



Background

Why should we care about stroke in Georgia?

- **Stroke is the fourth-leading cause of death** in Georgia (**3,694 stroke deaths in 2013**)¹
- **Georgia's age-standardized stroke death rate in 2013 was 13.5% higher** than the national average¹
- **In 2013, Georgia had the 10th-highest stroke death rate** compared to other U.S. states¹
- Stroke is a **leading cause of disability**.² Treatment of eligible stroke patients with the drug tissue plasminogen activator (tPA) can reduce disability by 30%, but the drug needs to be administered in the first three hours after symptom onset.³
- Georgians had **23,742 stroke hospitalizations in 2013**
 - The median cost per hospitalization was **\$27,077**
 - The total stroke-related hospitalization charges **were over \$1 billion in Georgia**
- **Georgia is in the "Stroke Belt,"** an area in the southeastern U.S. with stroke death rates that are approximately 20% higher than the rest of the U.S. The coastal plains of Georgia are in the "buckle" of the Stroke Belt, an area with stroke death rates about 40% higher than the rest of the nation.⁴
 - The higher death rates seen in the Stroke Belt can be collectively explained, in large part, by demographic and socioeconomic factors and the prevalence of stroke risk factors and chronic diseases like diabetes and hypertension.⁵
- Only 43% of Georgia stroke deaths occurred in a hospital in 2013. This suggests that most stroke sufferers and witnesses are **not recognizing stroke events or calling emergency services** quickly enough.
- More than **one-fifth (21.1%) of Georgia stroke deaths were premature**, i.e. among persons under the age of 65 years, based on 2013 death data.¹
- The stroke death rate for blacks in Georgia was **38% higher than** the rate for whites in 2013.¹

- **Adult Georgians have high prevalence rates for stroke-related risk factors.** 2013 and 2014 Behavioral Risk Factors Surveillance System data showed that:⁶
 - **35%** of adult Georgians had hypertension (2013 BRFSS)
 - **38%** had high cholesterol (2013 BRFSS)
 - **12%** were diabetic (2014 BRFSS)
 - **30%** were obese (2014 BRFSS)
 - **24%** were physically inactive (2014 BRFSS)
 - **17%** of Georgia adults smoked (2014 BRFSS)

Coverdell-Murphy Act Required Reporting

Georgia's Coverdell-Murphy Act (CMA), or Senate Bill 549, enacted in 2008, requires the reporting of specific types of stroke data to the Georgia Department of Public Health (DPH) as part of the Georgia Coverdell Acute Stroke Registry (GCASR).⁷ The required elements are in Table 1 in bold, exactly as specified in the law. With exceptions noted for data coming from Georgia Emergency Medical Services (EMS), all data in this report come from GCASR. GCASR currently has 69 participating acute care hospitals, of which 42 are comprehensive or primary stroke centers, and four are remote stroke treatment centers. Georgia EMS provides data on the number of subjects evaluated and transported to acute care facilities with a presumptive diagnosis of acute stroke. This report covers the years 2012 through 2014 in Georgia. Some data elements specified in the law are not available through GCASR or EMS (see Table 1) and thus are not reported here.

Summary of Data Findings

According to available data, Georgians received a consistently high quality of stroke care during 2012 to 2014. The median time from hospital arrival to administration of the clot-busting drug tPA to ischemic stroke patients was **shortened from 66 minutes in 2012 to 58 minutes in 2014**. Numbers for many other quality indicators, such as stroke education and discharge on appropriate medication, also improved in Georgia from 2012 to 2014.

In Georgia during 2012 to 2014:

- The number of patients delivered to hospitals by EMS with a presumptive stroke diagnosis, based on provider impression, **increased by 37%** from 2012 to 2014.
- The number of Georgians receiving acute interventional therapy for stroke, defined as tPA administration, **increased by 28%** from 2012 to 2014.

- The median door-to-needle time for tPA administration **improved by 12%, decreasing from 66 minutes to 58 minutes**. Door-to-needle time refers to the minutes elapsed from when the patient arrives at the hospital to the administration of tPA.
- The median length of hospital stay for stroke patients **remained low (3 days)** from 2012 to 2014.
- The percentage of eligible stroke patients who received venous thromboembolic prophylaxis **remained consistently high at 95%** from 2012 to 2014.
- The percentage of eligible stroke patients discharged on antiplatelet or antithrombotic medications **remained consistently high at 99% and 98%** from 2012 to 2014..
- The percentage of eligible atrial fibrillation patients who received anticoagulation therapy **increased from 95% to 98%** from 2012 to 2014.
- The percentage of eligible patients who had antithrombotic medication administered within 48 hours of hospitalization **remained consistently high at 97%** from 2012 to 2014.
- The number of lipid profiles ordered **increased by 10%** from 2012 to 2014.
- The percentage of eligible patients receiving dysphagia screening **remained at 87%** from 2012 to 2014.
- The percentage of patients who received all five components of the recommended stroke education **progressively increased from 90% to 94%** from 2012 to 2014.
- The percentage of eligible patients receiving help for smoking cessation or with whom smoking cessation was discussed **remained consistently high at 98% and 96%, respectively**, from 2012 to 2014.
- The percentage of eligible patients who were assessed for rehabilitation and for whom a plan for rehabilitation was considered remained **consistently high at 98%** from 2012 to 2014.
- The number of hospital-admitted stroke patients who were transported by EMS **increased by 10%** from 2012 to 2014.
- The percentage of eligible stroke patients treated with intravenous tPA **increased from 75% to 91%** from 2012 to 2014.
- The percentage of eligible stroke patients who were discharged on cholesterol-reducing medication **increased from 91% to 94%** from 2012 to 2014.

Table 1. Coverdell-Murphy Act Required Data Elements available via GCASR or Georgia EMS, Georgia, 2012-2014

| Indicator (Statewide) | 2012 | 2013 | 2014 |
|---|----------------|------------------|----------------|
| 1. The number of patients evaluated Defined as the total number of incidents which were reported by dispatch or transported by EMS as stroke or transient ischemic attack <i>Data source: Georgia EMS data</i> | --* | 12,652 | 10742 |
| 2. The number of patients receiving acute interventional therapy Defined as number of stroke patients receiving tPA administration | 995 | 1,050 | 1,278 |
| 3. The amount of time from patient presentation to delivery of acute interventional therapy Median door-to-needle time in minutes (Interquartile Range) | 66 (50, 88) | 61.5 (47, 86) | 58 (43, 83) |
| 4. Patient length of hospital stay Median length of stay in days (Interquartile Range) | 3 (2, 6) | 3 (2, 7) | 3 (2, 7) |
| 5. Patient functional outcome <i>Not collected; see Table 2 for alternative data</i> | -- | -- | -- |
| 6. Patient morbidity <i>Not collected; see Note below</i> | -- | -- | -- |
| 7. Deep vein thrombosis prophylaxis given Percent among eligible ^o patients | 9,623 95% | 10,319 95% | 10,771 95% |
| 8. Number of patients discharged on anti-platelet or anti-thrombotic medication Percent among eligible patients | 7,880 99% | 8,570 99% | 8,951 98% |
| 9. Number of patients with atrial fibrillation receiving anticoagulation therapy Percent among eligible patients | 921 95% | 1,014 96% | 1,088 98% |
| 10. Patients on which the administration of tissue plasminogen activator was considered <i>Not collected; see Note below</i> | -- | -- | -- |
| 11. Antithrombotic medication administered within 48 hours of hospitalization Percent among eligible patients | 6,712 97% | 7308 97% | 7521 97% |

| Indicator (Statewide) | 2012 | 2013 | 2014 |
|--|---------------|---------------|---------------|
| 12. Number of lipid profiles ordered during hospitalization | 11,740 | 12,492 | 12,935 |
| 13. Number of screens for dysphagia performed Percent among eligible patients | 8,785 87% | 9,314 87% | 9,800 87% |
| 14. Stroke education provided* Number of patients who received all five components of stroke education by GCASR Percent among eligible patients | 5,447 90% | 5,967 93% | 6,214 94% |
| 15. Number of smoking cessation programs provided or discussed Percent among eligible patients | 1,531 98% | 1,626 98% | 1,689 96% |
| 16. The number of patients assessed for rehabilitation and whether a plan for rehabilitation was considered Percent among eligible patients | 9,680 98% | 10,413 98% | 10,846 98% |
| 17. The number of emergency medical services stroke patients who were transported to the hospital facility Defined as number of patients delivered to hospital by EMS with a presumptive stroke diagnosis based on provider impression <i>Data source: Georgia EMS data</i> | 6,191 | 6,929 | 8,473 |
| 18. The number of emergency medical services stroke patients who were admitted to the facility | 6,999 | 7,058 | 7,671 |
| 19. The number and percentage of stroke cases treated with intravenous or intra-arterial tissue plasminogen activator Percent among IV tPA eligible patients | 513 75% | 590 89% | 673 91% |
| 20. The number of patients discharged on cholesterol- reducing medication Percent among eligible patients | 5,853 91% | 6,501 93% | 6,769 94% |
| Total Patients | 14,845 | 15,870 | 16,469 |

* Data not available for 2012.

⊕ Eligibility for specific care varies and is based on criteria set by the Paul Coverdell National Acute Stroke Registry for measuring the performance of hospitals in stroke patient care.

¥ The five stroke education components are: modifiable risk factors, warning signs and symptoms, activating EMS for stroke, prescribed medication, and follow-up after discharge.

Note: Some data elements listed in the Coverdell-Murphy Act are not available via GCASR or Georgia EMS (noted in Table 1) and thus are not reported here. Modification or clarification of the missing elements in the CMA may allow for future reporting on these elements. The GCASR collects some alternative data elements for “patient functional outcome” (Table 2). While these data are not exactly what the CMA stipulates, they are indeed indicators of patient outcomes.

Table 2. Additional Data from the Georgia Coverdell Acute Stroke Registry, 2011-2103

| Data Element | 2011 | 2012 | 2013 |
|--|--------------|--------------|--------------|
| Ambulatory status of patient at discharge, if documented | | | |
| Able to ambulate independently with or without device Percent among eligible patients | 7,232 57% | 7,602 59% | 8,418 60% |
| Able to ambulate with assistance by another person Percent among eligible patients | 3,527 28% | 3,354 26% | 3,492 25% |
| Unable to ambulate Percent among eligible patients | 1,970 16% | 1,889 15% | 2,080 15% |

Conclusions

The Georgia Coverdell Acute Stroke Registry is funded by the Centers for Disease Control and Prevention to improve stroke systems of care in Georgia. Participating EMS agencies, hospitals, and rehabilitation centers are working to strengthen the existing working relationship and developing new approaches in pursuit of delivering the best stroke care at all levels of the patient care continuum. Currently, GCASR- participating hospitals account for more than eighty percent of all Georgia stroke admissions. They have already had a major impact on the lives of thousands across the state by limiting the damage and disability from stroke. Analyses of hospital data indicated that ischemic stroke patients treated at GCASR facilities were less likely to die one year post-discharge than patients treated at non-GCASR facilities.⁸

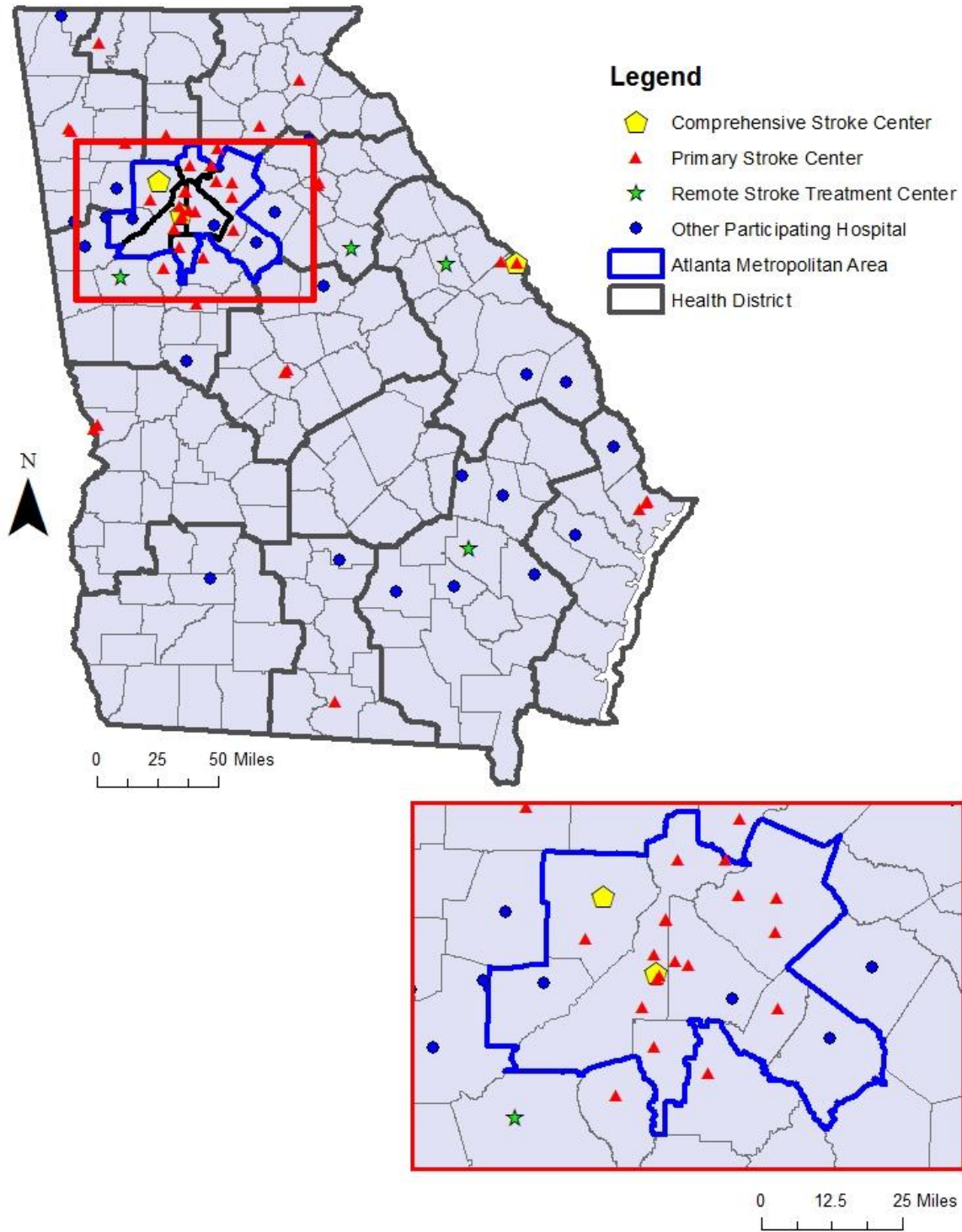
Valid performance indicators need to be identified and applied to measure and monitor the quality of care across the continuum of stroke care. GCASR-participating hospitals are providing a quality stroke care as evidenced by the consistently high levels of performance measures. It is imperative to monitor both the pre and post-hospital stroke care. With the advent of a new five-year grant from the Centers for Disease Control and Prevention the GCASR will now emphasize adopting and implementing performance indicators to improve the quality of both pre- and post-hospital care of stroke patients.

With an aging Georgia population⁹ entering the stroke-prone years (above 55 years)¹⁰, the number of Georgians affected by stroke is expected to rise over the next decade, which will increase costs, both financially and in terms of productive years of life lost. We must continue to improve stroke prevention and treatment across the state by reducing the prevalence of stroke risk factors in Georgia, and increasing public awareness of stroke signs and symptoms and knowledge to call 911 immediately for stroke. We must also continue to enhance hospital-based acute treatments and post-hospital rehabilitation services, including home care. Although we've made great progress, there's a great deal more to do to address this major public health problem in Georgia.

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Georgia Coverdell Acute Stroke Registry Participating Hospitals (n=69), November 2015



Definitions:

Anticoagulation, Antiplatelet, and Antithrombotic Medications: Medications that reduce blood clotting.

Deep Vein Thrombosis: When a blood clot forms in a vein deep in the body, usually in the leg. If the clot breaks off, it can cause serious complications and even death.

Door-to-Needle Time: Time elapsed in minutes from when an eligible stroke patient arrives at the hospital to when tPA is administered. Eligible patients must receive tPA within 3 hours of symptom onset.

Dysphagia Screening: Screening for difficulty in swallowing. This identifies patients who need targeted treatment to improve their ability to swallow, so they do not aspirate or take fluid into the lungs. Aspiration of fluid can lead to pneumonia.

Ischemic Stroke: A stroke caused by a clot or blockage in a blood vessel supplying blood to the brain. The majority of strokes in Georgia are ischemic.

Hemorrhagic Stroke: A stroke caused by a blood vessel rupturing and bleeding in the brain. Hemorrhagic strokes are often fatal.

Lipid Profile: Panel of tests to measure cholesterol and triglyceride levels. High cholesterol is a risk factor for stroke.

Tissue Plasminogen Activator (tPA): FDA-approved clot-busting drug for stroke. This drug can reduce disability by 30% in stroke sufferers if given to eligible patients within 3 hours of symptom onset.

Know the Signs and Symptoms of Heart Attack and Stroke

Heart attack and stroke are life-threatening emergencies. Call 911 if you experience these symptoms.

Signs of Heart Attack

- Chest discomfort. Most heart attacks involve discomfort in the center of the chest that lasts more than a few minutes, or that goes away and comes back. It can feel like uncomfortable pressure, squeezing, fullness, or pain.
- Discomfort in other areas of the upper body. Symptoms can include pain or discomfort in one or both arms, the back, neck, jaw, or stomach.
- Shortness of breath. This feeling often accompanies chest discomfort. But it can occur before the chest discomfort.
- Other symptoms may include nausea, lightheadedness, or breaking out in a cold sweat.

Signs of Stroke

- Sudden numbness or weakness of the face, arm, or leg, especially on one side of the body.
- Sudden confusion, trouble speaking or understanding.
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination.
- Sudden, severe headache with no known cause.