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Patients' Perspectives on Acceptable Risk for Computed Tomography in Trauma

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Background: Increased utilization of computed tomography (CT) in the evaluation of patients with trauma has increased both patient costs and their risks of cancer from ionizing radiation without producing measurable benefits in outcome. Patient centered care mandates fully informing patients of risks and costs associated with diagnostic testing whenever possible and this requires an understanding of their risk tolerance.

Study Objective: We sought to determine patient preferences regarding 1) emergency department (ED) real-time discussions of risks and costs of CT during their trauma evaluations; and 2) whether varying levels of the risk of life-threatening injury (RLTI) are associated with changes in patient preferences for CT.

Methods: We administered a structured survey to adult, English-speaking patients with non-critical traumatic injuries at four level 1 trauma centers. We excluded patients receiving CT scans and patients with alterations in their mental status. We assessed patient preferences for real-time ED discussions of radiation risk and cost of CT scans. After informing subjects of the cancer risk associated with chest CT, we used hypothetical scenarios with varying RLTI to assess patients' preferences regarding CT.

Results: Of the 941 subjects enrolled, 50% were male; 42% were White, 26% were African-American and 24% were Latino; their median age was 41 years. 27% and 84% had completed college and high school, respectively. 43% had Medicare, Medicaid, or other city/state funded insurance programs, 30% had private insurance, 20% had no insurance. Most subjects stated that they would prefer to discuss trauma CT radiation risks (73.5%, 95% CI [66.1, 80.8]) and costs (53.2%, 95% CI [46.1, 60.4]) with physicians. As the hypothetical RLTI decreased, the preference for CT scan decreased accordingly: RLTI 25% (desire 91.2%, 95% CI [89.4, 93.1]), RLTI 10% (desire 79.3%, 95% CI [76.7, 81.9]), RLTI 5% (desire 69.1%, 95% CI [66.1, 72.1]) and RLTI 2% (desire 53.8%, 95% CI [50.6, 57.0]). If the RLTI was less than 2% and subjects were required to pay \$1000 out of pocket for CT, only 34.5%, 95% CI [31.4, 37.5] would opt for a CT.

Conclusions: Most non-critically injured patients prefer to discuss radiation risks and costs of CT prior to receiving imaging for trauma. As the risk of RLTI decreases, fewer patients prefer to have CT imaging; at a threshold of 2%, approximately half of patients would prefer to forego CT. These patient preferences may guide the development of patient-centered assessments regarding CT in blunt trauma, and help to establish acceptable risk thresholds for selective imaging decision instruments.