

## CUSTOMER CASE

“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*



University Hospitals of Leuven, Belgium

# 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.



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-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 potential 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<sup>2</sup> 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<sup>2</sup> 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.”

Agfa and the Agfa rhombus are trademarks of Agfa-Gevaert N.V., Belgium, or its affiliates. DX-G, IMPAX and MUSICA are trademarks of Agfa HealthCare NV, Belgium or its affiliates. All other trademarks are held by their respective owners and are used in an editorial fashion with no intention of infringement. The data in this publication are for illustration purposes only and do not necessarily represent standards or specifications, which must be met by Agfa HealthCare. All information contained herein is intended for guidance purposes only, and characteristics of the products and services described in this publication can be changed at any time without notice. Products and services may not be available for your local area. Please contact your local sales representative at [agfa.com](http://agfa.com) for availability information. Agfa HealthCare diligently strives to provide as accurate information as possible, but shall not be responsible for any typographical error.

Copyright 2010 Agfa HealthCare NV  
All rights reserved  
Published by Agfa HealthCare NV  
B-2640 Mortsel – Belgium  
5Q20W EN 201011

[www.agfa.com/healthcare/](http://www.agfa.com/healthcare/)