TENNESSEE STROKE REGISTRY REPORT, 2015
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Background

Stroke is the 5th leading cause of death in Tennessee1. The Tennessee Stroke Registry (TSR) Act2 of 2008 established a statewide stroke database with annual reports produced by East Tennessee State University’s College of Public Health. The TSR is a partnership between East Tennessee State University’s College of Public Health, American Heart/American Stroke Association (AHA), and the Tennessee Department of Health.

The TSR report is generated from data which are voluntarily input by hospitals in Tennessee who participate in the AHA-supported quality improvement program, Get with the Guidelines-Stroke (GWTG-Stroke).

Objective3

To provide information about stroke in Tennessee to residents, health care professionals, and policy makers.

Methods

ArcMap 10.3.1 was used to map 2014 stroke mortality data, location of stroke centers, and 30-, 60-, and 90-minute service areas of stroke centers. Primary and Comprehensive Stroke Centers were identified through The Joint Commission quality check search engine; addresses were obtained from hospital websites then geocoded into a point shapfile in QGIS using the Google geocoder.

Aggregate data were abstracted from Quintiles, the online software used by GWTG-Stroke participating hospitals to input data.

Microsoft Excel was used to generate charts and graphs to illustrate the data collected by the TSR.

Results3

Figure 1: Map of Stroke Centers and Travel Time illustrates the 2014 stroke mortality rates per 100,000 population for each county in Tennessee (A) and the locations of the 31 certified stroke centers in Tennessee and the 9 stroke centers in bordering states within 50 miles of the Tennessee border. The map of 30, 60 and 90 minute travel times to each stroke center was then overlaid onto the map of mortality data (C).

Table 1: Population within Each Service Area shows the percentage of the state’s population that lives within 30, 60, and 90 minutes of a certified stroke center.

<table>
<thead>
<tr>
<th>Service Area</th>
<th>Population (2)</th>
<th>Population as % of State Population</th>
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</thead>
<tbody>
<tr>
<td>30 min</td>
<td>6,346,105</td>
<td>68.7%</td>
</tr>
<tr>
<td>60 min</td>
<td>99.9%</td>
<td>68.7%</td>
</tr>
<tr>
<td>90 min</td>
<td>99.9%</td>
<td>68.7%</td>
</tr>
</tbody>
</table>

Figure 2: Distribution of Stroke Diagnoses illustrates the distribution of stroke types among 6,365 stroke patients, excluding TIA.

Figure 3: Gender Distribution across Stroke Types shows the gender distribution across transient ischemic attacks (TIA), subarachnoid hemorrhage (SAH) and intracerebral hemorrhage (ICH). For each chart, n represents the number of patients of that stroke type for which gender was reported.

Figure 4: Average Ages of Stroke Types +/- 1 Standard Deviation shows the average age and one standard deviation for each type of stroke and all strokes, with n representing the number of patients of that stroke type with age reported.

Figure 5: Co-morbidities among Stroke Patients shows the top seven co-morbidities of the 7,126 stroke patients with the corresponding percentage of patients with that co-morbidity.

In 2015, stroke types (i.e., hemorrhagic and ischemic) exhibited different characteristics than strokes overall and geographic disparities were highlighted through the descriptive mapping. Regions with clusters of certified stroke centers (i.e. the Nashville area) tend to have lower rates of stroke mortality. Clusters of stroke centers appear to have a greater association with lower stroke mortality rates than does the presence of a single stroke center. Identifying and understanding these differences and disparities in stroke mortality can help in addressing ways to improve stroke care and outcomes in Tennessee.