authorities. This is essential. Only through both users and industry accurately reporting post-market issues can we assess the true impact of technology and improve the overall quality of care."

Agfa HealthCare considers itself among the leading exponents of integrated management systems. Customers can rely on our solutions and services to meet their needs. But they also have

to do their part, by deploying our tools and services appropriately. This is the handshake we seek, says Steve Abbott.

"When medical devices are integrated into a hospital's network, who is ultimately responsible for this integration? This is currently an active discussion topic within our sector that a new and much-needed standard, IEC 80001, specifically addresses by attempting to clarify the responsibilities of the various parties involved. As network complexity increases we now really have an extended series of handshakes between stakeholders. We look to ensure that our handshake is something our customers can rely on as they themselves are faced with both an increasingly sophisticated technology and an ever more demanding healthcare compliance environment."

"In the context of cradle-to-the-grave responsibility, we believe we are experts in our technology and how it should be used. But remember: how medical care is practiced is the customer's responsibility. We have an important role in providing appropriate documentation, training and support, but ultimately, it is our customer who makes the clinical use decisions. Like the automotive industry, we design products for safety and reliability, but the 'driver' is equally essential in achieving these goals. It's a partnership." •

REFERENCES

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  Quality management systems – Requirements
» ISO 13485:2003
  Medical devices – Quality management systems – Requirements for regulatory purposes
» ISO/IEC 27000:2009
  Information technology – Security techniques – Information security management systems
» ISO/IEC 20000-1:2005
  Information technology – Service management
» IEC 80001-1:2010
  Application of risk management for IT-networks incorporating medical devices

Coshocton County Memorial Hospital
boosts MD productivity

Agfa HealthCare's IMPAX HeartStation eliminates paper exam printouts; digitally displays, confirms, prints, archives ECGs hospital-wide as well as provides ECG access to physicians' office or home

INTERVIEWEES Steve Feller, Director, Cardiac Lab and Stress Room · Cindy Moore, ECG Technician
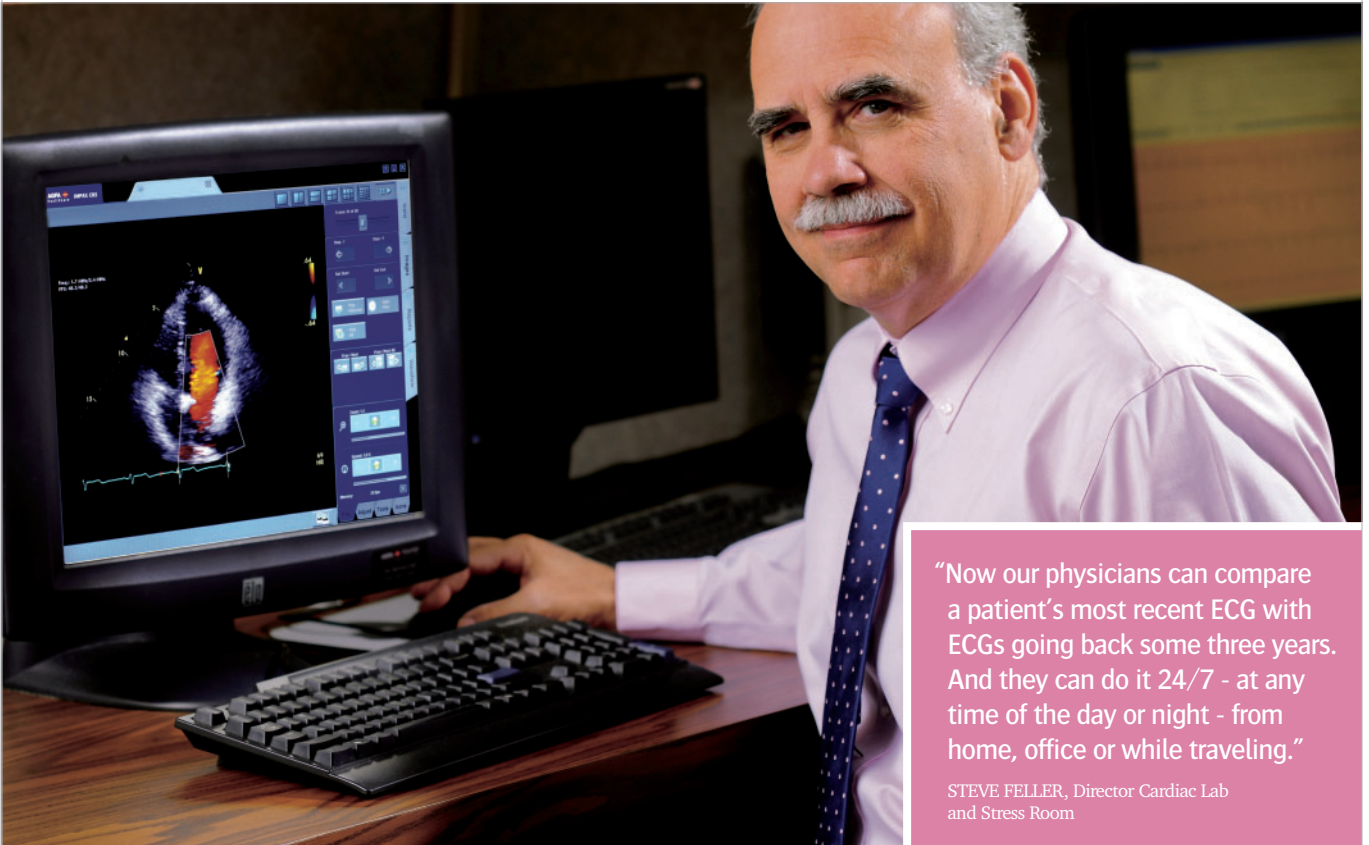
> "Now our physicians can compare a patient's most recent ECG with ECGs going back some three years. And they can do it 24/7 - at any time of the day or night - from home, office or while traveling."
>
> STEVE FELLER, Director Cardiac Lab and Stress Room

BACKGROUND

Coshocton County Memorial Hospital (http://www.ccmh.com), a 50-bed rural, acute care hospital with an attached 61-bed long-term care facility serving some 33,000 patients, has witnessed impressive gains in efficiency and clinician satisfaction thanks to its implementation of Agfa HealthCare's IMPAX HeartStation, a data processing solution that automates the processing and storage of electrocardiograms (ECGs).

Implemented in June 2007, the hospital's over 30 physicians and 25 technicians, as well as hospital affiliated clinics, have boosted their productivity using IMPAX HeartStation, which they say makes it easier and faster for them to display, edit, confirm, print, and archive ECGs.

OPPORTUNITY

Steve Feller, director of the hospital's cardiac lab and stress rooms, and Cindy Moore, an echocardiography technician and manager of IMPAX HeartStation, were eager to fulfill Coshocton's mission of delivering "the right care right here," while contributing to an enterprise-wide push toward electronic patient records (EPRs) and improvement of care efficiency through technology.

Responsible for 90 percent of the hospital's ECGs, Coshocton's cardiology lab had been electronic for approximately 10 years, including a 2005 upgrade to the cardiac stress room. But Feller and Moore knew they could do more. In 2006 they joined forces with two other lab staff to investigate alternatives to an ECHO vendor.

"We went into this process somewhat blind because no one at Coshocton really understood the fine points of management systems for ECHO and ECGs," says Steve Feller. "Fortunately, Agfa HealthCare guided us every step of the way, while Coshocton's IT

department helped to ensure integration with networked systems."

The Coshocton team was impressed with the ability of Agfa HealthCare's IMPAX HeartStation ECG Management System to improve access to ECG exams throughout the hospital network. Among the system's key selling points were its vendor neutral support for ECG devices, 12 and 15-lead ECG support, stress-ECG, Holter, event recorder and spirometer reports integration, urgent case prioritization technology and future integration with the EPR.

The Coshocton team was also impressed with Agfa HealthCare's customer-friendly mindset, fast turnarounds, and pricing flexibility. "With some vendors you can't ask for a simple change without having to ante up cash," says Steve Feller. "But Agfa HealthCare will never nickel and dime you. The reps solve problems, make adjustments and perform fixes with an enthusiastic 'no-problem' attitude."

IMPLEMENTATION
To address staff training needs, Agfa HealthCare brought in a six-member "A-team" for an entire week to conduct staff training and orientation. Group training was followed by one-on-one coaching on problems and questions. Several Agfa HealthCare staff also stayed on beyond the official training period to monitor the transition from a paper-based ECG environment to IMPAX HeartStation.

"If any of our clinicians or techs had questions or problems, Agfa HealthCare's training staff addressed them immediately," says Cindy Moore. "Training was delivered step by step and in laymen's terms, which contributed to system acceptance, ease of use, and clinician and tech satisfaction." Cindy Moore estimates that the Coshocton team was able to fully adjust to IMPAX HeartStation in less than a month.

RESULTS
Having worked with IMPAX HeartStation for more than three years, Feller and Moore are impressed with its ability to accelerate and streamline patient care by making it easier and faster for clinicians to display, edit, confirm, print, and archive ECGs. The system also speeds patient care decision-making by including ECGs in the patient's web-accessible cardiology record.

The most significant benefit resides in the ease and convenience with which Coshocton physicians now read ECGs. "Prior to working with Agfa HealthCare we had scores of ECGs, which required laborious, time-consuming searches," says Steve Feller.

"Now our physicians can compare a patient's most recent ECG with ECGs going back some three years. And they can do it 24/7 - at any time of the day or night - from home, office or while traveling."

He tells the story of a young Coshocton physician who, after reading ECGs from his bedroom at home, called the hospital's ED to provide guidance on one of his patients. "The ED physician was amazed that a colleague had almost instant access to his patient's results," she says. "By sharing the patient's results early on, the two physicians were able to make rapid, effective diagnostic and treatment decisions."

"Coshocton has become more efficient because IMPAX HeartStation allows us to do more with less," adds Steve Feller. "Physicians have also grown more efficient, which leaves them feeling satisfied with the quality and speed of the care they deliver." •

"Training was delivered step by step and in laymen's terms, which contributed to system acceptance, ease of use, and clinician and tech satisfaction."

CINDY MOORE, ECG Technician

"Throughout the years Agfa HealthCare has always provided excellent technical support and readiness to refine its solutions according to the hospital's needs."

DR. MAURIZIA DEL MASCHIO, Chief of Conventional and Digital Radiology Unit

Overcoming new challenges in healthcare services with IMPAX

At San Raffaele, an IMPAX solution optimizes health services to patients, making clinician's work easier with improved cost savings

INTERVIEWEE Dr. Maurizia Del Maschio, Chief of Conventional and Digital Radiology Unit

Four years after the complete implementation of an IMPAX solution, the hospital took stock of its situation. Today's Italian healthcare challenges now focus on cost controls without sacrificing quality, both in medical research and patient care. Under these circumstances, IMPAX systems are crucial to optimizing workflows and avoiding wasted resources and time.

PROVIDE BETTER PATIENT CARE AT REDUCED COSTS

Founded in the 1970s as a private, non-profit corporation owned by San Raffaele del Monte Tabor Foundation, San Raffaele University Hospital is considered a top-level research center, setting the standard for healthcare expertise and innovation in Italy. The hospital today combines traditional clinical activity with state-of-art education and training (by means of its affiliation with the University Vita-Salute). Also included is ground-breaking research in molecular medicine, oncology, diabetes, metabolic diseases and biotechnologies.

For a large, multi-centered hospital complex like San Raffaele, it is vital that all divisions and research facilities efficiently communicate. "At present, the challenge we face is maintaining and increasing our solid reputation in the healthcare field, yet at the same time, rationalizing how we charge for medical services. This means services must be cost-effective but without compromising quality, especially when it comes to diagnostic exams," says Dr. Maurizia Del Maschio, the hospital's Chief of Conventional and Digital Radiology.

That's why since 2003, San Raffaele has undertaken a radical digitalization project which included the installation of an IMPAX picture archiving and communication solution.

DID YOU KNOW...

» San Raffaele University Hospital totals more than 50,000 admissions, 60,000 ER admittances, and 160,000 diagnostic examinations per year.
» The Department of Radiology performs more than 500 exams per day.
» San Raffaele's University offers an International Ph.D. in Cellular and Molecular Biology.

> "Thanks to IMPAX, we can take care of a greater number of patients far more cost-effectively by using highly efficient digital methods."
>
> DR. MAURIZIA DEL MASCHIO, Chief of Conventional and Digital Radiology Unit

IMPAX ALLOWS A SWIFT AND INTUITIVE MANAGING OF DIAGNOSTIC IMAGES

The initial project involved the hospital's Nuclear Medicine unit, but it was soon extended to the Neuroradiology and the Radiology Department. The digitalization process was completed in 2006, while Agfa HealthCare followed this evolution step by step, refining its solutions to meet ever-changing hospital needs. The final result was an IMPAX modular solution, with High Availability and Disaster Recovery systems.

The modular structure of IMPAX allows the quick, intuitive managing of data and images from diagnostic imaging modalities: from general radiology through nuclear medicine, including orthopaedics and even radiotherapy.

REGIONAL CARE DIRECTIVES MET AND IMPROVED UPON THANKS TO IMPAX

The advantages of having a fully integrated IMPAX solution were clear to radiology department professionals, which has 22 radiologists spread over six different units. Despite an initial adjustment period, the hospital's personnel soon experienced a more efficient workflow, with significantly reduced downtime.

According to Dr. Del Maschio, "At first, there was some perplexity among the doctors who were used to reading hardcopy images. This situation was addressed by introducing all the changes gradually. This really helped us a lot, and after some minor adjustments, it was clear how much the new solution had improved our working environment, along with our ability to adhere to the region's 'best practices' directives. For example, the clinical follow-up of patients can't last more than three days; of course we were able to meet this standard even when using conventional diagnostic solutions. But now, thanks to IMPAX, we can take care of a greater number of patients far more cost-effectively by using highly efficient digital methods. We also benefit by having quick electronic access to a patient's complete clinical history."

San Raffaele's radiology unit is also deeply involved in clinical research, carrying out more than 50 programs in close collaboration with the Oncology Department and several other hospital groups. Coordinating research work of every department is not an easy task, and "we couldn't do it without IMPAX any more", admits Dr. Del Maschio.

San Raffaele is successfully continuing its relationship with Agfa HealthCare, relying on its constant support and willingness to develop new solutions that meet the hospital's needs in the best way possible. "Agfa HealthCare has been with us from the very beginning." says Dr. Del Maschio. "Throughout the years they have always provided excellent technical support and readiness to refine their solutions whenever a problem occurred." The next step is a further upgrading and expansion of the IMPAX system in 2011. •

SOLUTIONS

» Agfa HealthCare's ELEFANTE RIS, specially designed for the Italian market, fully integrated with IMPAX
» Agfa HealthCare's IMPAX modular solution.
» Supports a complete radiology workflow, from patient registration through medical reporting to back office operations and management reporting.
» User-friendly interface to minimize training.
» Quick access to patient history.
» Suitable for multi-centered university hospitals.

AGFA HEALTHCARE CONTRIBUTION

» Constant support.
» Readiness to develop new solutions to meet the hospital's present and future needs.
» Agfa HealthCare IMPAX solution allows a higher degree of coordination between colleagues, resulting in more efficient patient care.

With peak activity occurring primarily during the evening hours, throughput needs to be flawless. Orders are dispatched to the kitchen via computer straight to distributed printers, providing all staff members a good view on what's next. But it's a noisy environment, with people constantly jockeying about preparing the next steps.

Through the eyes of an Amazon

A personal portrayal by Marie Mandy – an experienced artist, but above all a woman who faced, fought and survived breast cancer.

The art catalog 'Through the eyes of an Amazon' was printed using :Sublima technology and environmentally-friendly thermal printing plates from Agfa Graphics.

Breast Cancer - Each year, 1 million women worldwide hear those words from their doctor. A serious diagnosis with dramatic consequences for them and their loved ones.

Yet there is positive news. Today, 75% of patients survive the disease. Detecting it early is of vital importance. The sooner the diagnosis is made, the faster doctors can treat it and the better the outcome can be.

Agfa HealthCare is committed to the fight against breast cancer, not only through its line of digital mammography systems, image enhancement software and associated products, but also by supporting a wide range of endeavors to increase breast health awareness among women and medical professionals.

'Through the eyes of an Amazon' is one such project; a creative photo exhibition in collaboration with Saint-Pierre University Hospital, Brussels. It features the work of Marie Mandy and filmmaker Vincent Fooy, conveying in words and art the real-life experiences of Marie, a breast cancer survivor, that will give heart to women who must face this disease, its social and emotional ramifications, and treatment up to and including partial or radical mastectomy.

The exhibition opened at the hospital in October in a stately ceremony attended by Princess Mathilde of Belgium. Christian Reinaudo, Chairman & CEO, represented Agfa-Gevaert NV. Dr. Fabienne Liebens, Head of the Saint-Pierre Hospital's Breast Clinic and one of the world's leading experts on breast cancer and mammography was present as well. She not only treated Marie Mandy, but also made her feel understood and taught her to appreciate the art of surgery.

Here is a page from the catalog that accompanies the exhibition. Marie Mandy beat her disease and, through her artistry, reconciled all the anguish and emotion that go with it. Her story inspires us and other healthcare professionals around the world who strive each day to give all women better chances.

"By projecting video onto my skin, like a canvas, I tried to represent directly on my body my emotions, the various stages of questioning I went through, and then my healing. It was an approach similar to a primitive tattooing: intended to express on the outside, i.e. on my flesh, what I was feeling on the inside, so I could exorcize my fear of death and expel this damned disease."

If you would like to receive a free copy of Marie Mandy's art catalog that accompanies the exhibition, please contact birgitte.baten@agfa.com

From left to right: Yvan Mayeur, president of the OCMW (Public Center for Social Welfare) in Brussels; Christian Reinaudo, CEO of Agfa-Gevaert N.V.; Marie Mandy and Dr. Fabienne Liebens, Head of the Saint-Pierre Hospital's Breast Clinic.

Princess Mathilde of Belgium (right) in conversation with Dr. Fabienne Liebens and Marie Mandy.

WHY THE AMAZONS...?

» The myth of the Amazon resonates across time, reaching us today through Marie Mandy's photographs and words. They were a tribe of women, skilled huntresses and warriors. In mythology, they burned off or cut off one of their breasts (mazos in Greek) in order to better shoot with a bow and arrow or use a spear. Like these warriors, women who experience breast removal are confronted with the asymmetry of their bodies. Modern-day Amazons are women who have lost a breast in their struggle against cancer.

Efficient, new PACS enhances hospital's reputation among physicians and patients

In a nation experiencing dramatic healthcare overhaul, the largest public teaching hospital in China's populous Jilin Province turns to Agfa HealthCare's workflow expertise and IMPAX solutions to grow its market share and remain competitive.

INTERVIEWEE Dr. Shucheng Hua, Vice President & Director, Radiology Department

> "Word of our improved efficiency has spread which helps secure our competitive position."
>
> DR. SHUCHENG HUA, Vice President & Director, Radiology Department
> Jilin University Norman Bethune First Hospital

A complete medical imaging solution including workflow optimization, image management, storage and distribution dramatically increased daily X-ray exams three times from 500 to 1,500 without compromising image quality.

The New Rural Cooperative Medical Care System (NRCMCS) initiated five years ago is designed to make medical treatment more affordable to China's rural poor. In the past two years, about 658 million people have signed up. The system is tiered, depending on location. If patients visit a small hospital or clinic in their town, 70 to 80% of their bill is covered. But if a modern city hospital is visited, only about 30% is paid. This puts tremendous pressure on larger, urban institutions to compete more effectively for privately insured individuals.

The 3,000-bed Jilin University Norman Bethune Hospital is facing these pressures. It's the largest medical teaching unit in Jilin Provence. Dr. Shucheng Hua is Vice President and Director of its radiology department.

"With healthcare reform intensifying each year, competition between local hospitals is increasingly fierce," Dr. Hua says. "How to retain and grow market share is the question each hospital administrator

must face. It boils down to how to make diagnosis and treatment more efficient, shorten waiting times, keep patients' costs low without compromising quality or service, and how best to lower overall operating costs."

In radiology, this lead to a desire to upgrade its four-year-old RIS/PACS and expand its use throughout the large, multi-site complex. There was also a need to streamline business processes by deploying the latest management tools.

EXPANDING ORIGINAL PACS IMPROVES EFFICIENCY ENTERPRISE-WIDE

The original RIS/PACS not only linked the radiology department to the main hospital's HIS, but also to multiple X-ray rooms at a separate pediatric hospital. These rooms had a mix of Agfa HealthCare CR systems and conventional screen/film imaging. The new solution would integrate these CR systems as well as expand the PACS' reach into every hospital department using medical imaging. This included nearby offsite clinics. It was also necessary to convert all of the pediatric hospital's conventional X-ray rooms to CR solutions, and support strategically placed, multiple clinical workstations throughout the enterprise. More than 100 clinical staff from radiology, other imaging departments and remote sites

DID YOU KNOW...

» The College of Medicine at Jilin University is named after Norman Bethune, a Canadian surgeon who in 1939 introduced western medical techniques to the Chinese.
» In its history, the school has trained more than 30,000 medical professionals practicing throughout the world. Today it has 4,552 faculty and staff members.
» Traditional Chinese medicine practiced for centuries is still administered alongside modern western medicine. Often, traditional physicians are primary caregivers in rural China's clinics and pharmacies.

would have access to all digital imaging and information.

"Being a public hospital, we use a competitive bidding process for such projects," Dr. Hua said. More than a dozen domestic and foreign firms participated. In addition to price, Jilin University Hospital also considered state-of-the-art technology, stability, a company's reputation and support capability.

Agfa HealthCare's IMPAX, integrated with a proprietary China RIS II solution, was selected based on its price, as well as the company's documented training, service support and ability to implement efficient workflows. Also a factor was the highly positive experience Jilin University Hospital had with its original PACS installed in 2006, a solution from Agfa HealthCare. "This successful implementation was a good example to us," the doctor adds.

The new project began in July, 2009 and fully cutover in December that year.

GROWTH IN PATIENT IMAGING VOLUME KEEPS HOSPITAL COMPETITIVE

"IMPAX is a very stable, reliable platform that meets all our demands," Dr. Hua says. "It has changed the way we work, switching fully from high-volume batch processing to a smarter, more deliberate flow that's faster and highly efficient."

As proof, daily X-ray exams enterprise-wide have grown from 500 to 1,500 since cutover without sacrificing image or service quality. This occurs, in large part, from patient wait times being significantly reduced thanks to faster exam workflows. Also provided was a new, "virtual printing" capability that queues DICOM print jobs from all digital modalities, and prints images on demand whenever needed, speeding the reporting process.

"Word of our improved efficiency has spread among medical colleagues

and patients, which helps advance our competitive position within the province," Dr. Hua adds.

Adequate training in the new digital solutions and workflows was also a major consideration, especially at a large hospital with a wide range of medical staff. "At first, some senior-level physicians preferred retaining their well-honed, conventional methods of reading, interpreting and reporting images," Dr. Hua said. "But we realized if everyone's individual habits were accommodated, the whole system could never be fully integrated. Agfa HealthCare training staff were especially sensitive to this issue, and in short time, all adjusted to the new workflows."

He concludes, "Before this solution, the radiology department was working in the past. Now, we handle three times the patient exam volume than before. We strongly recommend IMPAX to other hospitals." •

SOLUTIONS

IMPAX
» Provides complete image archiving, digital display, networking and distribution that is faster and more efficient than traditional processes.
» Supports one hospital or multiple facilities and clinics, across town or throughout a region.
» Full DICOM/HL-7 compatibility supports image printing, archiving and distribution anywhere on the network. Also provides easy data migration from current or legacy databases.

AGFA HEALTHCARE CONTRIBUTION

» IMPAX stores all images and data from conventional radiology, as well as digital modalities such as MRI, CR and DR.
» Agfa HealthCare has years of experience analyzing radiology department and hospital workflows, and can implement efficient solutions to expedite the dispatch of images and information.

Multi-site PACS with clinical applications helps hospital achieve high service quality to meet federal directives

Italian healthcare is among the world's finest, proactively guided by national laws that foster information technology (IT) as a means of providing quality service across all medical professions, including radiology. Recently, an IMPAX system from Agfa HealthCare helped a multi-hospital group meet these demands.

INTERVIEWEE Dr. Luigi Solbiati, Chairman, Department of Diagnostic Imaging; Head of Interventional Oncological Radiology, Busto Arsizio General Hospital
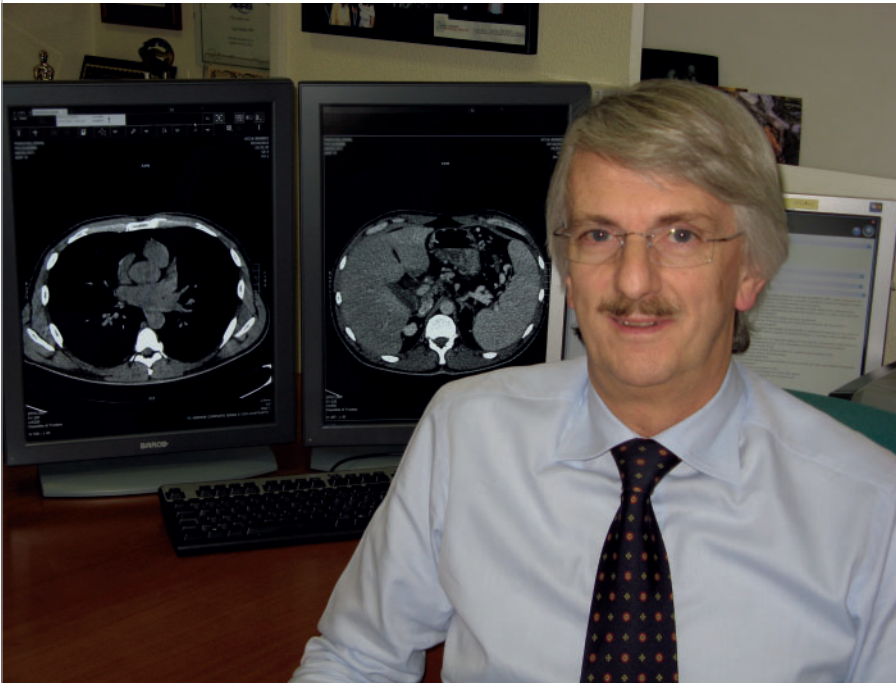
> "It's wonderful not having to wait for couriers to drive CDs or hardcopies between hospitals."
>
> DR. LUIGI SOLBIATI, Chairman, Department of Diagnostic Imaging; Head of Interventional Oncological Radiology – Busto Arsizio General Hospital

IMPAX links three separate Italian hospitals not only with advanced networking and image display tools, but also with customized orthopaedics, cardiology and mammography software to support 70 departments and 260,000 annual imaging exams.

Italy's healthcare system ranks second best in the world, after France, according to the World Health Organization. Services are provided to all Italian citizens through a mix of public and private sources. The public part handles 80 percent of care and is provided by the Servizio Sanitario Nazionale (SSN) through Italy's Ministry of Health. Public hospitals are administered locally.

The Ministry is highly proactive in encouraging laws pertaining to health excellence. In the mid-1990s, it directed many smaller, public hospitals to join together as single entities, thereby combining various strengths in one unit. Though hospitals retained their separate identities, they now were administered centrally. In 1998, further legislation drove the digitization of medical information between such hospitals to expedite care, minimize confusion, reduce paper and promote efficiencies to both patients and taxpayers.

In the early 1990s, the 500-bed general hospital in Busto Arsizio, located in Northern Italy just 25 km outside Milan, operated independently of other local, public hospitals. But to comply with new Health Ministry directives, it soon joined administratively with nearby 300-bed Saronno Hospital and 200-bed Tradate Hospital. The group is today called Busto Arsizio General Hospital, encompassing a three-site total of about 1,000 beds performing more than 260,000 X-ray studies annually. The hospitals form a

AGFA HEALTHCARE CONTRIBUTION

» IMPAX stores all images and data from conventional radiology, as well as digital modalities such as MRI, CR and DR.

» Agfa HealthCare's unique clinical application software for nuclear medicine, mammography, orthopaedics and cardiovascular provides easy access to a wide range of image enhancement and administrative features.

service triangle with each about 30 km from the others. Yet due to heavy local traffic, it can take up to an hour to drive between facilities.

AGFA HEALTHCARE SYSTEMS SCORE HIGH MARKS ON FIRST VOTE

"To comply with federal directives, we decided to expand our original mini-PACS connecting Busto Arsizio's radiology and emergency departments to link all diagnostic imaging functions at the other two hospitals, allowing radiologists to consult and diagnose from here," said Luigi Solbiati, Chairman of Diagnostic Imaging for the group. In addition to Nuclear Medicine and General Radiology across a full range of digital modalities, Busto Arsizio, the main site, specializes in radiotherapy procedures. The Saronno Hospital offers nuclear medicine, CT- and MRI-scans, along with general procedures and mammography. Tradate Hospital performs general radiology, mammography and CT-scans.

A wide area network (WAN) first had to be installed between the facilities involving the underground placing of fiber-optic cable. This multi-year effort was followed in 2007 by the need to choose a RIS/PACS supplier for the three-site hospital group. As a public institution, Italian law demands such decisions be made by competitive bid in a Request for Proposal (RFP). In addition to the multi-site RIS/PACS, the RFP included Computed Radiography (CR) imaging systems and supporting display software/workstations for mammography, orthopaedics and cardiology at all sites.

"In response to specific product and economic criteria set by our five-member panel, three competing firms submitted a technical proposal, followed by a separate pricing offer," Dr. Solbiati said. "Agfa HealthCare's IMPAX 6 solution, CR systems with NX Workstations and clinical application software received the highest marks across both criteria, and were readily selected on the first vote."

Installation at all three hospitals began in June 2008. Initial RIS/PACS cutover occurred at Busto Arsizio in early 2009, and in what Dr. Solbiati calls a wise move, was gradually phased in at the other two sites over the following weeks. "Both Agfa HealthCare and our oversight committee felt each facility should receive undivided attention during the cutover. Since the two smaller hospitals did not have PACS previously, it was felt each should be gradually eased into the technology – not brought in all at once."

The strategy worked. Says Dr. Solbiati, "In any leapstep change, there will be some who resist, and we were no exception. But Agfa HealthCare training staffs were excellent. They carefully and methodically worked with those hesitant about IT systems, and in short time, had them successfully acclimated."

IMAGE QUALITY AND ENHANCEMENT FEATURES OF CR SOLUTIONS OFFER EXCELLENT VISUALIZATION

Today, all imaging departments within the group are linked via 35 image display workstations and include 65 RIS clients. More than 500 clinical users also access images and data securely via the Internet.

"The benefits are enormous," Dr. Solbiati says. "My staff and I can now quickly consult with physicians enterprise-wide by simply viewing the shared images and data. It's wonderful not having to wait up to an hour for couriers to drive CDs or hardcopies between hospitals."

Also praised is Agfa HealthCare's clinical application software at each site. "The quality and enhancement features are excellent," Dr. Solbiati says. Agfa HealthCare's Oasis application software for nuclear medicine at the Busto Arsizio Hospital is the first such installation in Italy.

The doctor gives an example of the total system's benefits: "A high-quality screening mammogram performed using CR at a remote site can be sent right

away to us at Busto Arsizio. On review and consultation with the patient's physician, we can quickly decide if the patient needs to drive here for a Mammotome biopsy procedure to further analyze suspicious pathology. The same scenario applies to orthopaedic studies. As for cardiology, an IMPAX CV application is now being installed, and our interventional cardiologists are eager to start using it."

Finally, radiologists, physicians and administrative staff praise the ability of IMPAX 6 to facilitate the fast preparation of medical reports or quickly retrieve patient histories from any network location. "We don't have to dictate reports on tape anymore, along with waiting for hours for typed proofs to study and sign," Dr. Solbiati says.

"Since installing the multi-site RIS/PACS, it's not unusual for general X-ray images to be viewed right after a procedure is completed, with an electronic report prepared, printed and given with a CD to patients before they leave the hospital. Such high quality service is in part why our healthcare system ranks so highly." •

SOLUTIONS

IMPAX
» Provides a complete image archiving, digital display and networking solution that is faster and more efficient than traditional processes.
» Supports one hospital or multiple facilities and clinics, across town or throughout a region.
» Full DICOM/HL-7 compatibility supports image printing, archiving and distribution anywhere on the network.

DID YOU KNOW...

» Surgeries and hospitalization at all public Italian hospitals are completely free of charge to everyone regardless of income.
» Patients are assigned a family doctor by the SSN, but are free to change if they are dissatisfied with the assigned provider.

Ambitious restaurants constantly keep an eye on their customers. EPIC's staff get constant updates about what foodies say about them. Executive Chef Stephen Wambach organizes the EPIC Table over lunch, during which he demonstrates how to prepare, cook and plate a specific ingredient to make it a unique experience for many foodies.
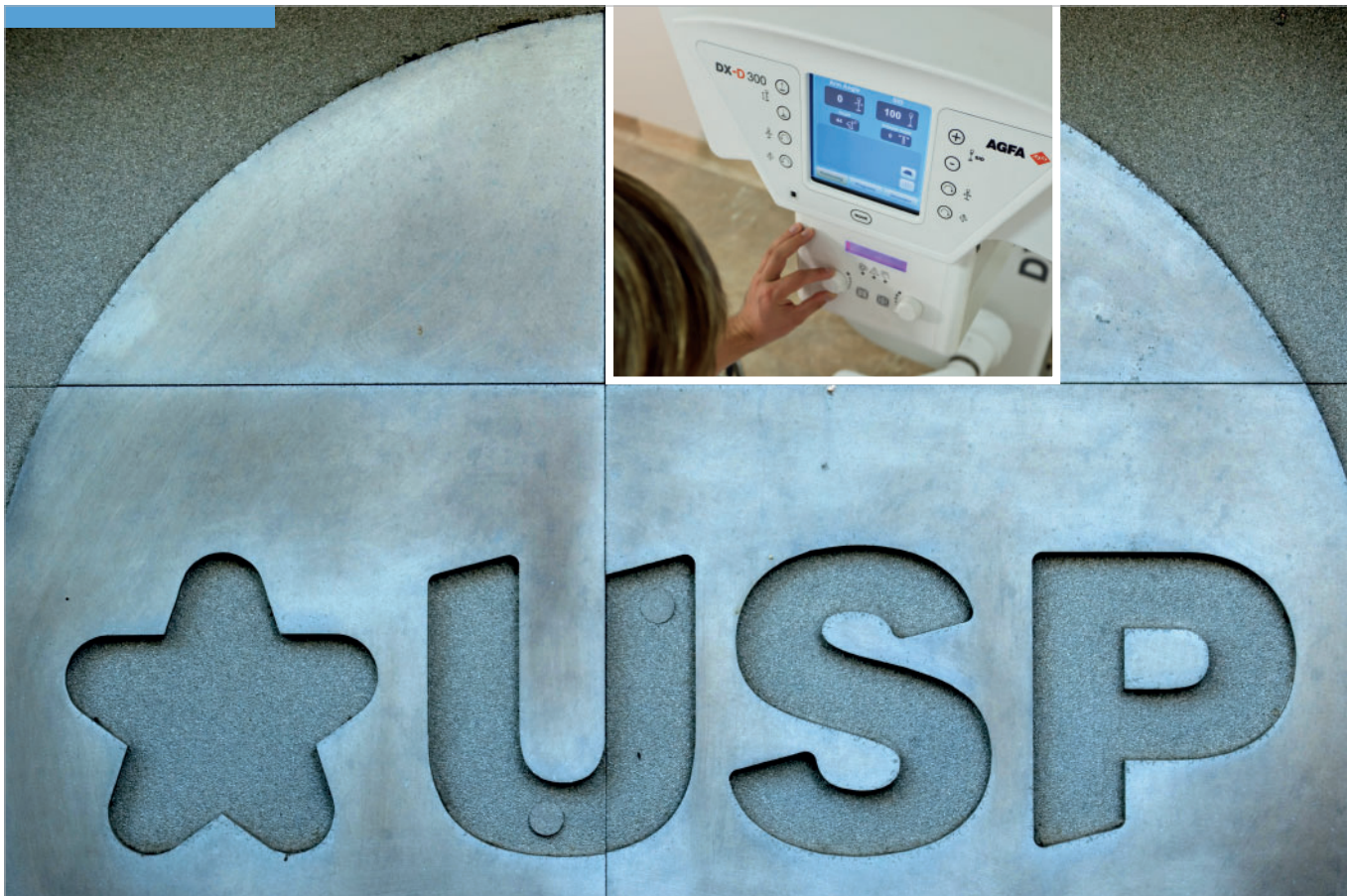
USP CLÍNICA SAGRADO CORAZÓN, SEVILLE, SPAIN

Taking the heat off radiology peaks in emergency care

Supported by a new DX-D 300 DR solution from Agfa HealthCare, this flagship of Spain's largest private hospital group will soon acquire legal university status as a radiology teaching facility.

INTERVIEWEES Dr. Alfonso Haya, Medical Director · Dr. Ignacio Galán, Head of the Radiology Department · Dr. Monica Romero Gomez, Radiologist · Guadalupe Godoy Chaves, Technologist, Emergency Department

When the summer heat is over at the emergency department of the highly reputed USP Clínica Sagrado Corazón, Seville, the staff is ready to take the healthcare heat: Agfa HealthCare's DX-D 300 Direct Radiography (DR) system can handle the workload peaks with ease, providing a staff- and patient-friendly examination environment.

With one of the most centralized healthcare systems in the world, Spain is spending an average amount of its gross domestic product on healthcare, based on Organization for Economic Cooperation and Development guidelines. Spain ranks seven on the World Healthcare Organization's care ranking, and the Spanish citizens are the second most satisfied with the quality of the healthcare offered by both public and private hospitals.

The Spanish model is a two-tiered, public/private system, with some 12% of the population being privately insured. All receive healthcare that is among the best in Europe and the world. Nowhere in Spain is the synergy between both healthcare worlds clearer than in Seville. The Hospital Universitario Virgen del

> "The Agfa HealthCare DX-D 300 Direct Radiography system is the catalyst to take radiology fully digital."

DR. ALFONSO HAYA, Medical Director

Rocío, generally considered to be one of the best public teaching hospitals in Spain, and USP Clínica Sagrado Corazón, one of the flagship hospitals of the leading Spanish private hospital group, USP Hospitales, are all present in the Seville city center.

UNIVERSITY STATUS FOR RADIOLOGY DEPARTMENT

"We are the leading private healthcare group in Spain and the most important one in Andalusia and Seville," says Dr. Alfonso Haya, Medical Director of the USP Clínica Sagrado Corazón, "with clinical specialties like neurosurgery, that are recognized all over the world. Our ambition is to have our doctors and staff recognized by achieving legal university hospital status. The first department to achieve this stature will be radiology in 2011. We have been investing heavily in digitization with the installation of the DX-D 300 Direct Radiography system as the catalyst of our ambition to make the department fully digital."

With six different campuses throughout the Seville area, and a seventh soon to come, the need for a completely digital workflow is acute. Currently, all

centers have Computed Radiography capacity using Agfa HealthCare solutions. More than 70,000 annual X-ray examinations require fast image transfer to a centralized picture archiving and communication system (PACS) and ubiquitous access to images and patient data. "The availability of the DX-D 300 DR system will double our examination

> "I am thrilled by the DR technology."

DR. MONICA ROMERO GOMEZ, Radiologist

> "We are big on the green agenda - the Agfa HealthCare CR and DR solutions are instrumental to this ambition."
>
> DR. IGNACIO GALÁN, Head of the Radiology Department

capacity in the emergency department," explains Dr. Ignacio Galán, Head of Radiology Department at USP Clínica Sagrado Corazón. "We have considerably increased our peak capacity because the patient flow is extremely fast with Agfa HealthCare's DR solution. Patients appreciate the short waiting times and the technologists like the extreme flexibility of the DR workflow. The planned deployment of PACS, integrating our distributed CR capacity with an optical fiber connection, will really boost our efficiency."

CR AND DR SOLUTIONS SUPPORT GREEN AGENDA

Dr. Ignacio Galán appreciates the state-of-the-art technology associated with the DX-D 300 solution. Next to the classic benefits of CR and DR, he strongly embraces the positive ecological advantages of the solution: no chemical waste and patients receive a minimal dose of radiation. "We are big on the green agenda, and clean technology is appreciated by both our staff and the patients. We ultimately aim at achieving a digital radiology environment, and the Agfa HealthCare CR and DR solutions are instrumental to this ambition. The small eco-footprint is also a good

rationale in negotiating favorable volume agreements with the insurance companies for clinical treatments."

EMERGENCY DEPARTMENT IS FRONT-LINE TEST FOR PRODUCTIVITY

Installing the first DX-D 300 DR system in Spain's largest private hospital group is far from a hap-hazard decision. Inspired by the fact that about 60% of all patients enter the hospital through the Emergency Department, it is also where waiting times often need to be significantly reduced. Typically, in southern countries with extreme day temperatures, hospital visits for examinations will peak in late afternoon. And during summer, when the outside temperature is mercilessly high, patients even tend to avoid going to the hospital at all. Consequently, in fall, emergency department visits double.

"We know this means extremely busy late afternoons," says Emergency Department Technologist Guadalupe Godoy Chaves. "We have already experienced the flexibility of the DX-D 300 DR solution during peak periods."

She adds, "The main reason to have the solution is its incredible speed: patients need only stay for a short while in the examination room because the system quickly adapts to the study type. We can easily maneuver the bucky as well as the tube, which we can turn around the patient. We can also move the table the patient is lying on. This is convenient for many different patients: small children, immobile adults, obese or the very weak. And it gets better: The DX-D 300 software quickly selects the right examination parameters once we enter the patient's data. It also instructs the system to properly position the bucky and the tube. It makes my life so much easier."

MUSICA[2] IMAGE QUALITY AT THE CORE OF HIGH QUALITY EXAM RESULTS

Radiologist Monica Romero Gomez confirms the comfortable workflow: "The change is dramatic, because the patients feel at ease and are effortlessly positioned for the examination. Also, images are almost immediately available for the radiologist and referring clinicians in the hospital." She further expects the emergency department's productivity to increase thanks to the faster patient throughput offered by

the DX-D 300. Dr. Romero Gomez is confident that the improved and consistent image quality provided by Agfa HealthCare's MUSICA^2 image enhancement software will help to assure the best examination quality, notwithstanding the higher productivity.

To Technologist Guadalupe Godoy Chaves, the contribution of MUSICA^2 software greatly enhances the results of the examinations: "In the time I have used the DX-D 300 solution, I have never needed to retake a patient. The image quality remains consistent from the day's first take to the very last. And the patient receives less radiation dose."

Concludes Radiologist Romero Gomez: "I am thrilled with the new digital imaging technologies. We have invested in many new systems including a CT scanner and this DR solution. In particular, the DX-D 300 will allow radiologists to confer with referring clinicians using the MUSICA^2 images even before we actually write the formal report. It's going to expedite team work considerably, for the ultimate benefit to the patient." •

DID YOU KNOW...

» In medicine, Seville is home to the largest DNA bank in Spain, as well as a major European research hub for renewable energies.

ABOUT USP HOSPITAL GROUP

USP Hospitales, with headquarters in Madrid, was created in 1998 and is the leading private healthcare group in Spain. Currently, it consists of 13 hospitals nationwide and 36 medical services centers. Four thousand clinicians yearly attend to more than 2 million patients. In 2009, the group performed 116,000 surgical interventions, 11,800 births and 444,000 emergency interventions, and recorded 339,000 hospital stays. •

www.usphospitales.com

"Agfa HealthCare answered our need for an in-depth analysis of our various medical, diagnostic, care and management workflows."

DR. GEERT LUYCKX, Head of Gynaecology

Detailed EPR provides highly accurate, structured platform for multidisciplinary collaboration

ORBIS Live* provides doctors at Sint-Jozef Hospital a fully detailed overview of all clinical and pharmaceutical information relating to earlier patient admissions, including a complete case history.

INTERVIEWEE Dr. Geert Luyckx, Head of Gynaecology
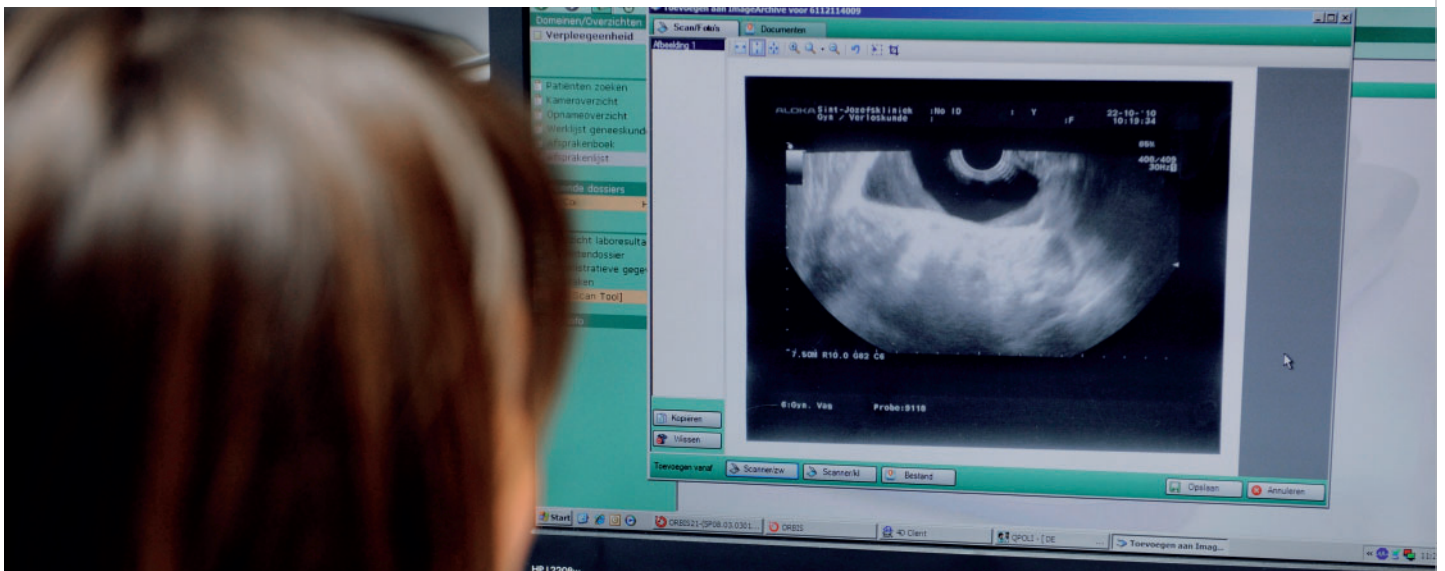
The Sint-Jozef Hospital is a small but rapidly growing institution among the large regional hospitals in nearby Kortrijk and Roeselare. With 55 doctors and 210 beds, it manages to provide a wide range of medical care, including highly demanding disciplines such as heart- and neurosurgery. "In ten years, the number of doctors has doubled," says Dr. Geert Luyckx, Head of the Gynaecology Department. "We live up to our name as a small, family-oriented hospital, which has put us under growing pressure due to longer waiting periods for patients who increasingly seek our services. As a result, we are adding a new building that includes expanded outpatient and emergency services."

SOLUTION TO ALL MICRO WORKFLOWS
To remedy the growing pains, the doctors agreed with hospital management to install an enterprise-wide Electronic Patient Record (EPR) solution which was able to support all clinical activities, from appointment management to prescription control; from case history archiving to therapy follow-up.

After an in-depth review which lasted a year and a half, Agfa HealthCare's ORBIS EPR was deemed the best solution. "Agfa HealthCare answered our need for an in-depth analysis of our various medical, diagnostic, care and management workflows," says Dr. Luyckx. "The company was working on pilot projects in a number of large hospitals, and a visit to one of these sites in Germany convinced us."

Dr. Luyckx adds: "Implementing ORBIS EPR went smoothly. Agfa HealthCare's project manager was a perfect partner for our IT employees. To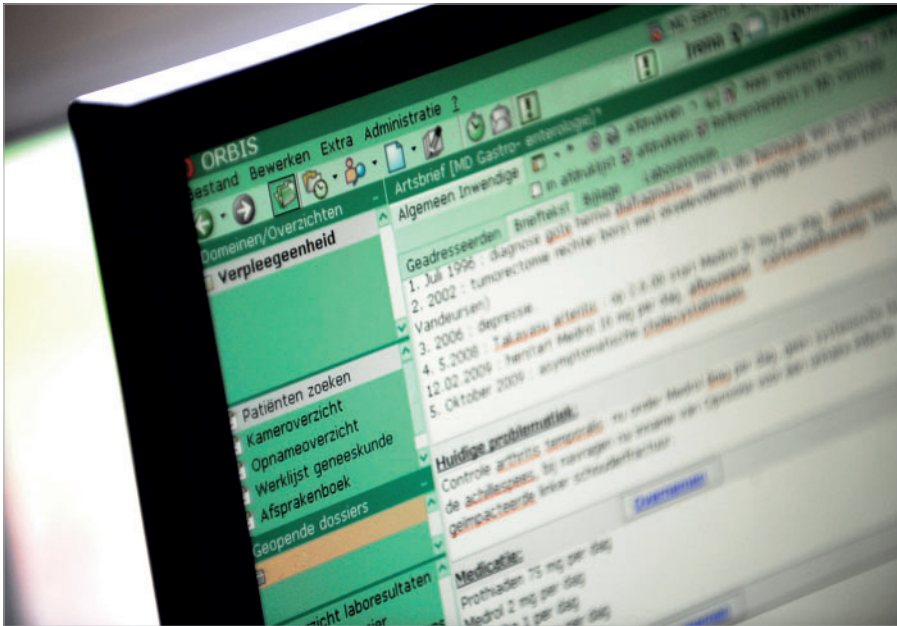day, ORBIS Live is fully operational throughout the hospital, thanks to its integration with the HIS. The hospital's Central Admission staff use each patient's unique Social Information System (SIS) number issued by Belgium's government to verify accuracy and minimize errors."

DETERMINING THE FULL CASE HISTORY IN NO TIME
ORBIS Live centralizes all relevant reports including department-related medical records, in which reports by

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AGFA HEALTHCARE CONTRIBUTION

» ORBIS, a hospital-wide, integrated IT solution to improve and quicken work processes in nursing, administration and business management. It facilitates full yet secure access to patient medical and demographic data across clinical and administrative processes.

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* ORBIS LIVE is available in select locations only (not available in Canada or the USA). Please consult an Agfa HealthCare representative for details.

DID YOU KNOW...
» Izegem was once renowned for shoe and brush making. One brand still remains: Belgian Shoes. Fully handmade leather clogs, with your own family emblem if you please. Only one shop in New York sells them, and only the most affluent buy them.

each department's clinical staff can be consulted. For the first time, the reporting is available to all clinicians and treatment staff in a structured, patient-focused way. Since the introduction of ORBIS Live, Sint-Jozef's physicians have a complete patient record with all medical and pharmacological information from previous admissions.

"A good diagnosis starts with a highly specific, correct case history," emphasizes Dr. Luyckx. "ORBIS Live allows us to check all details of each patient's history very easily. Often, the patient can't exactly remember what medication was prescribed, what the blood test results were or which operation was done. Patients typically convey complex medical procedures in vague terms, like 'I had a knee operation'. This lack of specificity, of course, is of little help to the medical professional."

A STRUCTURAL PLATFORM FOR MULTIDISCIPLINARY COLLABORATION
The full implementation of an EPR using ORBIS is only effective when head nurses, paramedics and other clinical support teams are able to integrate their reports, adds Dr. Luyckx. "The observations and measurements obtained by nursing staff are important to doctors in the care of their patients," he says. "This includes night observations, registration of vital signs, observations after birth, and other

data that add significant value to an EPR." That's why Dr. Luyckx believes all professional medical staff should use ORBIS Live at all times to give multidisciplinary collaboration a highly accurate, structured platform. •

"Implementing ORBIS EPR went smoothly. Agfa HealthCare's project manager was a perfect partner for our IT employees."
DR. GEERT LUYCKX, Head of Gynaecology

Technology Corner

Revealing its broadest portfolio ever for Digital Radiography at RSNA 2010

As an established supplier of comprehensive and innovative solutions, Agfa HealthCare is ideally positioned to address some of the toughest challenges currently facing the healthcare market. We are dedicated to continually providing solutions for both Computed Radiography (CR) and Direct Radiography (DR) to enhance the delivery of patient care, help reduce costs, and increase operational and clinical efficiencies.

At RSNA 2010 Agfa HealthCare will be showcasing the power of CR versatility with the productivity of DR. At the heart of all our digital solutions lie Agfa HealthCare's gold standard MUSICA^2 imaging software and NX user station. Exam-independent MUSICA^2 automatically analyzes the characteristics of each image and optimizes processing parameters – independent of user input and dose settings.

Agfa HealthCare introduces DX-M*, a CR solution for mixed use

Agfa HealthCare's DX-M is a CR solution able to handle both needle-based detector plates (NIP), as well as standard phosphor plates (PIP). The solution's ability to read NIP for Mammography requirements as well as for General Radiography means that the solution meets a market demand for high quality diagnostic images across needs, and offers the potential for dose reduction. The dedicated Mammography needle-based detector delivers outstanding CR image quality and is compatible with existing breast imaging modalities, ensuring cost efficiency. Its small footprint, fast preview and user friendly drop-and-go buffer allows it do deliver a high throughput, enhancing the department's overall workflow. Along with the DX-G, this solution is Agfa HealthCare's most complete CR system to date.

DX-G, a next-generation CR system with unprecedented flexibility

Agfa HealthCare's DX-G supports digital radiology, extremities, neonatal and pediatric applications with the flexibility of handling both standard phosphor imaging plates and needle based detectors. The needle detectors with high image quality offer the potential for dose reduction. It combines excellent imaging quality with high throughput delivered by a unique five cassette drop-and-go buffer for seamless workflow. It is housed in a compact system comprising the top features of already proven Agfa HealthCare CR systems. Requiring no dedicated area, its small footprint allows it to be placed easily inside the X-ray room or within the X-ray ward, where it can be slotted into small spaces.

DX-D 100
Mobile DR solution

Patients who need imaging exams the most, may lack the mobility necessary to move to the X-ray room or to position themselves properly for optimum imaging. This is where Agfa HealthCare's mobile DX-D 100 comes into its own. Designed for mobile use, DX-D 100 can handle a broad range of General Radiography X-ray studies, even for the least mobile patients. The very short exposure time means images are available immediately and can be validated straight away after exposure. The higher productivity and image quality translate into lower cost per exam and higher diagnostic efficiency. What's more, the higher image quality also means potential dose reduction for patients and operators. With superb handling capabilities it reduces patient waiting times and increases diagnostic confidence. The DX-D 100 further answers the need for constant enhancement of patient comfort and performance of your radiology department.

* DX-M is currently not available in the U.S.

Teleradiology solution replaces adventurous motorbike shuttles through São Paulo

One of Brazil's largest diagnostic imaging groups has currently linked 8 separate locations throughout São Paulo, using Agfa HealthCare's new IMPAX Data Center solution. The plan is to link up to 25 hospitals at the end of the project.

INTERVIEWEE Armin Spirgatis, IT & Teleradiology Manager

"Most impressive so far is a major reduction in turnaround time for radiologist reports enterprise-wide."

DR. ARMIN SPIRGATIS,
IT & Teleradiology Manager

Imagine processing, storing and managing over 3 million digital X-ray, CT and mammo exams each year, moving them seamlessly between multiple sites across a huge urban area. A novel teleradiology solution supported by vast central storage and sophisticated display tools makes it possible.

Both private and government institutions, administered nationally by the Ministry of Health and Aging, provide healthcare in Brazil. It comes free at the point of care to all Brazilians, funded through general taxes. Though large, public healthcare facilities play a prominent role in medicine, 66% of the country's 7,806 hospitals, 70% of its 485,000 hospital beds, and 87% of its 723 specialized hospitals are in the private sector. In diagnostic support and therapy, 95% of such establishments are private.

IMPAX DATA CENTER WITH TELERADIOLOGY SOLUTION

» Integrates images and information across regions, facilities and departments
» Consolidates and shares data across disparate, multi-vendor PACS
» Creates a single patient record – images, demographics, clinical test results, pharmacy
» Ends data migration – modalities can now store data on IMPAX Data Center, eliminating added expense of independent storage
» Stores rich variety of all DICOM 3.0 medical images and diagnostic results

Against this background is the Fundação Instituto de Pesquisa e Estudo de Diagnóstico por Imagem, or FIDI, a private, non-profit organization specializing in nearly all aspects of diagnostic imaging. It supplies a range of radiology services to 46 public hospitals in the City and State of São Paulo, as well as numerous stand-alone clinics and first aid units. FIDI employs more than 1,000 technologists, IT and clinical specialists, as well as 300 radiologists to support its service to the Southern Hemisphere's largest metro area.

EFFICIENT, DIGITAL IMAGE STORAGE AND DISTRIBUTION REPLACES NOISY MOTORBIKES

The evolution to an IMPAX Data Center solution linking all sites served by FIDI was nothing short of revolutionary, says Armin Spirgatis, FIDI's IT and Teleradiology Manager. "Most locations had PACS from a variety of vendors, but prior to the centralized teleradiology network, they couldn't talk to each other. So each facility printed films or CDs, and used a fleet of motorcycle couriers to convey images and information between sites. Motorbikes are the only way to get around São Paulo's highly congested street traffic. And there were still many problems – accidents, bad weather delays, wrong turns, noise pollution and lost or missing films or CDs."

FIDI's primary objective was to bring all imaging and information together in one, centralized processing system

at a single data center in central São Paulo, and make it easily available, electronically, to all 46 customer sites.

A tender was soon issued for the IT portion of this massive project. Agfa HealthCare was selected based on its overall reputation, its experience with installing a similar regional network in Canada and its multi-year PACS expertise at one of São Paulo's largest government-owned institutions, and FIDI client, the Hospital for Public Employees, which performs more than 300,000 exams annually.

In addition to IMPAX Data Center technologies, the Agfa HealthCare contract included 15 stand-alone Computed Radiography (CR) systems spread across eight hospitals, to help transition all imaging to a digital platform. Dedicated fiber optic links were run to four huge public hospitals. In situations where it was impractical or expensive to hard-wire a network, a

» Ability to analyze all institutional data and network requirements, study and recommend radiology workflow improvements, present options and discuss a viable solution to meet specific needs. Agfa HealthCare has proven experience and expertise in successfully implementing a wide range of similar applications worldwide.

microwave radio signal on a protected frequency was used. Others used Agfa HealthCare's MediWeb solution, allowing imaging results to be securely transmitted and viewed on a password-protected website.

FIRST RESULTS – REPORT TURNAROUND GOES FROM A WEEK TO HOURS SYSTEM-WIDE

While the network's execution phase has just begun, and statistics are still being complied, some results have been immediately apparent. "Most impressive so far is a major reduction in turnaround time (TAT) for radiologist reports enterprise-wide," says Armin Spirgatis.

All FIDI clients have seen report TAT cut from five working days to about four hours. "For example, during September this year, approximately 2,800 digital imaging procedures were completed, and the average radiologists' report TAT averaged just four hours and 39 minutes," Armin Spirgatis says. "Better yet, there are no more missing images caused by physically transporting films and CDs from one location to another. The combination of the IMPAX solution with the Agfa HealthCare CR solution provides instant high quality image enhancement and manipulation features. Workstations throughout the organization can also access these images and viewing features, something we couldn't properly do shuttling around films and CDs by motorcycle."

According to Armin Spirgatis, the teleradiology network with its many workstations, central storage and processing, web-based access and individual CR equipment makes FIDI competitive in recruiting and retaining young radiologists who want to practice at the forefront of their profession. Most FIDI radiologists now work at the São Paulo remote reporting facility in a very high-technology environment with numerous perks and benefits.

Finally, a change so revolutionary did not come without some skepticism and even resistance. "Investing significant time in familiarization training is paramount to acceptance and success," Armin Spirgatis says. "Our IT staff visited each hospital or clinic multiple times every week during installation and cutover, and even now, we regularly send our professionals to the front lines and discuss any issues. We also routinely meet with administrators, medical and financial management at each institution as they're our key stakeholders. Their support is vital to continued success."

Perhaps the solution's most convincing line of reasoning is regular open house events at the central data center. "It's very important to show users that this facility is real, and contains all the servers, networking systems and IT support specialists to maintain its reliable operation. These events go a long way in winning over even the hardest cynics," he concludes. •

In the kitchen, all line chefs are trained and assessed on-the-job on a daily basis. Every single day the Chef de Cuisine tastes every ingredient, making sure it's fresh. He says it's about being on top of the crew and keeping expectations high.

DX-M* and DX-G solutions herald a new era in private practice radiology

By acquiring Agfa HealthCare's DX-M and DX-G solutions plus a DX-D 300 flat panel detector, Dr. Rouas is now offering a fully digital service for his radiology practice

INTERVIEWEE Dr. Lucien Rouas, Radiologist

> "The DX-D 300 allows a 30% time saving."
>
> DR. ROUAS, Radiologist

Since taking over and renovating the facility in 1998, the doctor has continually modernized his equipment in order to enhance medical imaging performance and quality. As a result, what was once known as the oldest radiology practice in Chelles has today become among the most advanced of its kind in the region. This is in large part thanks to numerous Agfa HealthCare solutions and technologies that revolutionize the medical staff's day-to-day work.

PRACTICE BENEFITS FROM A DECADE OF GROWTH WITH AGFA HEALTHCARE

Located in Chelles, in the Seine-et-Marne region twenty minutes from the center of Paris, Dr. Rouas' surgery performs a wide range of general radiology, arthrography, mammography, and osteodensitometry exams, among other procedures. The practice sees more than 1,500 patients per month.

As a longstanding Agfa HealthCare customer, Dr. Rouas has always opted for quality products and has regularly upgraded his imaging equipment to stay at technology's cutting edge.

A pioneer among his colleagues, the doctor originally installed an ADC Compact system in the 1990s, which at the time was unique in its ability to manage 10 cassettes. Dr. Rouas has again renewed his confidence in Agfa HealthCare through his acquiring new digital imaging solutions as they come to market.

In 2009, Dr. Rouas crossed a major threshold by installing Agfa HealthCare's latest digital imaging innovations. In 2010, the center became the first private French radiology practice to link the DX-D 300 flat panel detector with the new DX-G and DX-M digitizers based on needle technology.

INSTANT IMAGE ACQUISITION SPEEDS PATIENT/STAFF WORKFLOWS

Upgrading to these digital radiology solutions improves the practices' image quality, helps reduce X-ray doses and speeds staff productivity. By combining these advantages in a single piece of equipment, the DX-D 300 flat panel detector system is a perfect illustration of such an advance.

With its state-of-the-art technology, unique detector and fully-motorized, remotely-controlled positioning system, the DX-D 300 is an easy-to-use, ergonomic solution providing excellent image quality at lower radiation doses.

While its flexibility pleases its operators, who can now record and automatically select all angles of incidence, it is an essential solution for optimized image acquisition.

"Image display is instantaneous, resulting in about a 30 percent time savings in our workflows," Dr. Rouas explains.

MUSICA² OPTIMIZES IMAGE QUALITY - HELPS LOWER X-RAY DOSE

Thanks to the DX-G's novel ability to read standard plates as well as needle-based detectors, and supported by its unique MUSICA² image processing software, the solution offers image quality equivalent to flat panel detectors and one that is noticeably higher than standard plates.

"Whether using flat panel or needle-based detectors, we estimate that X-ray emissions are cut by at least half," Dr. Rouas comments.

This sizeable X-ray reduction benefit is also a significant factor in performing screening mammography. With about fifteen examinations per day, Dr. Rouas sought a dedicated mammography digitizer. The DX-M, equipped with a high-performing reading capacity and needle-based detectors, raises the level of performance by providing breast imaging with improved definition.

BOTH SOLUTIONS NETWORK WITH PACS FOR QUICK, SECURE IMAGE/DATA SHARING

Because these Agfa HealthCare solutions are easy to use, they significantly improve staff productivity. In fact, the DX-M and DX-G complement each other in allowing all information to be centralized on a PACS, allowing quick, secure access by numerous referring physicians and clinicians.

Such information can eventually be shared with other medical establishments to achieve even greater efficiency in processing diagnostic images and medical information.

"Having a single, reliable and credible contact partner was a real advantage for justifying the purchase of this equipment," Dr. Rouas concludes. •

> "Needle-based detector technology offers noticeably higher image quality."
>
> DR. ROUAS, Radiologist

* DX-M is currently not available in the U.S.

The CR roadmap to "radiation hygiene"

In pediatric, neonatal, full leg/full spine imaging and barium studies, CR still is the technology of choice at UZ Leuven's radiology department. Agfa HealthCare's DX-G digitizers provide excellent image quality with the potential to lower X-ray doses (when the needle detector option is utilized), even in challenging circumstances, thanks to their capability to scan both powder plates and needle detectors. When combined with sophisticated NX workstations, they allow for decentralized image quality control.

INTERVIEWEE Prof. Dr. Raymond Oyen, Head of the department of Radiology

With a full-time staff of 34, along with 140 paramedics and 32 residents in training, the radiology department of the Belgian University Hospitals of Leuven (UZ Leuven) is the nation's largest and most reputable. Two hundred and fifty investigators at two research centers – MOSAIC (Molecular Small Animal Imaging Center) and MIRC (Medical Imaging Research Center) – further strengthen its standing on an international scale. The radiology department is active on two hospital sites and has a strong tradition in multidisciplinary collaboration with most clinical departments. It recently installed a medical physics quality network which facilitates patient-centered "radiation hygiene", strengthening the ethical dimension of radiology and increasing radio-protection of patients.

"Like all university hospitals, we need to carefully consider new investments in our radiology department," explains Prof. Dr. Raymond Oyen, who has recently assumed the Head of Radiology position at UZ Leuven. "We need to differentiate from larger regional hospitals, which invest heavily in new equipment triggered by a patient-driven model. As a university hospital, we need to excel in a triple mission: provide care, support education and perform research. From that perspective, it is essential that we balance our investments, both in equipment and staff."

CR AND DR OPTIMIZE WORKFLOW EACH IN THEIR OWN WAY

With a Computed Radiography (CR) infrastructure dating from 2003, the department faced a choice: replace its existing CR equipment with in-kind solutions, or extend its Direct

Radiography(DR) infrastructure, which was already implemented in some examination rooms. The department chose to invest in five DX-G CR solutions from Agfa HealthCare spread over the two hospital sites, and also added seven of Agfa HealthCare's NX workstations to support them.

Says Prof. Oyen: "We understand that some examinations are best performed using CR solutions because the practical circumstances require more flexibility than is possible with DR. Generally, full leg/full spine studies are faster and more comfortable in a CR environment. In pediatrics we need to perform fast full leg and full spine examinations in a single take, because stitching images of a young, uncontrollable patient is not always advisable. In neonatology, incubator-side examinations are frequently done."

"We also use CR in the operating theatre and recovery room. Agfa HealthCare's DX-G CR digitizer has a small footprint and uses lightweight, cable-free cassettes, compared to the heavy, wired cassettes used for a DR examination. We also prefer CR to document the entire abdomen during barium studies of the gastrointestinal tract. The DX-G digitizer will also be used in the only analog examination room left in our department – for skeleton studies."

The availability of NX workstations linked to examination rooms has changed the department's quality control approach. "We no longer aim at centralized quality control," explains Prof. Oyen, "because the NX workstations let us establish an examination room-based QC approach. Thanks to such decentralization, we have saved the equivalent of one full-

"In pediatrics, NIP offers the best combination between the ability to provide a lower dose and high image quality. In many cases, image quality from CR will be even better than images generated by some DR-based examinations, because of its higher resolution."

PROF. DR. RAYMOND OYEN, Head of Radiology
UZ Leuven

time employee, who is now assigned other responsibilities. In order to compensate for the missing, centralized quality control of studies made by trainees, only images approved on the fly by a qualified technologist will be accessible on the Agfa HealthCare IMPAX solution. Rejected images stay on our Central Monitoring System, or CMS, in case a radiologist wants to see them and for learning/educational purposes."

COMBINED PIP AND NIP CASSETTES FOR LOWEST DOSE WITH BEST IMAGE QUALITY

An additional benefit of the DX-G digitizer is its unprecedented convenience of accepting both standard phosphor plates (PIP) as well as needle-based detectors (NIP). To Prof. Oyen, it is clear that compared to previous generations, the current PIP technology offers sharply reduced dose exposure than older technology provided, which is why it is used for adult patients. "However, for children and adolescents, NIP offers by far the best combination between a potentially lower dose and high image quality. In many cases, CR image quality will be even better than images generated by a DR-based examination. With an image resolution mode that reaches 100 micron pixel pitch or 10 pixels per millimeter, it does even better than some DR units. Moreover, dose reduction is considerably lower using NIP – up to three points less – which also benefits the life span of the tube. This fits perfectly with our efforts to establish radiation hygiene as a central concept in our department."

Finally, Prof. Raymond Oyen points out another important benefit of the Agfa HealthCare CR solution: MUSICA[2] processing software. "We have found it to be a highly reliable and qualitative image processing solution. Whenever we're unsure about images from another vendor's solution, or we have to compare old and new images, we rely on MUSICA[2] as the benchmark image. It usually does the trick."

With an Agfa HealthCare IMPAX picture archiving and communication system solution in place since 2001, the relationship with the company's application team was a sound basis for further collaboration, underscores Prof. Oyen.

"When the IT department asked for specific assurances on network security and integration, Agfa HealthCare's R&D department provided the necessary solutions. This is an example of the exemplary service Agfa HealthCare has been providing over time. We strongly appreciate the short and clear reporting lines, with a single interface to help us out with any issues that may arise." •

Technology Corner

Six generations of PACS further solidified with the launch of IMPAX 6.5

With the launch of IMPAX 6.5, the latest version of its sixth generation PACS solution, Agfa HealthCare is introducing its most innovative system to date at this year's RSNA in Chicago, USA.

IMPAX 6.5 is the latest release of one of the industry's leading integrated RIS/PACS workflow solutions for data management and reporting, offering improved productivity through its automated worklists, advanced volumetric study management systems, and its ability to be deployed across and beyond the hospital enterprise to wherever radiologists need to report from, including at home.

New to IMPAX 6 this year are advanced features which focus on usability, workflow and productivity including new guided workflows for extended and personalized workflow control, new business intelligence and data mining tools, solutions enabling remote and home reporting, additional communication tools to improve the exchange and delivery of vital information (instant messaging with patient sharing) and improvements in result distribution of images and information to referring physicians at the point of care. New functionality and workflow enhancements have also been included to further improve the management of large volume studies with multiple series, and the ability to automatically link series within one study or across multiple studies.

Supporting the increased demand for integrated clinical solutions, IMPAX 6.5 also offers mammography tools with full support of the IHE Mammography Image Profile, improved productivity with automated multi-planar Spine Labeling, and advancements in clinical applications with fully integrated advanced 3D and 2D image processing.

IMPAX 6.5 is provided with Agfa HealthCare's latest Radiology Information System (RIS) release, the 7th installment of its 5th generation solution, IMPAX RIS 5.7. The latest version delivers on increasingly demanding usability expectations from both receptionist and technologist, including the automatic display of the pertinent patient and visit details, an easy-to-use worklist and a customizable preview pane. The solution's customizable toolbars and buttons enable the IMPAX RIS to be tailored to accommodate specific needs and preferences.

When patients prefer not to wait for registration – there's IMPAX Kiosk

Reducing long, frustrating lines at registration desks is a key element of providing faster, more efficient patient service that helps ease pressure on care facilities. IMPAX Kiosk, introduced at this year's RSNA, offers a viable solution to this problem; a computerized, self check-in system that offers quick patient identification upon arrival, confirmation of demographic and insurance information, and electronic acknowledgement of consent documents.

This interactive system enables patients to register with and check-in to hospital services without going through traditional, busy administration desks. It lets them register more rapidly, bypassing long lines and congestion and eliminates the use of clipboards and all the errors that can occur during manual registration. Patients log-in securely, select their appointment, verify data, and sign consent forms digitally.

While secure login options such as Biometrics protect data security, the privacy filter ensures that kiosk transactions can only be viewed by the patient standing directly in front of the solution. When the system exceeds user-defined idle time limits, a multimedia screen saver activates to prevent inadvertent exposure of the patient's information. Multi-language options enable non-English speaking patients to use the system. A Receptionist Dashboard allows staff to monitor the check-in status of each patient using the kiosk, manage and track line length and waiting times. Alerts notify staff when patients may require help during their check-in transaction.

IMPAX Kiosk integrates with Agfa HealthCare's IMPAX suite of solutions, including IMPAX Scheduling, RIS, and PACS, as well as other hospital systems.

Agfa HealthCare has teamed with HealthAsyst and HP to provide an array of kiosk solutions and hardware. All IMPAX Kiosk's design, manufacturing, and customer services are ISO certified, providing excellent product quality and field performance. The IMPAX Kiosk is a complete, concept-to-completion collaboration.

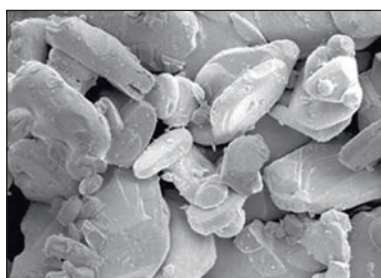Healthcare Check-in Kiosk

Touch Screen to Begin

Culinary quality implies the best ingredients all the time, along with continuous innovation. Ingredients are tested on arrival and sent straight back if unsatisfactory. Suppliers to Chicago's EPIC are constantly challenged to offer the best they have, at their best conditions. With three suppliers for each ingredient, and weekly pitches by new ones, the rules of the game are clear to all. "Only if it's better than what I have, will I consider fitting their offer into our menu."

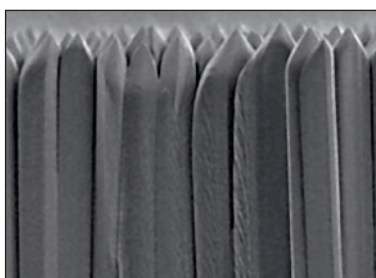# Who is offering needle-based image quality in both CR and DR?

We R

## Enjoy the highest possible image quality in both CR and DR

Radiography has many applications. But one constant remains: the demand for superb image quality. Agfa HealthCare offers needle-based technology in both CR and DR. This ensures the highest quality images with outstanding consistency and lower dose potential. It is part of a commitment to provide the world's best digital imaging across broad needs, from desktop systems to integrated radiography rooms. Only Agfa HealthCare includes the NX user station for an intuitive experience across CR and DR. And MUSICA[2], body part independent software that optimizes processing parameters for exceptional images across general radiography, neonatal or pediatrics. Transforming to digital radiography? **We'll take you there.**

■ *Standard CR*

■ *Needle-based detector*

■ Needle-based detector
■ Standard phosphor plate
Doubled detector dose efficiency
DQE
Resolution
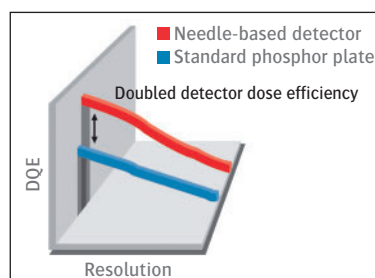
Performance comparison

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