Siemens with a focus on Right Dose

- Features for application and management of sensible dose rates for patients and clinical staff
- Continuous development of dose-sensitive imaging systems for mammography, angiography, computed tomography and molecular imaging

The topic of radiation dose in medical imaging is a controversial one. When applied in a correctly and medically indicated manner, medical radiation can help save or prolong lives. In the field of diagnostics the focus is on imaging patients with as little dose as possible and achieving optimal image quality at the same time. Medical imaging makes use of the fact that different parts of the human body absorb radiation to different degrees. When using X-rays, detectors absorb the amount of radiation that has passed through the imaged body part and thus generate a precise image of respective organs and structures. In the field of cancer therapy, radiation is used to destroy malignant tissue.

For Siemens it has been a priority for many years now to keep radiation dose levels for patients and clinical staff as low as possible. With the new concept “Right Dose” the focus is on facilitating effective dose management to achieve lowest dose in combination with highest possible image quality – always keeping in mind the fact that focusing solely on lowest possible dose without compromise bears a certain risk as well. If the dose applied is too low, this will impair image quality and the diagnostic scan will have to be repeated. “Every clinical case, every individual patient calls for an individual dose rate,” says Bernd Montag, CEO of the Imaging & Therapy Systems Division at Siemens Healthcare. “With our Right Dose approach we want to demonstrate leadership in dose management. It is our aim to support hospitals and private institutions in focusing on the right balance of sensible dose rates and the best image quality possible.”
Siemens has developed specific products and software to reach this goal: in the field of angiography, for example in angiography, the Artis Q.zen system has been equipped with a new detector technology that enables interventional imaging at ultra-low-dose levels down to 6 nanogray (nGy) per pulse. With Artis Q.zen, dose reduction of up to 60 percent at equal image quality is now achievable compared to conventional configurations in angiography.

In the field of mammography, dose exposure is an extremely sensitive topic, as healthy women are exposed to X-ray within screening programs. Siemens has developed a new algorithm eliminating the need for the conventional scatter radiation grid. Thanks to this development, with the new system Mammomat Inspiration Prime Edition a dose reduction of up to 30 percent can be achieved, compared to grid-based acquisition with Mammomat Inspiration, depending on breast thickness.

In the field of molecular imaging, Siemens has introduced a new positron emission tomography/computed tomography (PET/CT) scanner to the market. This scanner doubles the scan speed, thus decreasing scan time by 50 percent. Biograph mCT Flow enables users to reduce CT radiation dose because the scan range can be selected precisely.

Computed Tomography is one of the most commonly frequented imaging modality. This is why sensible dose rates applied in CT have positive effects on a high number of patients. The new CT scanner Somatom Force offers individualized diagnoses now especially also for challenging patients, e.g. for very young patients or people suffering from renal insufficiency, the seriously ill, and obese patients. Patients suffering from renal insufficiency will benefit from the significant reduction in contrast medium. Early detection examinations and functional 4D imaging can be conducted using up to 50 percent lower radiation dose compared to previous high-end CT scanners.

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