

42. PICTURE PERFECT - PEDIATRIC CT UTILIZATION IN TRAUMA

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Introduction: Radiation exposure poses a greater risk to children than adults due to greater life expectancy and smaller organ size with similar absorption. The risk for developing radiation-related cancer can be higher for children than adults. Following an ACS consultative site visit for Level II Pediatric Trauma Center standards, a weakness was identified regarding over-utilization of computed tomography (CT) scans of the cervical spine and thorax on pediatric trauma patients (defined as age < 15). A multidisciplinary radiation reduction plan began.

Methods: The pediatric trauma program manager partnered with the radiology liaison to trauma. In the trauma peer meeting, the committee reviewed three cases with CT scan overuse with radiology critique on each, followed by radiology recommendations and evidence. The discussion was intense, clinical, educational, and productive. Moving forward, each trauma meeting contained "Radiation Roundup" where all CT scans from the previous month were summarized by patient with injuries for critique. Operational changes included removal of scans from the resuscitation order form, to allow a pause prior to ordering scans. Pediatric emergency medicine was incorporated into trauma response to allow pediatric specific input on scans. Weight-based dose attenuation was already in place. Education included multidisciplinary development of a flyer, posted throughout the hospital, including in the trauma bays, pediatric ED, triage, CT scan control rooms, physician lounge, resident lounge and PICU. Pediatric imaging algorithms were changed in every trauma bay. The "departure to CT" checklist was modified to include pediatrics and a consideration of risk vs. benefits for diagnostic radiation.

Results: In 2015, 53% of patients received a CT c-spine, dropping to 37% in 2017, and in 2018 only 32% of pediatric trauma patients received a CT c-spine. CT thorax utilization in 2015 was 26%, dropping to 21% in 2017 and further to 15% in 2018. Prior to the initiative, in 2017, the average ISS of a patient receiving a CT c-spine was 4.8. 72% of those cases had an ISS < 9. 2018, the average ISS was 7.6, with 57% cases with an ISS < 9 receiving a CT c-spine. In 2017, of patients who received a CT thorax, 45% sustained an ISS < 9. In 2018, only 30% of patients who sustained an ISS < 9 underwent CT thorax. Zero missed injuries have been identified.

Conclusion: Pediatric radiation exposure is a critical element for trauma programs that treat children, regardless of verification level, to routinely evaluate and can be significantly impacted in a short period of time.

