Image Gently™ Campaign Focuses on Need to “Pause and Pulse” in Pediatric Fluoroscopy

Continuing its mission of increasing awareness of the opportunities to lower radiation dose in pediatric imaging, the Alliance for Radiation Safety in Pediatric Imaging (the Alliance) is launching the Image Gently™ campaign’s fourth phase — “Pause and Pulse” — with a focus on diagnostic fluoroscopic procedures.

Since its inception three years ago, the Alliance has grown into an international coalition of 57 member medical societies. In previous campaign phases, Image Gently™ reached out to radiologists, referring physicians, medical physicists, radiologic technologists, and parents, to spotlight benefits and potential risk related to medical imaging in computed tomography (CT) (January 2007) and interventional radiology (August 2009), and to promote medical literacy among parents (January 2008).

“There is no doubt that medical imaging saves lives, but children are particularly susceptible to the potential adverse effects of radiation, so fluoroscopic procedures should be used wisely with dose optimization in accordance with the ALARA principle — As Low as Reasonably Achievable,” says Marta Hernanz-Schulman, MD, FAAP, FACR, professor of radiology and pediatrics at Vanderbilt University Medical Center and chair of the fluoroscopy campaign.

The availability of endoscopy and CT has reduced the number of fluoroscopic procedures, but fluoroscopy sometimes provides the only non-invasive method of making a diagnosis or monitoring treatment. The international push to lower radiation dose has spurred tremendous innovation in fluoroscopic equipment. The latest equipment, Hernanz-Schulman notes, often achieves “significant reductions in dose while maintaining, and sometimes significantly improving, image quality.”

“Pulsing the X-ray is one of the greatest dose-savings measures in fluoroscopy and is especially important to children with smaller bodies and greater vulnerability to radiation,” Hernanz-Schulman says. “But even before this, radiologists need to pause and make sure the study is indicated for the clinical problem. As with any test, there should be clear reasons to request the study. In some situations ultrasound or occasionally magnetic resonance imaging (MRI) could provide similar information without exposing a child to radiation.”

Radiologists can utilize numerous techniques to significantly decrease the amount of radiation children are exposed to while still allowing diagnostic-quality images. These include:

- having a clear initial understanding of the patient’s problems and goals of the study
- limiting fluoroscopic time in general and limiting use of magnification mode in particular
- careful collimation to the area of interest and appropriate shielding
- matching tube output (kVp and mAs) to the size of the child
- utilizing pulsed digital fluoroscopic equipment with adjustable frame speeds as well as last image hold and capture capability

To ensure that a qualified, experienced and credentialed medical team is performing the fluoroscopic examination with fluoroscopic equipment suitable to children, referring physicians and parents are encouraged to ask:

1) if the facility is accredited by the ACR
2) if the technologists are certified
3) how frequently the facility performs the requested fluoroscopic study in children
4) if a board-certified radiologist with pediatric experience or a pediatric radiologist will be performing and interpreting the study

Ishtiaq Hussain Bercha, MSc, lead medical physicist on the fluoroscopy phase of Image Gently™ and a medical physicist at The Children’s Hospital, Aurora, Colorado, notes, “The medical physicist, having a background in physical sciences as applied to medicine, is uniquely positioned to help optimize the whole procedure, including radiation safety. The bottom line is that the physicist should work very closely with all of the professionals involved.” He also notes the need to recognize potential radiation exposure to the fluoroscopist and assisting personnel when the medical team is trying to immobilize and position the child during a procedure.
As always, the radiologic technologist has a key role. “Reducing dose is a team effort. Acquiring an optimal pediatric fluoroscopic exam with minimal radiation dose to the patient must be a coordinated effort between the radiologist, physicist and the radiologic technologist,” says Greg Morrison, MA, RT (R), CNMT, CAE, chief operating officer of the American Society of Radiologic Technologists (ASRT) and a member of the Alliance’s steering committee.

“We really need to image our kids with care,” Hernanz-Schulman notes. “During the fluoroscopy, the Image Gently™ Pause and Pulse Campaign reminds medical professionals to pause to properly plan and prepare for study; to activate dose saving features of equipment; to take no exposures unless necessary; to depress last image hold instead; and to pulse at the lowest possible frame rate.”

More information is available at www.imagegently.org.