

Overuse of CT Scans Can Lead to Cancer Deaths

Studies Identify Higher Than Expected Rates of Radiation-Induced Cancer

Michael Pentecost, M.D., Associate Chief Medical Officer, National Imaging Associates

Two scientific reports and an accompanying editorial, published in the Archives of Internal Medicine on Dec. 14, 2009, raise the possibility of a much higher than expected rate of radiation-induced cancer in patients who have undergone CT scans.

The studies, authored by scientists from the National Cancer Institute, the American College of Radiology, Johns Hopkins and the University of California at San Francisco, assert that 29,000 future cancers can be attributed to scans performed in just one year (2007).

With CT scans increasing in number from less than 20 million in 1993 to 72 million in 2007, the findings are especially relevant and timely.

The reports are particularly newsworthy as they emphasize several new points. These include:

- While it is well known that radiation dosage from CT scans varies substantially (up to 1300%) between body parts (e.g., studies of the brain versus abdomen), the investigators describe a 14-fold difference in dosages (expressed in millisieverts, or mSv) between patients undergoing scans of the same area.
 - o Example #1 = Abdomen/pelvis CT dose of 3 mSv in one patient vs. 44 mSv in another.
 - o Example #2 = Chest CT dose of 2 mSv in one patient vs. 24 mSv in another.
- For the first time, the scientists also quantify the risk to patients depending upon their age and gender, demonstrating that younger patients and women are at greater peril.
 - o Example #1 = A 15-year-old female with a CT of the chest has a 30 in 10,000 lifetime chance of developing cancer, whereas a male of the same age has a 9 in 10,000 chance.
 - o Example #2 = A 30-year-old female with a CT of the abdomen and pelvis has a 10 in 10,000 chance of developing cancer, whereas a 70-year-old female has a 3 in 10,000 chance.

Recommended Actions

The recommendations presented in these scientific and editorial reports reflect a practical approach to addressing this issue and are consistent with NIA's management focus and approach.

First, given these data and the recent highly publicized cases in California, **imaging providers must redouble their vigilance around individual patient monitoring, equipment performance and professional standards.** These efforts will seek to minimize the variability that is compromising patient safety. As an example, NIA's provider privileging program offers a level of protection by verifying the qualifications and expertise of the rendering staff, ensuring that the equipment is safe and up-to-date, and confirming that systems are in place to ensure regular equipment calibration.

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Next, recognizing that as many as 30% of CT scans don't contribute to patient care, emphasis must be placed on **reducing unnecessary studies by adhering to accepted evidence-based guidelines and indications**. This is the cornerstone of NIA's radiology benefits management program. By working with ordering providers to make sure that each patient receives the most appropriate test, we eliminate unnecessary tests and encourage appropriate use of non-radiation emitting technology, thereby reducing radiation exposure.

Finally, an **ongoing, accessible tally of cumulative individual dosage is central to informed decision-making**. This valuable information helps both patients and providers evaluate with caution the need for advanced imaging examinations that involve significant radiation. As an example, NIA's radiation awareness program can offer an additional safeguard by tracking a patient's cumulative radiation exposure and informing providers when a patient's exposure has reached a certain threshold.

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