

Imaging Healthcare Specialists Reduce Patient Radiation Exposure Up to 90 Percent



Patient exposure to radiation is a major concern to radiologists and patients. The growth in CT imaging has been accompanied by an unavoidable increased cumulative radiation exposure to the general public.

A number of simple strategies may be used to minimize radiation exposure during CT imaging. These include protocol redesign and CT dose adjustments on the basis of each patient's body mass index, limiting length of coverage and multiphase examinations, and iterative reconstruction.

An article in the November issue of the Journal of the American College of Radiology describes how Imaging Healthcare Specialists of San Diego, has implemented a successful radiation dose reduction program, reducing radiation exposure by up to 90 percent in some patients.

"In the past decade, there have been unparalleled technological advances and growth in CT imaging, with many lives saved and more costly and invasive procedures avoided. This growth in CT imaging, however, has also been accompanied by an unavoidable increase in cumulative radiation exposure to the public," said John O. Johnson, MD, the article's author.

At Imaging Healthcare Specialists, a highly successful program of radiation dose reduction was created, and dose savings of up to 90 percent have been achieved in select patients.

"Our primary focus was to reduce radiation dose for CT examinations of the chest, abdomen and pelvis because these constitute the most frequent studies in our practice and those with the highest radiation dose. Ultimately, all imaging protocols were revised," said Johnson.

The following dose reduction strategies were developed over months of careful computed tomography (CT) dose adjustment and imaging analysis:

- Decreased Peak Kilovoltage
- Low-dose Automatic Dose Modulation
- Decreased Length of Coverage
- Pitch
- Iterative Reconstruction and Noise Reduction Software

In addition, the imaging facility focused on limiting double scans and multiphase examinations; performing low-dose follow-up CT examinations; and the use of iterative reconstruction and noise reduction software. A low-dose strategy for CT-guided biopsies was also developed.

"To implement such a program requires dedication, leadership and commitment. Key components include a lead CT physician, a lead CT technologist, a CT applications specialist, a continuous feedback loop and systems in place to educate staff members and audit compliance," said Johnson.

"It is possible to perform high-quality CT at a fraction of the radiation dose previously thought possible. Using a combination of dose reduction strategies with or without iterative reconstruction, risks can be minimized, thereby ensuring the health and welfare of our patients," he said.

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