Scatter Correction

Excellent image contrast without a grid

High contrast images without using a grid

Canon's Scatter Correction reduces the effect of scattered radiation for non-grid bedside examinations, allowing you to obtain images with outstanding contrast while avoiding the grid handling and improving your workflow.
Where a grid physically reduces scatter and thereby increases the image contrast, the software mimics this process virtually. The software works by creating a scatter model, which is subsequently subtracted from the image. The result is an image with reduced scatter and increased contrast.

Benefit from Canon's decades of imaging expertise
Use a grid or select Scatter Correction; you are always in control and the choice is yours as the situation demands. Canon digital radiography provides the versatility, and years of imaging expertise provides the following benefits:

- Significantly lower X-ray dose compared to imaging with a grid[1]
- Superior image contrast without the need for a grid
- Improved workflow: no need to carry, fit, position and remove a grid
- Enhanced efficiency: no repeat exposures due to grid misalignments and resulting artefacts
- Potential to improve patient comfort in bed examinations as the imaging receptor is thinner without a grid fitted

Technically the scatter correction will be applicable to all protocols, but stringent reviews on clinical applicability are required.

Before

After

Before

After

Before

After

[1] confirmed result after testing Canon Scatter Correction at Linköping University Hospital, Sweden

Experience ultralight digital radiography; faster workflow with reduced stress and reduced radiation dose

-60%

Significantly reduce radiation dose by up to 60%. Don't just take our word for it. We asked Linköping University Hospital, Sweden, to tell us just how important dose reduction using Canon Scatter Correction is, and how much bedside radiation dose could be eliminated.

"Many of our patients are X-rayed on a daily basis over a period of several weeks and in these cases the ability to halve the radiation dose makes a big difference," commented Mr Kraff, radiographer at Linköping University Hospital, Sweden. "Previously, when a grid was used at the hospital, the standard PA Chest exposure was 141 kV and 1.25 mAs. Now, with Canon's Scatter Correction, the mAs value has been cut to 0.5 mAs - a 60% reduction."

Since introducing Canon's Scatter Correction software at Linköping University Hospital, this innovative grid-free imaging has become the default technique during bedside radiography.

Reduce detector handling weight by up to 30%; no grid necessary! [2]
Scatter Correction software improves workflow by reducing the number of process steps required whilst also reducing the physical manual handling burden on radiographic personnel. Although the latest Canon detectors are some of the lightest available, fitting a grid still adds approximately 1 kg more. Scatter Correction instantly eliminates this unwanted additional weight.

[2]Using the ultralight Canon CXDI-710C Wireless detector fitted with an anti-scatter grid totals 3.3 kg compared to 2.3 kg when using Scatter Correction - that's a 30% weight reduction.
Using the popular CXDI-701C Wireless detector with a grid totals 4.3 kg compared to 3.3 kg with Scatter Correction - a 23% weight reduction.

Eliminate grid misalignments and artefacts; no more retakes!
Scatter Correction users experience the convenience of radiography without a grid and without grid alignment challenges that can lead to repeat patient exposure.
"It makes our life so much easier." (Harald Kraff, radiographer, Linköping University Hospital, Sweden)

Allows more time for patient care
Examination time can be reduced when using Scatter Correction as the imaging workflow is freed from grid handling, accurate grid, tube alignment and possible retakes. This streamlined workflow allows more examinations to be performed within the same timeframe and makes more time available to spend with each patient.

Consistent image quality
Reducing X-ray dose by eliminating the use of a grid comes with a challenge: can you be sure that optimum image quality is being consistently achieved? Thanks to Canon's huge experience in imaging and digital image processing across a variety of professions and industries, you can be sure that the very best image quality is presented time after time.
"The image quality is very similar to that performed with a grid. When we perform these examinations we are usually looking for major changes in the lungs, and in this respect, Scatter Correction works just as effectively." (Maria Lindblom, radiologist, Linköping University Hospital)

Image any body region without a grid
The latest release of Canon's Scatter Correction software allows the freedom to image any body region without the encumbrance of a grid.

REPORT

Scatter Correction reduces radiation dose and offers better ergonomics

Lower radiation doses, improved ergonomics for staff and improved comfort for patient. After almost 300 X-ray examinations, radiologists and radiology personnel at Linkoping University Hospital have only words of praise for Canon's new grid-free 'Scatter Correction' imaging software.

"Halving the radiation dose to the patient is a significant achievement" says radiology staff member Harald Kraff.

Although hospital radiology personnel in Linkoping have only been evaluating Canon's Scatter Correction imaging software for a few months, it is as if they have never known any other method - so naturally have they adapted to its use. They especially appreciate no longer having to carry the extra weight of an X-ray grid with them when performing mobile examinations. According to radiologist Maria Lindblom, the software solution is now used for virtually all chest X-ray examinations where the patient is bedridden.

"It has become the norm to use Scatter Correction for this type of examination and it took no time at all to get used to the imaging process" she said.

Linköping University Hospital is the first in the country to test and evaluate Canon's grid-free Scatter Correction software which is now commercially available to all Canon DR users. So far, the staff concerned at the hospital have had no criticisms whatsoever. On the contrary, the new technology has made their job easier and it has been possible to reduce the radiation by 60 percent.

"The image quality is very similar to that performed with a grid. When we perform these examinations we are usually looking for major changes in the lungs and in this respect Scatter Correction works just as effectively."

The Scatter Correction software is currently in use on 3 'Movix' mobile X-ray units equipped with Canon's CXDI-NE imaging software platform and CXDI wireless portable AED-type DR detectors.

Mobile X-ray imaging is typically required when a patient is too ill to be brought to the imaging department and so the the examination must take place on the hospital ward. Thanks to 'Scatter Correction' the task of positioning the DR detector behind or under the patient in their bed has been made easier, as the detector is both lighter and thinner without the need for a grid.

"When we use an X-ray grid we need to align the X-ray source at exactly the right angle and position over the grid to avoid grid artefacts. A grid is sensitive to inaccurate positioning which can lead to a repeat exposure if these factors are not optimised. The scatter correction software is not demanding in this way and does not suffer from these grid effects. It makes our life so much easier" explained radiology team member Harald Kraff
As the detector has to be placed under the bedridden patient, not having to use the grid is also an advantage because it is quite heavy. Given that 15 examinations of this type are carried out every day at Linköping University Hospital, good ergonomics is important for the staff. Every little detail which can make each aspect of their work easier reduces the physical burden placed on the staff.

"Although lightweight, the detector still weighs just over 3 kilograms but having to use a grid adds another 1 kilogram"
Mr Kraff added.

However, the biggest advantage remains the significantly lower patient radiation dose required. Previously, when a grid was used at the hospital, the standard PA Chest exposure was 141 kV and 1.25 mAs. Now, with Canon's Scatter Correction, the mAs value has been cut to 0.5 mAs - a 60% reduction.
Despite taking precautions, radiology personnel are likely to be at a higher risk of being exposed to some radiation when they used mobile equipment which means that any possibility to reduce radiation dose is to be welcomed. As the examination is carried out on a hospital ward where other patients are inevitably in close proximity in their beds, it is not just the patient to be examined that is exposed to radiation; other patients nearby are also at risk of some exposure.
"Many of our patients are X-rayed on a daily basis over a period of several weeks and in these cases the ability to half the radiation dose makes a big difference" commented Mr Kraff. The latest release of Canon's Scatter Correction software not only allows chest imaging but also all other body regions to be imaged without the burden of using a grid and paves the way for low dose grid-free imaging to become standard practice, particularly in mobile X-ray imaging.

"The image quality is very similar to that with the older technology," said radiologist Göran Stenport

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