

Department: Radiology	Section: Safety	Effective Date 5/28/2008
Procedure Number:5.14.1		Revision: October 2013

Radiation Safety in Pediatric Imaging

As you are all aware, radiation in the Pediatric patient is now a very hot topic in the radiology and medical community. Children's tissues are 10 times more radiosensitive than adult's tissues, and these children have a longer time frame to develop radiation induced cancers during their lifetime. The web site "Image Gently" has offered advice and recommendations to help lower the radiation dose to the Pediatric patient. I have forwarded this web site to all of our staff, our physicist, and the Pediatricians. I recommend that you review this site. As the Director of Pediatric Radiology, I have come up with the following policies.

Conventional Radiographs

- 1) ALL Pediatric patients shall be shielded for their x-ray examinations, except for when the shield will obscure the region of interest, as in a pelvic or SI joint x-ray for trauma or arthritis, or when it is physically or clinically unreasonable to shield the patient. For routine Hip X-Rays, ALL male children shall have their scrotum shielded using the small gonadal shield, females may not be shielded as this would obscure the hips.
- 2) The technologist should collimate and use the lowest radiation dose which allows a diagnostic image.
- 3) A Scoliosis series will consist of a single frontal standing view of the spine. No lateral view or supine view is needed, unless specifically asked for by the Orthopedist or Radiologist. If the female's breasts can be shielded without obscuring the spine, breast shields should be used.
- 4) If the technologist notices an unusual request, they should contact the Radiologist. An example would be from the Pediatric Clinic where they order a full Cervical, Thoracic, and Lumbar Spine series. The Radiologist should contact the ordering Physician and decide what is the best study for this Pediatric patient.
- 5) For Developmental Dysplasia of the Hips (DDH), Ultrasound is the study of choice for infants Less than 6 Months of age, not X-Ray.

Fluoroscopic Examinations

- 1) Every request should be reviewed by the Radiologist prior to beginning the examination to insure the correct study is being performed.

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- 2) The technologist should use the proper technique for the patient's size to decrease the radiation dose.
- 3) The Radiologist should use the least amount of fluoroscopic time and the fewest number of exposures/images to obtain a diagnostic study. A single image per exposure, rather than x/frames per second, should be used on the great majority of the Pediatric fluoroscopic studies. Collimation should be used to reduce the exposure to areas which are not pertinent to the study.
- 4) If the study is of the upper GI tract, the patient's pelvis should be shielded with a waist apron for older children and teenagers. For infants and very small children, a lead shield should be placed on the table and the patient placed on this to shield the lower abdomen and pelvis.

Computerized Tomography (CT)

- 1) If an alternative study such as Ultrasound or MRI can be used instead to obtain the same information needed, these non-radiation studies should be performed rather than the CT.
- 2) Only the area of concern should be scanned. The Radiologist should review the request and if needed, contact the clinician to insure that the correct body area is being studied. Example: If a dermoid is suspected on an Ultrasound, CT ONLY the Pelvis.
- 3) The exposure parameters should be reduced for the smaller patient size to reduce the tube output. Our Physicist should check to insure we are using the lowest possible dose for a diagnostic study.
- 4) Single phase studies should be used, rather than the multi-phase exam to lower the dosage, unless otherwise requested by the Radiologist.
- 5) Girls should have CT breast shields placed for their examinations of the chest, if the child is large enough for the shield.

These are policies and guidelines to help reduce radiation exposure to our Pediatric patients. Of course there will be times when shielding will not be possible, such as in the operating room when sterile conditions are present, or in trauma when severe body injuries of the abdomen or pelvis are present, or even when the patient is so small that a shield could cause injury to the patient. Common sense by all involved is needed in these special situations.

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Updated: October 2013
Reviewed: 11/12
Written: 05/28/2008