## Canon

# 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 followup chest CT scans at doses similar to a chest X-ray."

> **Dr. Jonathan Seeff** Consultant Radiologist Southern Radiology, Australia



### **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<sup>\*1</sup>) 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 82.4% when compared to filtered back projection. 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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Clinical results may vary due to clinical setting, patient presentation and other factors.

#### Acquisition

Scanner Model: Aquilion ONE / GENESIS Edition

can Mode:	Ultra Helical
Collimation:	0.5 mm x 80
xposure:	135 kV, 3 mAs
lotation Time:	0.3 second
Oose Reduction:	FIRST
TDI:	0.2 mGy
DLP:	5.7 mGy∙cm
ffective Dose:	0.08 mSv
-factor:	0.014*3

\*1 Option

- \*<sup>2</sup> Adaptive Iterative Dose Reduction
- \*<sup>3</sup> American Association of Physicists in Medicine (AAPM) Report 96, 2008.

