



Assessing improvement in performance measure adherence using regression trend analysis; Results from the Massachusetts Coverdell National Acute Stroke Registry

Laura J Coe¹ MPH; Katrina D'Amore¹ MPH; H June O'Neill¹ MPH; Hilary K Wall¹ MPH; Lee H Schwamm² MD, FAHA; Judith A Hinchey³ MD; Cynthia L Boddie-Willis¹ MD MPH

¹Massachusetts Department of Public Health, ²Massachusetts General Hospital, Boston, MA ³Saint Elizabeth's Medical Center, Boston, MA

BACKGROUND

The Stroke Collaborative Reaching for Excellence (SCORE) is a voluntary quality improvement collaborative that supports Primary Stroke Service designated hospitals in Massachusetts. Since 2005, SCORE has assisted hospitals in monitoring and improving the quality of care for stroke patients in the acute, inpatient, and discharge settings. SCORE is implemented as a partnership of the Massachusetts Department of Public Health Paul Coverdell National Acute Stroke Registry, the American Stroke Association Get With the Guidelines-Stroke quality improvement program and participating Primary Stroke Service-designated hospitals.

SCORE has adopted the ten nationally acknowledged evidence- and guidelines-based performance measures for stroke care.

OBJECTIVE

To determine if the aggregate results of the calculated measures for participating hospitals has significantly improved over time

METHODS

Cases entered from the 56 participating hospitals from the time period of July 2005 to September 2008 were analyzed to produce quarterly aggregate estimates and standard errors for the ten consensus stroke measures. A join point regression analysis (Joinpoint Regression Program Version 3.3.1, Silver Spring, MD) was used to test for trend on each of ten measures. Joinpoint regression analysis software calculates the number and temporal location of points where trends change direction (join points). The join point regression model describes the trend as a sequence of linear segments between corresponding join points, so that each segment has an associated percentage change. Because data was analyzed on a quarterly basis, the percent change refers to the increase or decrease of adherence by quarter. All percent changes calculated in this report were statistically tested at the 95% probability level against the null hypothesis; "the proportion value is neither increasing nor decreasing over time." To determine the overall trend for each outcome measure, the zero-joinpoint model and its corresponding percent change was chosen.

RESULTS I

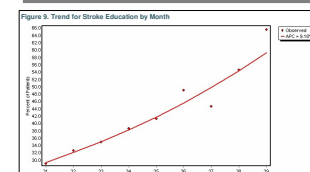
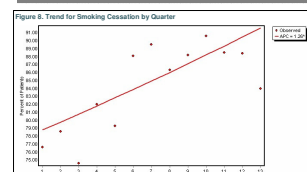
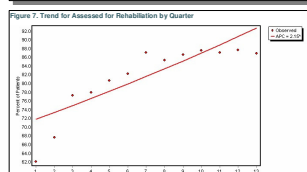
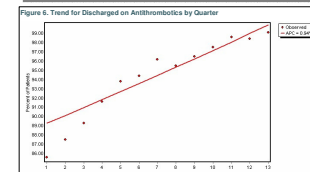
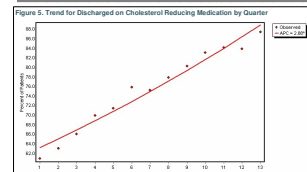
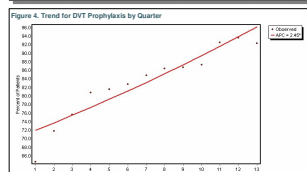
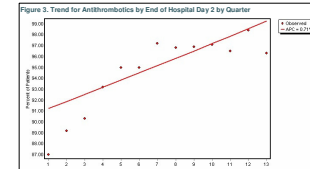
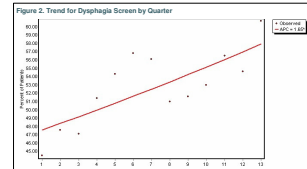
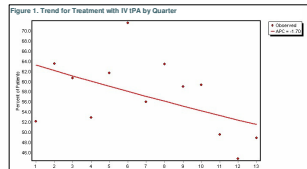
Table 1. Monthly and Quarterly Trend Statistics by Measure

Measure	Overall Trend	Average Monthly % Change	Average Quarterly % Change
Treatment with IV tPA within 2 hours	↓*	-0.60	-1.70
Dysphagia Screen	↑*	0.55	1.65
Antithrombotics by end of Hospital Day 2	↑*	0.24	0.71
DVT Prophylaxis	↑*	0.81	2.45
Discharged on Cholesterol Reducing Medication	↑*	0.96	2.88
Discharged on Antithrombotics	↑*	0.32	0.94
Discharged on Atrial Fibrillation Medication	↑	0.09	0.30
Assessed for or Discharged to Rehabilitation Services	↑*	0.73	2.15
Smoking Cessation	↑*	0.42	1.26
Stroke Education ^A	↑*	9.18	N/A

*Significant at the 0.05 level

^AData limited to the time period of January 2008 to September 2008

RESULTS II*



*Significant measures only. Note: APC refers to the percent change by time period

CONCLUSIONS

SCORE participating hospitals showed a statistically significant increase in improvement in eight of the ten stroke measures. Average improvement ranged from 0.71 – 2.88 percentage points per quarter. The measure for 'Stroke Education' showed a 9.18 monthly percentage change since January 2008. The measure for 'Treatment with IV tPA within 2 hours' was the single measure showing a significant downward trend. This may be due in part to a small sample size as well as a considerable change in the definition of the measure in January 2008.

CONTACT INFORMATION

Laura J. Coe, MPH
Massachusetts Department of Public Health
617-624-5499 laura.coe@state.ma.us