Compliance with Stroke Education in the Michigan Paul Coverdell Acute Stroke Registry

Adrienne Nickles¹, Jay Fiedler², MS, Sarah Lyon-Calloy², MA, MS, Mathew J. Reeves², PhD

¹ University of Michigan School of Public Health, MPH Candidate, ²Michigan Department of Community Health, Chronic Disease Epidemiology Section, ³Michigan State University, College of Human Medicine, Department of Epidemiology

BACKGROUND

• Stroke Education provided to hospitalized stroke patients and their families is an endorsed stroke performance measure (PM) tracked by several national quality improvement programs.

• Stroke Education consists of 5 distinct subcomponents: modifiable risk factors (RF), stroke warning signs (SSS), EMS activation (EMS), physician follow-up (PFU), and discharge medications reconciliation (MED)

OBJECTIVES

• Determine the compliance with the Stroke Education Performance Measure and its subcomponents

• Identify predictors of receiving Stroke Education in the Michigan Stroke Registry Quality Improvement Program (MiSRQIP)

METHODS

• 4282 acute stroke admissions from 20 hospitals participating in MiSRQIP in 2008 were eligible for Stroke Education

• Patients who expired, were comfort measures only, who were transferred to another hospital, discharged against medical advice, discharged to hospice, and those with an unknown discharge destination were excluded from the measure

• Compliance results were measured for the overall PM and each subcomponent

• Independent factors associated with PM compliance were identified using GEE multivariable logistic regression

RESULTS

The average age of the patients was 69.8 years, 52.6% were female, 59.2% had ischemic stroke (IS), 9.8% hemorrhagic stroke (HS), 27.0% transient ischemic attack, and 4.1% stroke not specified (SNS)

Overall compliance with the Stroke Education PM was 59.6%, ranging from 5.8% to 91.6% across the participating hospitals

Patients could receive from 0 to 5 subcomponents of the Stroke Education PM (Figure 1). Most patients received either 2 subcomponents or all 5

PFU (94.4%) and MED (91.2%) were the most frequently delivered subcomponents

CONCLUSIONS

• Compliance with the Stroke Education PM was only 59.7% in this registry

• High compliance with the 2 subcomponents, PFU and MED, is likely because these measures are delivered to all hospitalized patients not just stroke patients

• The other three stroke specific measures RF, SSS, and EMS were delivered in less than 70% of stroke patients

• Important QI opportunities reside in the delivery of stroke education and in the large differences between hospitals

• As of November 2009, Stroke Education is limited to those patients discharged home, note that the compliance with Stroke Education was no different in this subgroup 59.4% vs. 59.9% for those discharged not home

Table 1. Characteristics Associated with Receiving all 5 vs. Receiving <5 Components of the Stroke Education Measure.

<table>
<thead>
<tr>
<th>Age</th>
<th>Received All 5</th>
<th>Received &lt;5</th>
<th>p2, p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50 yrs</td>
<td>441</td>
<td>63.0%</td>
<td>37.0%</td>
</tr>
<tr>
<td>50-59</td>
<td>471</td>
<td>62.2%</td>
<td>37.8%</td>
</tr>
<tr>
<td>60-69</td>
<td>407</td>
<td>62.9%</td>
<td>37.1%</td>
</tr>
<tr>
<td>70-79</td>
<td>1071</td>
<td>59.1%</td>
<td>40.9%</td>
</tr>
<tr>
<td>&gt;80</td>
<td>1225</td>
<td>55.1%</td>
<td>44.9%</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2395</td>
<td>56.4%</td>
<td>43.6%</td>
</tr>
<tr>
<td>Non-White</td>
<td>387</td>
<td>70.4%</td>
<td>29.6%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2031</td>
<td>62.1%</td>
<td>37.9%</td>
</tr>
<tr>
<td>Female</td>
<td>2391</td>
<td>57.4%</td>
<td>42.6%</td>
</tr>
<tr>
<td>Stroke Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ischemic</td>
<td>2533</td>
<td>66.0%</td>
<td>34.0%</td>
</tr>
<tr>
<td>Hemorrhagic</td>
<td>416</td>
<td>40.6%</td>
<td>59.4%</td>
</tr>
<tr>
<td>TIA</td>
<td>1155</td>
<td>52.3%</td>
<td>47.7%</td>
</tr>
<tr>
<td>Pre-Stroke Ambulatory Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Able</td>
<td>4196</td>
<td>50.7%</td>
<td>49.3%</td>
</tr>
<tr>
<td>Unable</td>
<td>175</td>
<td>61.1%</td>
<td>38.9%</td>
</tr>
<tr>
<td>Discharge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>2294</td>
<td>59.4%</td>
<td>40.6%</td>
</tr>
<tr>
<td>Other</td>
<td>1996</td>
<td>59.9%</td>
<td>40.1%</td>
</tr>
</tbody>
</table>

Table 2. Crude and Adjusted Odds Ratios of Stroke Education Compliance by Individual Patient Characteristics.

<table>
<thead>
<tr>
<th>Age</th>
<th>Crude OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50 yrs</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>50-59</td>
<td>0.97 (0.754, 1.23)</td>
<td>0.92 (0.70, 1.16)</td>
</tr>
<tr>
<td>60-69</td>
<td>1.00 (0.79, 1.26)</td>
<td>0.93 (0.74, 1.21)</td>
</tr>
<tr>
<td>70-79</td>
<td>0.85 (0.66, 1.09)</td>
<td>0.85 (0.66, 1.09)</td>
</tr>
<tr>
<td>&gt;80</td>
<td>0.72 (0.58, 0.90)</td>
<td>0.72 (0.58, 0.90)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Non-White</td>
<td>0.94 (0.67, 1.33)</td>
<td>0.97 (0.68, 1.46)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Female</td>
<td>0.82 (0.73, 0.93)</td>
<td>0.86 (0.76, 0.98)</td>
</tr>
<tr>
<td>Stroke Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ischemic</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hemorrhagic</td>
<td>0.55 (0.39, 0.79)</td>
<td>0.56 (0.37, 0.80)</td>
</tr>
<tr>
<td>TIA</td>
<td>0.86 (0.69, 1.05)</td>
<td>0.86 (0.69, 1.05)</td>
</tr>
<tr>
<td>SNS</td>
<td>0.91 (0.79, 1.11)</td>
<td>0.98 (0.84, 1.15)</td>
</tr>
<tr>
<td>Pre-Stroke Ambulatory Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Able</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Unable</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 1. Number of Stroke Education Subcomponents Received

Figure 2. Frequency of Individual Subcomponents