

Fragmentation of Care and the Utilization of Computed Tomography (CT) in Ischemic Stroke among Medicare Patients

Kimon Bekelis MD; David W. Roberts MD; Weiping Zhou; Jonathan Skinner
The Dartmouth Insitute for Health Policy and Clinical Practice

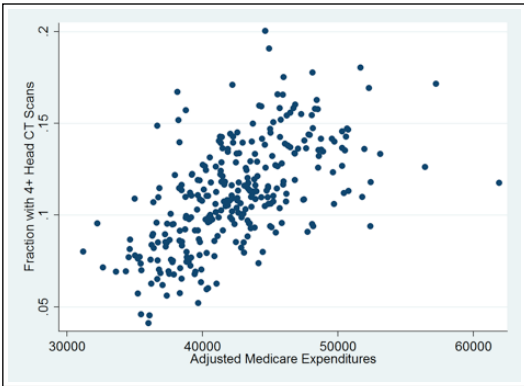


Introduction

Computed Tomography (CT) scans are central diagnostic tests for patients with ischemic stroke. The inefficient use of CT scans is a negative quality measure tracked by the Centers for Medicare and Medicaid Services (CMS). We attempted to demonstrate any differences across regions, hospitals, or race/ethnicity groups with regard to high rates of CT scans and expenditures for stroke patients, and why they might occur.

Methods

We performed a retrospective longitudinal study using all Medicare fee-for-service claims data from 2008-2009 for ischemic stroke admissions with follow-up of one year. A total of 327,521 patients were analysed. We used regression techniques to assess the effects of fragmentation of care on high-intensity CT use (four or more within a year post-admission), and the association of risk-/price-adjusted Medicare expenditures within a year post-admission with high-intensity CT use. Risk adjustment measures included sex, race/ethnicity, comorbidities on admission, and hierarchical condition categories (HCCs).



Results

The average number of head CTs in the year after admission was 1.94; 11.9% of the patients had four or more. Regionally, risk-adjusted rates of this high-intensity CT use ranged from 4.6% in Napa CA to 20.0% in East Long Island, NY. Average risk-adjusted rates of high-intensity CT use were 2.6% higher for blacks than for whites (95% C.I., 2.1% to 3.1%), but there was considerable variation across regions. One important explanatory factor was fragmentation of care, as measured by the number of different doctors seen. Patients living in the top quintile regions of fragmentation experienced a 5.9% (95% C.I., 5.5 to 6.3%) higher rate of increased CT utilization; the corresponding odds ratio was 1.77 (95% C.I., 1.71 to 1.83). Similarly, overall one-year risk-/price-adjusted expenditures exhibited considerable variation across regions, ranging from \$31,175 in Salem, MA to \$61,895 in McAllen, TX. Regional rates of high-intensity CT scans were associated positively with one-year expenditures ($\rho = 0.56$, $p < .01$)

Conclusions

Rates of high-intensity CT use for ischemic stroke patients reflect wide practice patterns for similar patients across regions and races. Medicare expenditures parallel these disparities. Fragmentation of care contributes to high CT use.

Learning Objectives

- By the conclusion of this session, participants should be able to:
- 1) Describe the significant geographic variation in CT utilization and Medicare expenditures for acute ischemic stroke was observed throughout the United States, and identify particular outliers
 - 2) Describe the prominent racial disparities in the rate of head CTs in acute ischemic stroke patients
 - 3) Identify areas of significant fragmentation of care and their correlation with CT utilization

References

- 1.Fisher ES, McClellan MB, Safran DG. Building the path to accountable care. N Engl J Med 2011;365:2445-7.
- 2.Schwamm LH, Reeves MJ, Pan W, et al. Race/ethnicity, quality of care, and outcomes in ischemic stroke. Circulation 2010;121:1492-501.
- 3.Xian Y, Holloway RG, Noyes K, Shah MN, Friedman B. Racial differences in mortality among patients with acute ischemic stroke: an observational study. Ann Intern Med 2011;154:152-9.
- 4.Fonarow GC, Smith EE, Reeves MJ, et al. Hospital-level variation in mortality and rehospitalization for medicare beneficiaries with acute ischemic stroke. Stroke 2011;42:159-66.
- 5.Brenner DJ, Hall EJ. Computed tomography--an increasing source of radiation exposure. N Engl J Med 2007;357:2277-84.
- 6.The Dartmouth atlas of health care. The Dartmouth Atlas Project. Lebanon, NH; 2010.
- 7.O'Toole LJJ, Slade CP, Brewer GA, Gase LN. Barriers and facilitators to implementing primary stroke center policy in the United States: results from 4 case study states. Am J Public Health 2011;101:561-6.

