

## Control of Radiation Dose in Imaging

**Purpose:** To define guidelines for radiologic technologists to follow in order to ensure that the radiation dose used to obtain an image is as low as reasonably achievable (ALARA).

**Introduction:** The amount of radiation dose used to obtain image or to perform a procedure should be no more than what is required to produce a diagnostic quality image or to safely and successfully complete a procedure. The final decision on the dose required for a particular exam is that of the Supervising Radiologist. The Radiology Department recognizes that guidelines are important so that the technologist has a frame of reference to know when the Radiologist must be contacted regarding a dose decision. In the event that a procedure is involved the technologist will also follow established guidelines for alerting the physician of dose concerns. The Radiology Department will update these guidelines and add new guidelines as radiation dose information becomes available.

### **Guidelines:**

1. Single Pass abdomen/pelvis CT, (eg Stone Protocol) – The American College of Radiology (ACR) and American Association of Physicists in Medicine (AAPM) reference radiation dose for an average adult patient (75Kg or 160 pounds) is 25 milliGray (rev 2008). A patient's body habitus will affect the dose required to obtain a diagnostic quality image. After correctly positioning the patient and performing the scout, the technologist will verify that the scanner's automated tube current software has proposed technique settings that will yield a dose of 25 MilliGray or less for a patient weighing 75 kg or less. If the scanner technique selections yield a dose greater than 25 mGy for an average size adult abdomen, or greater than 45 mGy for an obese abdomen, the technologist will check positioning and attempt to determine why the proposed dose exceeds these maximums. If the technologist is unable to reduce the proposed dose, the Radiology Resident or Attending Radiologist will be contacted for guidance. If it is then determined by the Radiologist to proceed scanning with a dose greater than 45MilliGray, the technologist will perform the exam and make a note in the RIS system.
2. Exception: In an emergent situation it may not be practical to contact the Radiologist and determine how the dose can be lowered. The technologist will alert the Attending Physician that the exam is to be conducted at a dose level greater than 45 MilliGray. If the physician indicates the exam must

proceed without any further delay, the technologist will complete the exam and place a note in the RIS.

3. All pediatric CT exams are to be performed with documentation of medical necessity for ionizing radiation exam by the ordering physician, adequate clinical information, and weight-adjusted tube current settings according to the color-coded Broselow Luten system. No pediatric patient shall undergo multipass or overlapping technique CT imaging without the expressed instruction to do so by the radiologist.
4. In plane bismuth breast shields are to be utilized on ALL female patients when breast tissue will be irradiated per policy.

**Policy:**

All technologists must follow the established guidelines including completing documentation for those situations where dose must exceed the recommended level. All technologists will be provided education on dose guidelines during orientation, annually and upon implementation of new guidelines. Enforcement of these guidelines will be accomplished through education and progressive disciplinary action steps:

Step 1 – Verbal counseling and education as determined by the section manager.

Step 2 – Written reprimand

Step 3 – Written reprimand with referral to Human Resources for disciplinary action.

Violations of guidelines will be tracked within a 12 month period from the first infraction.

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