

AbstractID: 12720 Title: Calculating cumulative CT dose in the trauma patient population

Purpose: Recent concerns about lifetime radiation dose from computed tomography (CT) exams has prompted a review of the CT dose delivered at our hospital, a Level I trauma center. A particular patient population of concern is trauma patients, who routinely receive multiple CT exams during their stay. We sampled the trauma patient population and tracked their CT dose during the lengths of their stays to calculate their lifetime attributable risk of cancer incidence (LAR_i) and mortality (LAR_m) based on total CT dose, sex, and age. **Methods and Materials:** We selected as our population sample 100 patients, chosen alphabetically by last name, who were admitted under a trauma code in the month of November 2008. We collected information on the CTDI value, the scan length, and the anatomy scanned from the DICOM headers of all CT scans made during each patient's stay to calculate each patient's individual effective dose and cancer risk estimates (LAR_i and LAR_m, using the BEIR VII data). **Results:** The mean effective dose (in mSv) for male and female trauma patients was 41.9 and 34.3, respectively, and the maximum dose for any patient was 113.8 mSv. The mean LAR_i for males and females was 0.29% and 0.30%, respectively; the LAR_m for males and females was 0.17% and 0.16%, respectively. **Conclusion:** Based on our dose tracking information we have a better understanding of the risks of cancer incidence and mortality for our trauma patients due to our diagnostic tools, which must be weighed against the risks of morbidity and mortality from the trauma incident itself. Our institution has adopted dose recording and dose tracking as an intrinsic part of each CT exam and as part of each patient's history, which will allow a more comprehensive examination of the radiation dose to or patient population.