

Trauma Patients Undergo More CT Scans But Fewer Are Positive and This Does Not Increase Trauma Bay Home Discharges

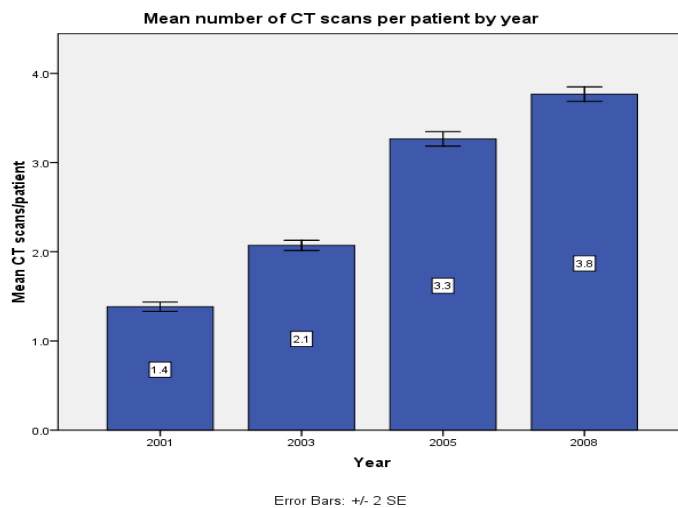
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Introduction It is unclear how increasing computed tomography (CT) scan use in the evaluation of injured patients has impacted trauma bay management. We hypothesized that our institution had significantly increased the number of scans performed in the initial evaluation of trauma patients in the last decade. Additionally, we postulated that this practice had resulted in a greater number of patients discharged from the emergency department.

Materials and Methods After institutional IRB approval, patient demographics, mechanism of injury, injury severity score (ISS), scans performed, and trauma bay disposition were abstracted from all adult trauma contacts at a Level 1 trauma center for the years 2001, 2003, 2005 and 2008. A local anatomical abbreviated injury scale (AIS) ≥ 2 was used as a surrogate of CT scan positivity, indicating an injury that was at least of moderate caliber. Chi-squared, Kruskal-Wallis, and Mann-Whitney tests were used for analysis. A p-value <0.05 was considered statistically significant.

Results The total number of trauma contacts for each of the 4 years sampled (2001, 2003, 2005, and 2008) was 1878, 2263, 2621, and 2544, respectively, representing a 35.5% increase from the first to the fourth year of sampling. Demographics and ISS were similar between years. The total number of scans performed per patient increased significantly during the study period (1.4 ± 0.03 , 2.1 ± 0.03 , 3.3 ± 0.04 , and 4.7 ± 0.04 mean CTs/contact; $p < 0.000$ all years).



Both blunt and penetrating mechanisms resulted in increasing number of ct scans as the number of scans tripled irrespective of mechanism. The number of mean CTs/contact was higher for blunt mechanism patients ($1.8 \text{ v } 0.33$ (2001), $2.6 \text{ v } 0.54$ (2003), $4.0 \text{ v } 0.76$ (2005), and $5.4 \text{ v } 1.9$ (2008), $p < 0.001$). The percentage of patients scanned (all body regions) increased significantly during the study period [head $61.1(2001) \text{ v } 76.1(2008)$, cervical spine $18.6(2001) \text{ v } 72.7$ (2008), chest (7.7 (2001) $\text{ v } 70.9$ (2008), abdomen/pelvis (48.1 (2001) $\text{ v } 78.1$ (2008), all comparisons $p < 0.000$]. As the proportion of trauma contacts undergoing ct scan increased, scans with positive findings remained stable: head & neck ($31 \text{ v } 29\%$) and chest ($13 \text{ v } 14\%$) (both 2001 vs 2008, $p = \text{NS}$), yet in the abdomen this decrease was significant ($11 \text{ v } 9\%$, $p = 0.035$). The percentage of trauma contacts that were discharged from emergency department to home was similar, 36 % throughout.

Discussion CT scan use throughout all body regions has steadily and significantly increased at our institution over the 8 year study period. Increased CT usage has not resulted in an increase in the number of positive scans and this practice change has not resulted in a greater number of patients being discharge from the emergency department directly to home.