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Clinical Decision tools in electronic medical records can reduce childhood radiation exposure

Bethesda, Md – Childhood exposure to ionizing radiation increases lifetime malignancy risk, but a team of researchers has found that with just a little bit of education, the risk can be significantly reduced.

Currently, up to 40% of computed tomography, or CT, scans are ordered (for everyone) unnecessarily. The study, “Point-of-care estimated radiation exposure and imaging guidelines can reduce pediatric radiation burden,” appears in the May 1, 2015, issue of the *Journal of the American Board of Family Medicine*.

Researchers from the Uniformed Services University of the Health Sciences (USU), Cincinnati Children’s Hospital Medical Center, National Library of Medicine, and Clemson University, led by Air Force Major (Dr.) Christopher W. Bunt, assistant professor in the Department of Family Medicine at USU’s F. Edward Hébert School of Medicine, conducted a study of 115 physicians from 17 military family medicine training programs to determine whether the clinical decision support system – which encompasses a variety of tools to enhance decision-making in the clinical workflow-- and the order in which decision-support information is presented would impact physician imaging choices.

The increased use of CT may unnecessarily expose children to ionizing radiation. Risks associated with radiation exposure are greater in children due to their longer life span and greater radiosensitivity. Given the need to weigh risk and benefit prior to a medical test, physicians need to better understand doses of radiation associated with common imaging modalities. Although imaging guidelines and clinical decision support systems have been developed to improve appropriate use of medical imaging, these initiatives have been inconsistently adopted and are largely unavailable for children.

Using an American College of Radiology (ACR) Appropriateness Criteria pediatric clinical scenario, researchers examined how decision support provided in the electronic medical record just before they made their decision -- in the form of estimated radiation exposure coupled with current imaging guidelines -- influenced family physician selection of pediatric imaging modalities. Participants were broken into two groups: those who reviewed the ACR Criteria and then radiation exposure information and those who received radiation exposure information and then the ACR criteria.

Going into the study, ultrasound was the initial imaging modality of choice (between ultrasound, CT, MRI and multiple types of X-rays) for more than 70% of the participants. This was significant since ultrasound has no radiation exposure. In the group that viewed the ACR criteria prior to radiation exposure information, there was a significant change to their imaging choices, with ultrasound use increasing. In the second group, who reviewed radiation exposure initially, the effect was not noted.

“Busy clinicians in the civilian sector or in the military welcome information that helps them make a quick, safe and evidence-based decision. This study provides them with evidence that the information helps save kids from unnecessary radiation exposure,” said Bunt. “As a parent, I want my kids to receive the imaging studies that they need to diagnose and treat illness or injury. Making sure that these decisions are supported by evidence and are safe for my children is extremely important. Our study helps parents feel comfortable about their clinician's decisions.”

Learning to Care for Those in Harm's Way

This study is the most recent publication resulting from the Military Primary Care Research Network (MPCRN), also centered at USU. The MPCRN is a practice-based research network that is composed of all 15 Family Medicine training sites in military treatment facilities across the US. The network encompasses more than 300 practicing physicians and is the only network of its kind in the U.S. military.

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The Uniformed Services University of the Health Sciences (USU), founded by an act of Congress in 1972, is the academic heart of the Military Health System. USU students are primarily active duty uniformed officers in the Army, Navy, Air Force and Public Health Service who receive specialized education in tropical and infectious diseases, TBI and PTSD, disaster response and humanitarian assistance, global health, and acute trauma care. A large percentage of the university's more than 5,200 physician and 790 advanced practice nursing alumni are supporting operations around the world, offering their leadership and expertise. USU also has graduate programs in biomedical sciences and public health committed to excellence in research, and in oral biology. The University's research program covers a wide range of clinical and basic science important to both the military and public health. For more information, visit www.usuhs.edu.