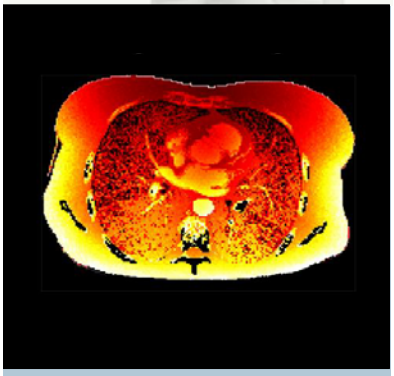

"With adaptive dose shielding and X-CARE we have very good methods to fulfill the expectations of best image quality and reduction of radiation".

Christoph Becker, MD,
Radiologist, University Hospital Grosshadern,
Munich, Germany

Current Challenges:

- Over-radiation, both pre- and post spiral scanning, increases with wider detectors and shorter scan ranges, e.g. in the brain.
- Dose sensitive organs are unnecessarily exposed to radiation, e.g. the breast in a chest exam.

Unique 'Flash' Solutions:

- Adaptive Dose Shield eliminates all clinically irrelevant dose.
- X-CARE protects dose sensitive organs while maintaining high image quality, e.g. up to 40% dose reduction for the breast.[2]

Organ-sensitive dose protection

SOMATOM Definition Flash

Answers for life.

SIEMENS

Challenge:

- **Over-radiation, both pre- and post spiral scanning, increases with wider detectors and shorter scan ranges, e.g. in the brain.**

Relevant for stroke patients, subarachnoid hemorrhage (SAH) in the brain, a wide range of chest examinations and pediatric imaging.

- With increased clinical applications for CT and the development of scanners with wider detectors, potential radiation exposure from CT scans continues to increase. Until now, increasing the detector width meant increased radiation dose for patients, before and after the clinically relevant area being scanned.
- It is estimated that >60 million CT examinations were performed in the US in 2005. Examinations with short scan ranges include the following: brain (21%), chest (15%), head & neck (7%) and pediatric imaging (11%), in total 54% of CT examinations.[4] In other words, up to 32.4 million conventional spiral scans (54%) in the US alone are paid with a "hidden" dose penalty.[7]

Solution:

- **Adaptive Dose Shield eliminates all clinically irrelevant dose.**

- Advances in CT must always be weighed against any risks associated with radiation dose. The SOMATOM Definition Flash, equipped with two Adaptive Dose Shields, helps to relieve many of these worries while reducing dose by 15 - 25%[8] in spiral exams. The dynamic collimator blades eliminate all irrelevant pre- and postspiral radiation, thus ensuring that only the clinically essential radiation exposure occurs.
- The well established CARE Dose4D, which recognizes individual cross-sectional anatomy in real-time and adapts the X-ray dose accordingly, additionally helps to reduce radiation exposure in average adult patients by up to 66%.[5]

Challenge:

- **Dose sensitive organs are unnecessarily exposed to radiation, e.g. the breast in a chest exam.**

Relevant for stroke, SAH in the brain, chest exams in women, head-neck & trauma exams, especially of younger individuals who are more sensitive to radiation.

- Dose measurements mainly focus on the Dose Length Product (DLP) which presents the total average dose per examination. What's neglected is the fact that different tissue has different sensitivity towards dose. The potential effects of radiation on those tissues such as the eye, thyroid gland, ovaries and female breast in particular are often overlooked. However those tissues are frequently included in the scan field, even if they are rarely the organ of interest.[2]
- In 2007, "pelvic" procedures constituted 31% of all CT procedures in the US, followed by "brain" with 21%. Next highest volumes are "trauma" (16%)[6], "chest" (15%) and "head-neck" (7%).[4] To put it in other words: in 58.8 million or 98% of CT scans dose sensitive tissue, which was not of interest, was unnecessarily exposed to radiation.

Solution:

- **X-CARE protects dose sensitive organs while maintaining high image quality.**

- For the first time ever, a technology is available to selectively reduce the radiation exposure of dose-sensitive anatomical regions, such as the female breast. X-CARE reduces or completely switches off tube current during the rotation phase in which the concerned anatomical regions are most directly exposed to radiation. So it becomes possible to reduce radiation exposure of individual anatomical regions.
- With X-CARE the SOMATOM Definition Flash can now protect dose sensitive organs, e.g. the eyeballs in stroke or neuro imaging, the thyroid gland in head-neck examinations, the ovaries in the pelvis for trauma imaging, or the female breast in thorax examinations. Latest research demonstrates that scans, not irradiating the breasts directly, reliably reduced dose by up to 40% while distribution of noise is homogeneous and image quality uniform.[2]

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