

How our Company Contributes to Radiation Protection
Agfa HealthCare

Optimising patient dose

The right dose of expertise

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Agfa HealthCare's digital radiography solutions are designed according to the ALARA principle (as low as reasonably achievable) to deliver the optimum balance between low radiation dose and high image quality, while providing the tools to monitor patient exposures.

Up to 60% lower dose

Agfa HealthCare conducted both a technical and clinical image quality evaluation. The goal of this evaluation was to determine how much patient exposure could be reduced while still providing similar image quality, comparing CR-BaFBr (Agfa HealthCare's standard powder phosphor CR: MD4.0R) with cesium-based detectors: CR-CsBr (Agfa HealthCare's cesium-based needle phosphor CR: HD5.0) and DR-Csl (Agfa HealthCare's cesium-based needle phosphor DR: DX-D 30C).

The study outcome shows that substantial dose reductions of up to 60% can be achieved with cesium-based detectors, combined with MUSICA image processing (*).

Cesium detector

The thickness of the powder phosphor layer is limited to below 300µm, because of light scattering.

With needle phosphor, a thicker phosphor layer of 500µm can be used without jeopardising sharpness. The high absorption of x-ray quanta in the needle phosphor layer of cesium-based detectors results in good image quality.

The detective quantum efficiency (DQE: image quality parameter) evaluation illustrates a similar image quality for CR-CsBr and DR-Csl at RQA3 and RQA5 beam qualities. Both cesium-based detectors produce better image quality than the CR-BaFBr, with a DQE that is more than double.

This higher image quality translates into an equivalent image quality at lower exposure levels.

Focus on the patient with MUSICA

Agfa HealthCare's patented MUSICA image processing offers excellent image quality and greater diagnostic confidence for low-dose images.

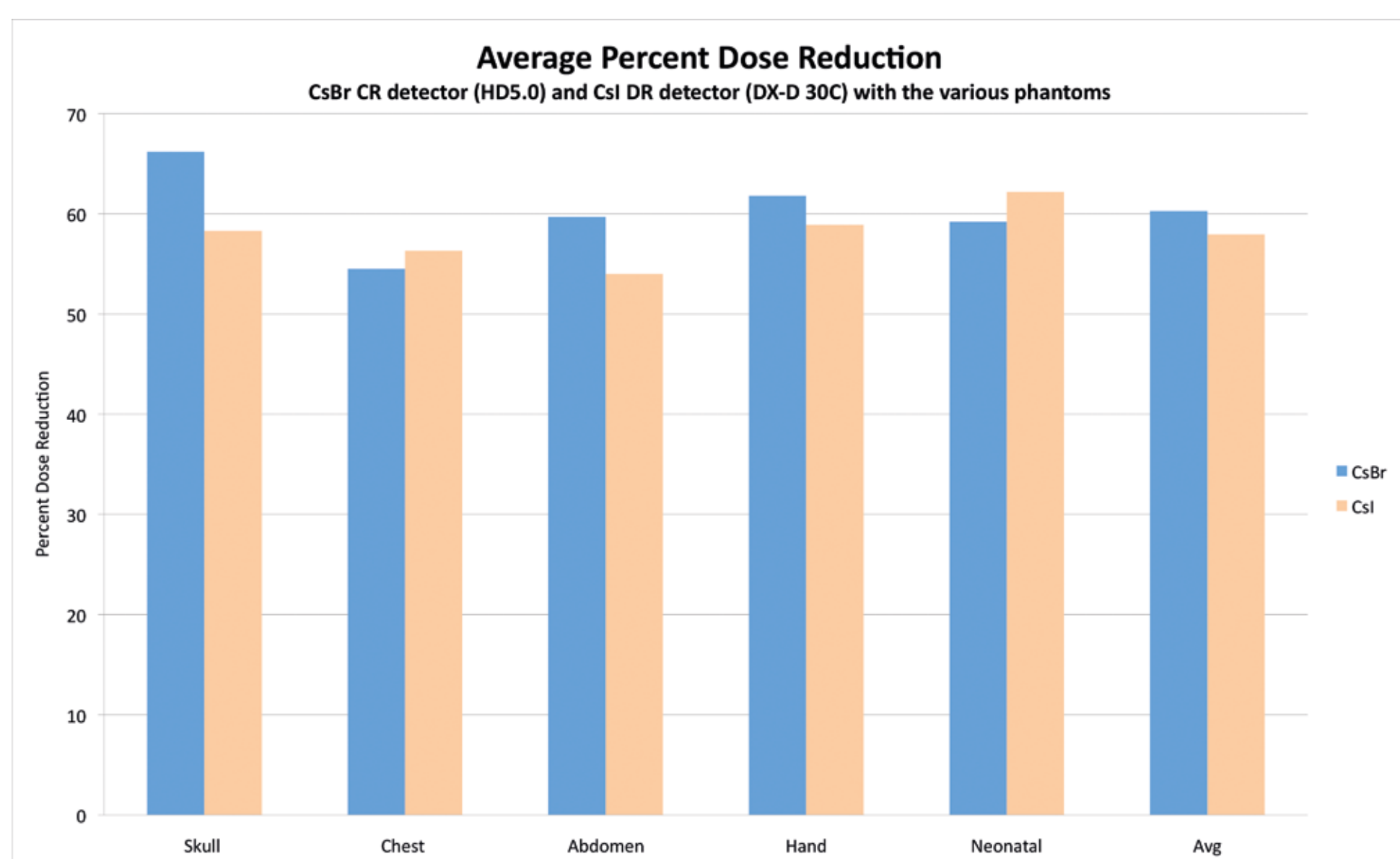
Radiographic images taken at a lower dose result in higher noise content.

MUSICA image processing with fractional multiscale denoising (FMD) can achieve active noise reduction based on selective and fractional attenuation with preservation of the fine and subtle image structures.

Clinical image quality study

To confirm that the detectors (DR-Csl, CR-CsBr and CR-BaFBr) would perform in clinical practice as predicted by the technical assessment, certified radiologists evaluated abdomen, chest, hand, neonatal and anatomical skull phantoms. The radiologists were asked to match the 'test' images to the 'reference' image.

Both DR-Csl and CR-CsBr with MUSICA showed a substantial dose reduction between 50 to 60%(*) when compared with conventional CR-BaFBr.



Dose: a question of management

Agfa HealthCare was the first manufacturer to fully implement the IEC exposure index standard in 2009. When it is coupled with the colour-coded exposure indicator, the technologist receives immediate visual feedback.

Extended dose monitoring software tools enable QC supervisors and physicists to monitor the exposure and dose history of an individual technologist, or of any CR or DR system in the department.

In addition, dose area product (DAP) meters are available with all Agfa HealthCare DR systems.

Mobile performance, instant imaging

The DX-D 100, with its cesium-based detector, is the ideal mobile solution. Easily moved to and within small rooms, it can be connected wirelessly to the RIS & PACS for a fast workflow. The integrated filtration wheel lets you select the optimum level of filtration for each exam, for additional dose reduction.

Dose Monitoring

With Qaelum's tqm|DOSE™ platform, Agfa HealthCare offers an advanced solution for patient radiation dose monitoring, analysis and improvement in digital imaging. The vendor-neutral dose management solution integrates into existing PACS environments and collects relevant dose and metadata information. This information is used to provide patient radiation dose analyses at the study, patient, device, modality or institution level. Information on radiation exposure levels can support the referring physician in making better-informed decisions, while allowing the radiology department to conform to best practices and regulations, and to perform root cause analysis, in order to understand and solve potential problems.



Innovative and market-leading solutions

Agfa HealthCare's digital radiography systems have been implemented and used worldwide since 1993. The huge installed base of more than 50,000 units clearly illustrates the confidence our customers have in our products throughout medical communities worldwide.

We provide you with innovative and market-leading solutions to keep your systems and technology up to date, and to make a significant change in the dose required. Whenever possible, cesium-based detectors in combination with MUSICA should be used to minimise dose and achieve optimum image quality.

We are committed to being your imaging solution provider for life.

(*) Testing with board-certified radiologists has determined that Cesium Bromide (CR) and Cesium Iodide (DR) detectors, when used with MUSICA image processing, can provide dose reductions between 50 to 60%, compared to traditional Barium Fluoro Bromide CR systems. Contact Agfa HealthCare for more details.