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Welcome to the first edition of Charlotte Radiology Journal, a publication for our referring providers that seeks to highlight current issues in radiology practice, with this issue focusing on radiation safety in medical imaging.

Dose Reduction Initiatives Image Wisely

By Douglas H. Sheafor, MD

X-rays and other forms of ionizing radiation have been used in medical diagnosis since the late 1800's when Nobel Prize winning Wilhelm Roentgen took the first hand radiograph. Since those days, development of Computed Tomography (CT), digital mammography and other x-ray based technologies have revolutionized medicine.

The ready availability and clinical efficacy of imaging exams has markedly increased the radiation exposure in today's patients. Extrapolation of data from atomic bomb survivors in Japan suggests that the increasing use of medical imaging will increase the incidence of cancer

in the US population. While the benefits of indicated imaging exams far outweigh these risks, radiation exposure can be minimized by preventing inappropriate imaging while concurrently obtaining the best quality image at the lowest possible dose.

The adoption of dose limiting strategies is a complex process: unfortunately, there is no "Easy Button" when it comes to dose reduction. For example, most current scanner-based dose reductions result in increased noise, thereby limiting image quality. Never-the-less, Charlotte Radiology, in cooperation with CHS and affiliated practices, is actively implementing a range of

dose and quality related programs (Table 1). Look for continued updates as these changes are implemented. Please be aware that many of these changes are not available "off the shelf" and will continue to evolve and improve over time. We appreciate your assistance and patience during this time of transition.



What is IMAGE WISELY? www.imagewisely.org

“Image Wisely” is a program instituted by the American College of Radiology in an effort to educate imaging professionals, referring practitioners, and patients about safety in adult medical imaging. This is in addition to the ACR’s “Image Gently” campaign for our pediatric patient population. The website is a valuable resource which answers some common questions including “what are the risks of radiation?”, “when can I use ultrasound instead of xray?”, and “what are special concerns in pregnant and pediatric patients?” For further information or questions about a specific patient or clinical situation, please don’t hesitate to contact one of our radiologists!

CMC “Primordial” Dose QA Shows Promise
Preliminary Findings:
60% of reported issues related to inappropriate or overuse of CT
30% of reported issues related to inadequate plain film collimation

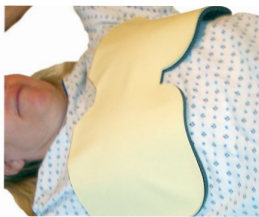
Unsure if a CT is Warranted?
 ACR appropriateness criteria are now available for your smart phone at <http://www.acr.org/ac>

Want to Reduce Dose on In-Office Plain Films?
 Contact Katie Robbins at CharlotteRadiology.com for more information on the Collimation Initiative

Estimated Radiation Doses (compared to background radiation in Charlotte, NC)

- Abdomen + Pelvis CT: 10 mSv (3 years background)
- Chest CT: 7 mSv (2 years background)
- LowDose Chest CT: 1.5 mSv (6 months background)
- Head CT: 2 mSv (4 months background)
- Chest x-ray, 1 view: 0.1 mSv (10 days background)

NEW dose-initiative	Roll-out	Notes
CTDI Initiative (All CT scanners)	July, 2011	The CT Dose Index is a measurement of dose that can be manually checked prior to common CT scans to insure dose levels do not inadvertently exceed national targets. These levels are currently defined for adult body and head CT’s as well as pediatric body CT.
Collimation Initiative (All standard X-rays)	June, 2011	Pre-exposure collimation can significantly reduce radiation exposure for the patient. As an added benefit, this type of dose reduction actually increases the quality of the exam.
CT Breast Shielding Initiative (All CT Scanners)	December, 2010	While used at some CHS sites well before 2010, all CHS and CIS adopted uniform use policy, with shields utilized in all female patients under the age of 50.
“One and Done” ED CT initiative (CT in the Emergency Department)	December, 2010	CMC-NorthEast ED trial decreases number of non-contrast CT scans followed by repeat contrast studies to ZERO in May 2011 (approximately 10 mSv dose savings per patient)



Did you know?
 In order to reduce in-plane breast radiation dose by as much as 40%, CMC and CIS facilities use bismuth shields in younger female CT patients

RECENT HEADLINES Unnecessary CT Exams?

New York Times
 A recent NYT report “Medicare Claims Show Overuse for CT Scanning” (<http://www.nytimes.com/2011/06/18/health/18radiation.html>) warns that many hospitals needlessly expose Medicare patients to “double” chest CT’s - scanning with and without contrast on the same day. While it is uncertain whether these were actual

scans or incorrect charges, rest assured at CMC, the vast majority of CT’s are performed only with OR without IV contrast (not both). In fact, most techniques utilizing both pre- and post contrast scans are very specialized. For example, the dedicated renal CT uses two scans in order to characterize enhancement in mass lesions. Also be aware that some CTA scans (e.g., pulmonary embolus protocols) are called “with and without” for coding purposes but only include a single full radiation dose post-contrast scan.