Case Study

Ultra-Low-Dose Chest with FIRST

“The combination of the Aquilion ONE / GENESIS Edition and true model-based iterative reconstruction in FIRST enable us to drive CT doses to lower levels than ever before while maintaining diagnostic image quality. This has enabled us to perform follow-up chest CT scans at doses similar to a chest X-ray.”

Dr. Jonathan Seeff
Consultant Radiologist
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Patient History

A 36-year-old man, a former smoker with a BMI of 28.4, presented with a persistent nonproductive cough. An ultra low dose CT examination of the chest was requested to rule out lung nodules.

Results

Mild atelectasis is seen in the basal regions of the lungs in this CT scan performed at 0.08 mSv. No lung nodules are demonstrated.
Technology
The Forward projected model-based Iterative Reconstruction SoluTion (FIRST\textsuperscript{*1}) algorithm is a true MBIR algorithm, meaning that a forward projection step is performed for every iteration. FIRST provides improved high contrast spatial resolution and dose reduction of up to 84.6%. The integration of FIRST with automatic exposure control allows users to take full advantage of the capabilities of true iterative reconstruction without any of the guesswork that can interfere with clinical workflow.

Conclusion
FIRST provides images of the lungs with improved high contrast spatial resolution at a radiation dose as low as a chest X-ray.

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Acquisition
Scanner Model: Aquilion ONE\textsuperscript{TM} / GENESIS Edition
Scan Mode: Ultra Helical
Collimation: 0.5 mm x 80
Exposure: 135 kV, 3 mAs
Rotation Time: 0.3 second
Dose Reduction: FIRST
CTDI: 0.2 mGy
DLP: 5.7 mGy\textperiodcentered cm
Effective Dose: 0.08 mSv
k-factor: 0.014\textsuperscript{*2}

\textsuperscript{*1} Option
\textsuperscript{*2} Adaptive Iterative Dose Reduction