



A CASE STUDY...

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on Recent Installations

Washington Hospital Takes on Role as Patient Advocate

Hospital is the first in the region to implement CT dose reduction technology

Computed Tomography (CT) has helped change healthcare over the past decade. Sub-millimeter lesions can now be detected via a non-invasive CT study. CT images are used to help guide cardiologists, surgeons and oncologists in targeting and treating a wide array of diseases. Yet, underlying the technological advancement of CT is a growing concern of radiation dose.

"The health cost of having these high-resolution CT images – some less than 1 mm slice thickness – is that the radiation dose went from being about the same that a person is exposed to environmentally during the course of a year without any X-rays to anywhere from five to nine times that amount," says James S. Jelinek, MD, Chairman of Radiology at Washington Hospital Center.



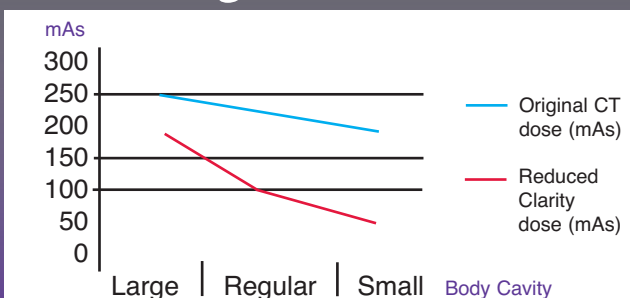
James Jelinek, MD

Radiation dose concern is compounded in patients who require serial follow-up CT studies over the course of one year, he explains. And the radiologist must now balance image quality with radiation dose.

"It is a paradigm shift for the radiologist," Dr. Jelinek adds, "as to what is needed to answer the clinical question – to show the anatomy and pathology as best as possible versus using the minimal radiation dose for an accurate diagnosis."

For Dr. Jelinek and the radiology department staff at Washington Hospital Center and its outpatient imaging center, the answer is two-fold: implementing technology that can help reduce dose and becoming stronger patient advocates.

Reducing Radiation Dose



The right technology at the right time

In June 2009, Washington Hospital Center became the first in the nation to implement Sapheneia's Clarity CT, a post-processing software solution that optimizes CT images to lower radiation dose protocols without impacting the diagnostic



Washington Hospital Center, founded in March 1958, is the largest private hospital in the nation's capital. The not-for-profit hospital is a proud member of MedStar Health system and shares a 47-acre campus with three medical facilities in Northwest Washington, D.C. Washington Hospital Center's premier program in cardiovascular services is among the top 20 centers in the U.S.

It is also a respected top facility in the treatment of stroke, neurological illness and injury, gastrointestinal disorders and women's services. In 2009, U.S. News & World Report recognized Washington Hospital Center as one of the nation's "Best Hospitals" for heart and heart surgery, endocrine disorders, geriatrics and ear, nose and throat care.

quality of the study. Then, in February 2010, the hospital installed Clarity CR Solution software with 64-bit processing to multiple CR readers in the CCU, ICU and Emergency Departments.

Clarity CT is currently retrofitted to scanners in the Physician Office Building, Physician's Imaging Center in Hyattsville and the two scanners in the hospital's Emergency department.

For Washington Hospital Center, Clarity CT allows the technologists and radiologist to work together to reduce the radiation dose delivered to patients by 50% or more.

"Our goal is to ensure our patients – no matter where they are scanned – receive the lowest possible dose," says Joey Dunn, CT Supervisor at Washington Hospital Center. Since Clarity CT can be retrofitted to any CT scanner, regardless of the manufacturer or number of multi-detector rows, it was the perfect solution for all of the hospital's CT systems

"The more we reduce dose, [historically] the lower the image quality," says Dr. Jelinek. "We see an improvement in image quality when we apply the



Washington
Hospital Center

www.WHCenter.org
110 Irving Street, NW
Washington, DC 20010
202-877-7000



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Sapheneia software.” What’s significant, he adds, is reducing the dose delivered on all CT exams without impacting the diagnosis.

Reducing dose is dependent upon several factors: the patient’s body habitus, the body part being scanned and the clinical question. “Many sites follow the manufacturer’s suggested dose level, which is often too high to begin with,” notes Felix Smith, Supervisor at Physician’s Imaging of Washington Hospital Center – Outpatient Center, “and in many studies we don’t need the highest resolution for a high-quality diagnostic study.” By starting at a lower initial dose and then utilizing Clarity CT, the hospital has reduced patient dose by as much as 75% in some cases, Smith adds.

Case in point, says Dr. Jelinek, is a young woman with a kidney stone. “We don’t need the highest resolution – which means increasing dose – to see the kidney stone,” he explains. “We can see it just fine with a reduced dose CT image.”

The crux of this issue, adds Dunn, is to become more cognizant of all the patient variables – including their age and the type of study ordered. “With technology, our industry has moved to a push-button approach to CT scanning. We actually had to step back and retrain our techs to become more aware of the dose levels they are delivering.”

Being a patient advocate is an important aspect of the technologist’s job, says Dunn. “We want them to always consider if the dose levels are appropriate and that, as often as possible, they are pushing the dose down as far as is clinically acceptable.”

Dunn, Smith and Dr. Jelinek all note that their efforts to trim dose levels occurred in many instances without the radiologists even knowing. While on a few occasions their efforts lowered the dose to levels that were not acceptable to the radiologists, the referring physicians remained unaware.

“It is important for our referring physicians to know that their radiology partners are very concerned and motivated to protecting patients while providing the highest quality images,” Dr. Jelinek adds. This awareness, he says, can help address concerns for patient safety as it pertains to lifetime radiation dose. He cautions against the pendulum swinging too far in the other direction, where patients and their physicians avoid studies that may reasonably help them address their health issues.

“We don’t want people to not get a test, based on an assumption that a CT study will lead to cancer or other health issues,” he explains. “More than anything else, our campaign [to lower dose] has allayed those fears.”

Washington Hospital is spreading the news on radiation dose reduction via the hospital newsletter, flyers sent to physician offices and a recorded message when someone is placed on hold.

“Building awareness,” says Dunn, “is so important with the media coverage on patients overexposed to radiation dose.” And continuing to educate technologists on proper dose levels is crucial. He adds, “Know what your dose level is, then cut it down by 10%, 20%, even 30% until someone notices a difference in image quality. If no one notices, then why give the patient the extra radiation dose?”

Smith recommends that facilities continually evaluate their imaging protocols. And that requires close collaboration between the technologists and radiologists.

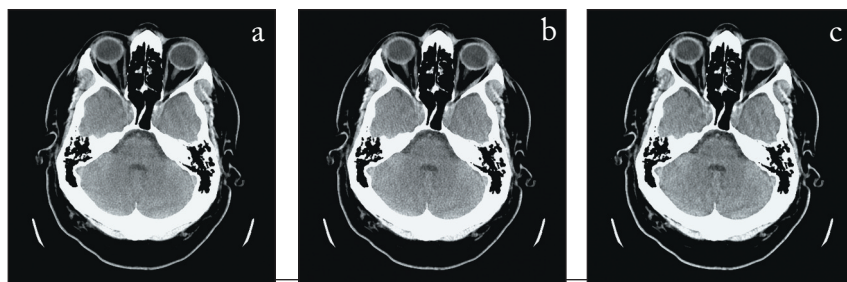


Figure 1. Neuro CT exam on a 41-year old male. (1a) Routine scan with no dose reduction; (1b) Same patient in 1a with 30% dose reduction; (1c) Same image in 1b processed with Sapheneia Clarity CT.

“We all need to image wisely,” concludes Dr. Jelinek. “Our techs and radiologists are motivated to provide the highest quality images at the lowest possible dose and we reassure patient and referring physicians that when someone needs to get a CT, they’ll get an excellent quality study that has as little radiation as possible.”

For More Information



www.claritysolutions.org

1.877.722.6569

Global Headquarters: Mjärdevi Science Park • Teknikringen 8, SE 583 30 • Linköping, Sweden • +46 (13) 21 1420

US Headquarters: 3311 Line Avenue • Shreveport, Louisiana 71104 • 1-877-722-6569 • www.claritysolutions.org