

Low dose CT solutions for paediatric imaging

Siemens Healthcare showcases CT without sedation and breath hold at the Congress of the International Society of Paediatric Radiology (IPR) 2011

Siemens Healthcare has presented its range of technological advances in computed tomography (CT) for use in paediatric imaging at the Congress of the International Society of Paediatric Radiology (IPR) 2011. Highlights included the SOMATOM® Definition Flash CT scanner and Siemens' new CT applications for dose reduction, Care kV and Safire (Sinogram Affirmed Iterative Reconstruction).

The Somatom Definition Flash is a Dual Source CT system with two X-ray tubes that rotate around the patient's body simultaneously. With the highest scan speed in CT to date (45 centimetres per second) and a temporal resolution of 75 milliseconds, the system enables complete thoracic scans in just 0.6 seconds. As a result, patients no longer have to hold their breath. The Definition Flash also works with a much lower radiation dose. For example, a routine cardiac scan on a patient of up to 90 kilograms can be performed with less than one millisievert (mSv).

The tube voltage selected in CT, known as the kV (kilovolt) level, depends on the size and weight of the patient as well as the examination type. If the tube voltage is changed, all other scan parameters have to be adapted accordingly and the values have to be calculated manually or estimated. Siemens is offering a solution to this with **Care kV**, which automatically recommends the correct tube voltage for the selected tube current in milliampere (mA) and adapts all other parameters to the selected kV level. This optimises the relationship between contrast and noise in the image and enables dose to be reduced by up to 60 percent.

Siemens also introduced **Safire**, a new method for iterative reconstruction of CT images based on CT raw data that builds on IRIS (Iterative Reconstruction in Image Space), its first innovation for iterative

reconstruction. With Safire, Siemens has further enhanced the algorithms and is also offering new hardware that enables to significantly reduce the time required to reconstruct slice images in comparison to IRIS.

“The Definition Flash CT is ideally suited to paediatric examinations because it carries out the fastest available scanning speed in CT and can image a patient in less than five seconds. This means patients do not have to remain still for as long and the need for sedation is removed,” said Russell Lodge, CT Business Manager at Siemens Healthcare. “Additional dose-reducing CT applications such as Care kV and Safire make it possible to reduce the radiation dose for paediatric patients by up to 60 per cent.”

In scientific studies¹ presented at IPR 2011, clinicians using the Definition Flash scanned infants in below one second and with an X-ray dose of less than one mSv (millisievert). The resulting images showed a high quality without motion artifacts. Using conventional CT technology with only one tube-detector system, this procedure would take several seconds and require a significantly higher dose. In addition, children would have to hold their breath and babies would have to be sedated to prevent motion artifacts that could distort the diagnosis.

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Notes to editors:

¹ Lell MM et al. High-Pitch Spiral Computed Tomography (...) Pediatric Chest Computed Tomography. Invest Radiol. 2011 Feb; 46(2):116-23.

Han K et al. Accuracy and Safety of High Pitch Computed Tomography Imaging in Young Children with Complex Congenital Heart Disease.

Paul JF et al. Radiation dose for thoracic and coronary step-and-shoot CT using a 128-slice dual-source machine (...). Pediatr Radiol. 2011 Feb; 41(2):244-9. Epub 2010 Sep 4

About Siemens Healthcare

The **Siemens Healthcare Sector** is one of the world's largest suppliers to the healthcare industry and a trendsetter in medical imaging, laboratory diagnostics, medical information technology and hearing aids. Siemens offers its customers products and solutions for the entire range of patient care from a single source – from prevention and early detection to diagnosis, and on to treatment and aftercare. By optimizing clinical workflows for the most common diseases, Siemens also makes healthcare faster, better and more cost-effective. Siemens Healthcare employs some 48,000 employees worldwide and operates around the world. In fiscal year 2010 (to September 30), the Sector posted revenue of 12.4 billion euros and profit of around 750 million euros. For further information please visit: www.siemens.com/healthcare.

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Picture caption: The SOMATOM® Definition Flash CT from Siemens Healthcare can image a patient in less than five seconds, meaning paediatric patients do not have to remain still for as long and the need for sedation is reduced.



Picture caption: In scientific studies presented at IPR 2011, clinicians using the SOMATOM® Definition Flash CT from Siemens Healthcare scanned infants in below one second and with an X-ray dose of less than one mSv (millisievert). In this case, a four year old patient was scanned without the presence of any artifacts caused by breathing.

