

### Healthcare Sector Imaging & IT Division

#### **Siemens Technologies Result in Dose Reduction for St. Louis Children's Hospital**

SOMATOM Definition AS CT scanner intelligently adapts to workflow and clinical needs

**Malvern, Pa., January 19, 2010 – Recognized as one of the leading pediatric healthcare centers in the United States, St. Louis Children's Hospital in St. Louis is further enhancing its nationally renowned pediatric care program with the installation of a SOMATOM® Definition AS computed tomography (CT) scanner from Siemens Healthcare. The SOMATOM Definition AS is the world's first adaptive scanner, which intelligently adapts, on the fly, to the patient, for aiding in dose reduction, as well as adapting to new dimensions and space.**

Even though CT is a crucial medical imaging tool in diagnosing illness and disease in children, there is always a concern over the amount of radiation dose a pediatric patient receives. Medical institutions, such as St. Louis Children's Hospital, strive to provide the best medical imaging exams as possible, while ensuring one of the best methods for its patients. The addition of the SOMATOM Definition AS provides the link between dose protection and imaging excellence for Children's Hospital's young patients.

"In light of recent studies on radiation dose and best practices for dose reduction, it is essential to employ a CT scanner that can not only ensure some dose reduction, but provide one of the fastest scan speeds, while still maintaining optimal imaging performance," said Dr. Marilyn J. Siegel, division of Diagnostic Radiology and professor of Radiology and Pediatrics, St. Louis Children's Hospital. "This latest addition to our CT family allows Children's Hospital to better serve our young patients with safe, effective, quality care."

In the July 2009 issue of *Radiology*\*, a team of researchers evaluated the potential effectiveness of adaptive collimation in reducing CT radiation dose owing to z-overscanning (one of the factors

responsible for radiation burden in spiral CT examinations) by using dose measurements and dose simulations.

The data revealed that by using adaptive section collimation, a substantial dose reduction of up to 10 percent was achieved for cardiac and chest CT when measurements were performed free in air and of 7 percent, on average, when measurements were performed in phantoms. For scan ranges smaller than 12 cm, ionization chamber measurements and simulations indicated a dose reduction of up to 38 percent, according to the team's findings.

The research team concluded that adaptive section collimation allows substantial reduction of unnecessary exposure owing to z-overscanning in spiral CT. It can be combined in synergy with other means of dose reduction, such as spectral optimization and automatic exposure control.

"Siemens' unique Adaptive Dose Shield helps to address the dose issue by dynamically assisting in blocking the unnecessary dose before and after the spiral scan, ensuring that the only dose applied to the patient is dose that is clinically relevant," said Kulin Hemani, vice president, Computed Tomography, Siemens Healthcare. "The desire for as little radiation exposure as possible lies at the heart of Siemens CARE philosophy, providing a wide range of dose-reduction solutions."

CARE Dose 4D, Siemens' real-time dose modulation, assists in guaranteeing an unparalleled combination of maximum image quality at minimum dose for every patient in every spiral scan. The entire SOMATOM Definition AS family of scanners comes with adaptive dose shield and set of pediatric protocols to provide optimal patient care.

In addition to its extraordinary performance, the SOMATOM Definition AS is able to adapt to the space constraints many facilities face today. Featuring a large bore and high-capacity patient table, the scanner requires very little floor space, with an 18-m<sup>2</sup> footprint. This allows the Definition AS to fit into rooms that have traditionally been too small for high-end CT scanners.

The technology couples components in a dynamic manner, such as a large-volume coverage area with a 200 cm scan range and up to 330 msec rotation time. These features allow even the most clinically challenging patients (i.e., trauma patients) to be imaged rapidly, from head to toe, with minimum difficulty.

\*Deak P, Langner O, Lell M, Kalender W. Effects of adaptive section collimation on patient radiation dose in multisection spiral CT. *Radiology*: Volume 252: Number 1—July 2009.

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