### Presenter: Kevin S Baker, MD

**Title of Abstract:** Evaluation of radiation dose among patients admitted through a university hospital emergency department

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**Modality:** Multi

**Organ System:** Multi

**Purpose:** To evaluate the impact of different patient presentations/characteristics on medical imaging and radiation exposure, we collected data on the estimated effective radiation dose (EED) of patients admitted through our University Hospital ER, and analyzed the relationships of patient gender, age, admitting diagnosis, and admission duration on EED.

**Methods Used:** All (592) patients admitted through our ER (with imaging) during one week periods in May/November 2009 were included. To compare EEDs according to admission diagnosis, seven categories were created: Cardiopulmonary, Gastrointestinal, Genitourinary, Neurologic, Trauma, Infectious, and Other. EEDs of patients with various admission durations were also evaluated. EEDs were also compared across gender and age groups.

**Results of Abstract:** Units for all EEDs are mSv. Median EED (MEED) for all patients was 4.5. Males (7.8, females=2.5) and adults (6.1, pediatrics=1.8) experienced higher MEEDs, but significance was lost after controlling for other variables. MEED increased with admission duration (0.1 for <24 hours, 1.8 for 1-3 days…and 92.0 for >2 months). Trauma patients experienced the highest MEED (18.3), while patients with gastrointestinal/genitourinary diagnoses experienced the second highest MEED (13.0 mSv for both).

**Discussion:** Pediatric/male patients experienced heightened radiation exposure, but these relationships were largely due to other variables (higher male frequency/severity of trauma, pediatric patients had shorter admissions and diagnoses requiring less radiologic workup). Patients admitted following trauma and for prolonged durations showed elevated radiation exposure even after adjustment for all other variables. The identification of these relationships may aid in the development and focusing of future radiation awareness/reduction efforts to persons involved in the evaluation and care of patients with these presentations and characteristics.

**Scientific and/or Clinical Significance?**

**Relationship to existing work**

Sorry for continuing discussion text into the next question, but I was being cutoff well before hitting the 300 word limit. To answer this question, this is the first time many of these relationships on a VERY "hot topic" have been examined and quantified.