

December 2007

CT (CAT) SCANS AND RADIATION RISK

There have been multiple reports and features in the recent news media in response to a *New England Journal of Medicine* article entitled, “*Computed Tomography – An Increasing Source of Radiation Exposure*” authored by David Brenner, Ph.D, and Eric J. Hall, D.Phil, D.Sc. The article reminds us all of the risks associated with radiation and the need for appropriate use of medical imaging, as well as any clinical test or procedure.

CT scans save lives, and are an invaluable tool in the diagnosis and treatment of our patients here at Massachusetts General Hospital. In the Department of Radiology, we remain guided by the unwavering belief that no radiographic examination should be performed unless the medical benefit of conducting the exam outweighs any risks involved.

MGH Radiology has been actively engaged in research on radiation exposure from CT scanning for over 10 years, and is a leader in the medical field with over 40 publications on this subject in major scientific journals. Our goal remains to continue developing and implementing measures to minimize radiation dose while simultaneously maintaining the highest level possible of diagnostic image quality.

Several points of emphasis around this topic include:

- New CT scanners use less radiation than described in the article. MGH has been one of the earliest adopters of the very latest CT equipment, which uses *automated current modulation*, a technology that significantly reduces radiation dose to the patient.
- MGH develops and refines CT exam protocols on an ongoing basis. Protocols are monitored with proactive dose reduction techniques by sub-specialty teams of radiologists in clinical areas such as: abdominal, neurological, cardiac, thoracic and pediatric imaging. Each protocol is tailored to both the specific organs involved as well as the symptoms and diagnoses provided for the imaging exam.
- MGH recognizes that children are the most vulnerable group of patients for radiation related risks, and has developed an even further specialized protocol program to “kid size” the use of CT imaging for children.

- MGH employs an American Board of Radiology certified medical physicist, who works closely with our CT equipment and its manufacturers to ensure proper calibration and quality control of all CT scan systems and the radiation levels they emit.
- All MGH Radiology technologists and staff are routinely educated on the potential risks involved in radiation exposure from CT imaging.

Additionally, to address the issue of unnecessary exams, the Department of Radiology has implemented two unique measures:

- An innovative, point of care “decision support” system which provides immediate feedback to physicians ordering CT scans advising them on the appropriateness of the test given the symptoms and diagnosis provided. The appropriateness of other exams in relation, such as ultrasound and MRI, is also provided.
- A “duplicate exam alert” system, which informs physicians ordering CT scans if a patient has recently had a similar exam performed, or another exam is scheduled, to avoid unnecessary radiation exposure.

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December 2007*