High Image Quality at Half the Dose
CARE kV and SAFIRE® in the community hospital.

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Ridgeview Medical Center
Minneapolis, MN

Answers for life.
Neuro
CT Dose Reduction
Ridgeview Medical Center
Minneapolis, MN

A 109-bed hospital located 35 minutes west of Minneapolis, MN, Ridgeview Medical Center recently added Siemens CARE kV and SAFIRE* technologies on the CT scanners in its freestanding emergency room (ER).

CARE kV is an application offering automatic tube voltage adjustment and SAFIRE* is sinogram affirmed iterative reconstruction software. Together, the technologies have enabled a 50 percent dose reduction across all applications, compared to before the use of any standardized radiation reduction processes.

“Our lead CT technologist loves it because it’s quicker, faster, and not technologist dependent,” says David Gross, MD, chief of Radiology at Ridgeview Medical Center. “That’s really a good quality because otherwise you get inconsistency. It makes it difficult to compare follow-up studies when they’ve been done by different technologists. Now, our images are easy to compare.”

The ability to easily compare images is not the only benefit Ridgeview Medical Center has noted. In Ridgeview’s ER, technologists are also able to quickly reconstruct the sagittal views their ER doctors prefer. In fact, technologists are using the software for a wide variety of applications, including neuro CT. “The studies are of very high diagnostic quality and we’ve been very happy with the quicker turnaround. It’s a real selling point for us,” says Dr. Gross.

In the ER in particular, Dr. Gross sees the benefit to pediatric and trauma patients from CARE kV and SAFIRE*. “I have four young kids and am concerned about radiation exposure like everyone else. But now, we can tell the ER doctors and the parents that our radiation doses are half what they were two-and-a-half years ago,” says Dr. Gross. Today, radiation dose has been reduced to an amount deemed acceptable for pediatric patients and physicians are ordering CT scans rather than admitting them for observation as they did in the past. “Before these dose reduction innovations, the ER doctors would admit a pediatric patient and watch them overnight. Now we have reduced the dose to a level where we can scan them and if everything’s normal, we can send them home.”

And in trauma, SAFIRE’s* reconstruction speed is contributing to better workflows and faster answers for referring physicians. “In the past, the ER doctors were breathing down our necks asking: ‘What do the images show?’ We don’t have that anymore. As soon as the patient is transferred back to the ER, we have the images here in radiology,” says Dr. Gross.

Ridgeview Medical Center has made a point to tell its referring physicians about its new dose reduction technology. As physicians see the high image quality and Ridgeview’s ability to lower doses, and thus help patients avoid unnecessary exposure, more of them are comfortable ordering CT scans, when necessary, for their patients. Their physicians recognize that patient care can be enhanced when high-quality CT imaging is combined with advanced dose reduction technology.

“The biggest issue in CT today is radiation reduction and Siemens seems to be so far ahead of it. We’re just so pleased we have Siemens.”

David Gross, MD
Chief of Radiology
Ridgeview Medical Center
Minneapolis, MN
CARE kV

CARE kV automatically recommends kV and effective mA to optimize the contrast-to-noise ratio (CNR) of the image, while limiting the applied dose. It takes the patient’s habitus from the topogram and the chosen examination type into consideration, proposes the appropriate kV, and sets all other parameters accordingly to get the defined CNR. With CARE kV, Siemens SOMATOM® scanners are the first in the medical imaging industry to provide a tool for an automated adjustment of tube voltage. Additionally, they are the first to provide the possibility to scan with 70 kV.

SAFIRE*

Sinogram Affirmed Iterative Reconstruction (SAFIRE*) is the first raw-data-based iterative reconstruction software and hardware. SAFIRE* can help users reduce dose by up to 60% compared to previous filtered back projection techniques. Its extremely fast reconstruction speed of 20 images per second enables reconstruction of a typical high-resolution thorax examination of 30 cm in just 15 seconds. With this performance, SAFIRE* can be applied routinely in clinical practice.

*Siemens disclaimer: In clinical practice, the use of SAFIRE may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. The following test method was used to determine a 54% to 60% dose reduction when using the SAFIRE reconstruction software. Noise, CT numbers, homogenity, low-contrast resolution and high contrast resolution were assessed in a Gammex 438 phantom. Low dose data reconstructed with SAFIRE showed the same image quality compared to full dose data based on this test. Data on file.

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