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2023 GEORGIA STROKE REPORT



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DEFINITIONS

- **Recombinant tissue plasminogen activator (rtPA – alteplase, Tenecteplase):** FDA-approved clot-busting drug for stroke. This drug can reduce disability by 30 percent in stroke sufferers if given to eligible patients within 3 hours of symptom onset.
- **Anticoagulation and Antithrombotic Medications:** Medications that reduce blood clotting.
- **Atrial fibrillation:** A disorder resulting in an irregular and often rapid heart rate. It predisposes to blood clotting and increases the risk of stroke, coronary heart disease and other heart-related complications.
- **Door-to-Needle Time:** Time elapsed from when an eligible stroke patient arrives at the hospital to when rtPA is administered. Eligible patients must receive rtPA 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.
- **Hemorrhagic Stroke:** A stroke caused by a blood vessel rupturing and bleeding in the brain. Hemorrhagic strokes are often fatal.
- **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.
- **Statin medications:** High cholesterol is a risk factor for stroke and statins lower blood cholesterol level.
- **Stroke ICD-10 Codes:** GCASR uses the following ICD-10 codes to define stroke and TIA – I60, I61, I63, I64, G45, and G46.
- **Venous Thrombosis:** When a blood clot forms in a vein, usually in the leg. If the clot breaks off, it can cause serious complications and even death.

BACKGROUND

Why should we care
about stroke in
Georgia?

- **Georgia's age-standardized stroke death rate in 2022 was 11.4 percent higher** than the national average.¹
- **In 2022, Georgia had the 13th-highest stroke death rate** in the U.S.¹
- **Stroke is the fifth-leading cause of death** in Georgia (**5,110 stroke deaths in 2022**).¹
- **In 2022, about 19 percent of Georgia stroke deaths were premature**, i.e., among persons under the age of 65 years.¹
- **In 2022, the age-adjusted stroke death rate for Blacks in Georgia was 54.7 per 100,000 population, which was 33 percent higher than** the rate for Whites.¹
- Stroke is a **leading cause of disability**.² Treatment of eligible stroke patients with the drug called recombinant tissue plasminogen activator (rtPA) can reduce disability by 30 percent, but the drug should be administered in the first three hours after symptom onset.³
- **In 2022, Georgians had more than 24,900 stroke-related hospitalizations.**
 - The median charge per hospitalization was **\$54,166**.
 - The total stroke-related hospitalization charges **were over \$2.4 billion**.
- **Georgia is in the "Stroke Belt,"** an area in the southeastern U.S. with stroke death rates that are approximately **30 percent 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 percent higher** than the rest of the nation.⁴

- The higher stroke death rates seen in the Stroke Belt can be collectively attributed, in large part, by demographic and socioeconomic factors and the prevalence of stroke risk factors and chronic diseases like diabetes and hypertension.⁵
- **In 2022, 63 percent** of adult Georgians knew all three signs of stroke – facial droop, arm weakness, and slurred speech – and the importance of calling 911 immediately.
- **Georgia stroke patients have higher prevalence rates for stroke-related risk factors than adult Georgians overall.** The 2021 Georgia Behavioral Risk Factor Surveillance System (GA-BRFSS) and 2021 GCASR data showed:⁶

Risk Factor	Acute Stroke Patients (%) ^a	Adult Georgians (%) ^b
Hypertension	77.7	36.6*
Dyslipidemia	45.3	36.6*
Diabetes Mellitus	35.4	12.1
Coronary Artery Disease/Prior Myocardial Infarction	19.4	6.3
Atrial Fibrillation/Flutter	13.5	--
Smoking	29.9	12.5

a: GCASR 2021 b: 2022 BRFSS data (*2021 data)



COVERDELL-MURPHY ACT

Georgia Coverdell Acute Stroke Registry (GCASR)



REQUIRED REPORTING

To assure that patients are receiving the appropriate level of care and treatment in each designated stroke center, Georgia's Coverdell-Murphy Act (GA-CMA), Senate Bill 549, enacted in 2008 and amended in 2016 (House Bill 853), requires reporting of stroke care-related data to the Georgia Department of Public Health (DPH) as part of the Georgia Coverdell Acute Stroke Registry (GCASR).^{7,8} The required data elements are used to generate performance measures that monitor the quality of stroke care among the designated stroke centers. GCASR currently has 87 participating acute care hospitals, of which 8 are designated as comprehensive stroke centers, 3 as thrombectomy-capable stroke centers, 40 as primary stroke centers, and 26 as remote treatment stroke centers (Map 1). In 2022, the designated stroke hospitals received **94** percent of Georgians admitted with acute stroke across the state.



SUMMARY OF DATA FINDINGS

Based on 2008-2019 hospital discharge data from 19 designated Remote Treatment Stroke Centers, acute ischemic stroke patients **treated after the hospitals were designated** had **48 percent lower odds of in-hospital death** compared to patients **admitted when the hospitals were not participating** in the Georgia Coverdell Acute Stroke Registry, which aims to improve the quality of stroke care.

From 2020 to 2022, Georgians received high quality stroke care consistently.

- **Nine of ten** eligible ischemic stroke patients received the clot-busting drug rtPA intravenously within 3 hours of last seen well.
- About **90 percent** of eligible ischemic stroke patients received rtPA within 60 minutes of hospital arrival and about **50 percent** in the first 45 minutes of hospital arrival.

Numbers for other quality indicators, such as venous thromboembolism prophylaxis, antithrombotic medication, stroke education and discharge on appropriate medication, remained **consistently high (above 90 percent)** from 2020 to 2022.

However, **less than 60 percent** of stroke patients were transported to hospitals by EMS and the proportion of patients who arrived at hospital in the first two hours of symptom onset **was less than 40 percent** during 2020 to 2022, indicating the need to raise public awareness to identify stroke in the community, call 911, and transport patients to designated centers rapidly.



DISCUSSION

The Centers for Disease Control and Prevention (CDC) funds the Georgia Coverdell Acute Stroke Registry (GCASR) to improve the stroke system of care in Georgia. Participating EMS agencies and hospitals are working to strengthen the existing relationships and developing new approaches to deliver the best stroke care possible at all levels of the patient care continuum. Currently, 43 EMS agencies and 84 acute care facilities in Georgia, of which 24 hospitals were designated as Remote Treatment Stroke Centers, participate in the GCASR, and they already have a major impact on the lives of Georgians by reducing mortality and limiting disability from stroke.^{9,10}

Shortening the time between symptom onset and hospital arrival is crucial for better patient outcomes. Currently, 66 percent of patients arrived at hospitals two hours or later after symptom onset and 41 percent transport themselves to a hospital; therefore, it is critical that all stakeholders exert a concerted effort to increase public awareness about the signs of acute stroke and the importance of calling 911 for a swift transfer of patients to one of the designated and appropriate level stroke centers.

Moreover, we must continue to improve stroke prevention and treatment across the state by reducing the prevalence of stroke risk factors in Georgia. Adults 55 years and older have a higher risk for stroke.¹¹ Based on the National Center for Health Statistics projection, 16 percent of Georgia residents are expected to be 65 years and older by the 2030.¹² Thus, the number of Georgians affected by stroke is expected to rise over the next few years.

Stroke is a major cause of disability, and adequate post-hospital care contributes significantly to reducing late complications of the acute incident. It is imperative, therefore, to monitor the quality of post-hospital stroke care. To this end, the GCASR collaborates with EMS agencies to strengthen the community paramedicine program.

GEORGIA COVERDELL ACUTE STROKE REGISTRY

Acute Care Hospital Participants Georgia Coverdell Acute Stroke Registry, January 2024

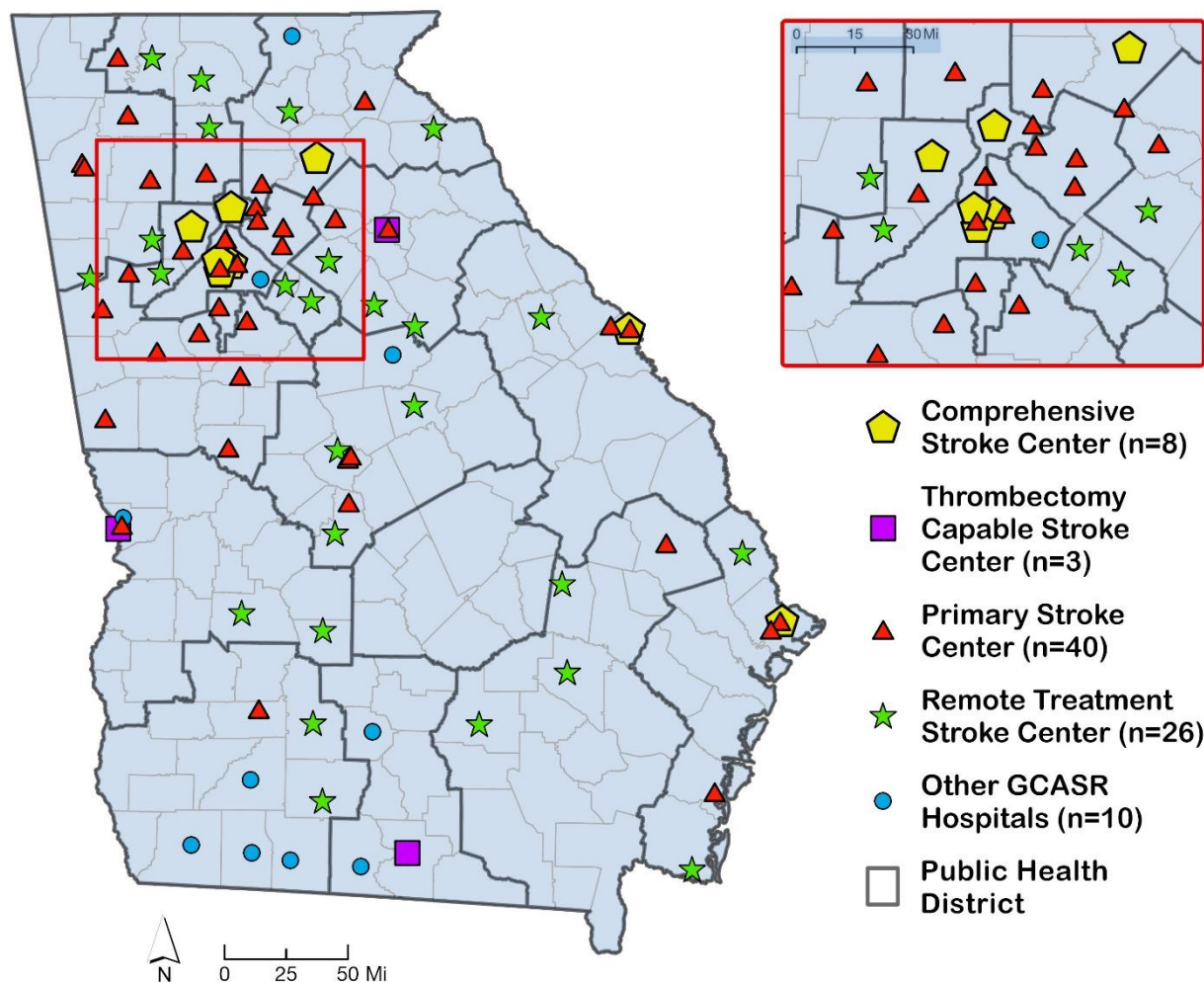


Table 1: Performance Measures for Designated Stroke Centers, GCASR, 2020-2022

Performance Measure	2020	2021	2022
Reach			
% of state acute stroke admissions in designated GCASR hospitals	93	94	94
Public Awareness			
% of patients presenting to ED with acute stroke or TIA that arrive by EMS	59	59	56
% of patients with acute stroke or TIA who arrive at ED in less than 2 hours from time last known to be well (LKW)	34	34	34
Quality of In-Hospital Stroke Care			
Early phase			
% of stroke patients who have brain imaging performed within 25 minutes of hospital arrival	77	72	74
% of ischemic stroke patients whose disease severity was assessed and documented using NIH stroke scale score	93	94	94
% of acute stroke patients who had dysphagia screening	87	87	85
% of acute stroke patients who received venous thromboembolism prophylaxis the day of or the day after admission	94	92	95
% of acute ischemic stroke patients who arrived at the hospital within 2 hours from time LKW and received IV rtPA within 3 hours of time LKW	94	92	95
% of eligible of acute ischemic stroke patients who received IV rtPA within 60 minutes of hospital arrival	89	89	89
% of ischemic stroke patients who received antithrombotic medication by the end of hospital day two	97	97	97
Later and at discharge			
% of ischemic stroke patients with medical history of smoking who received smoking cessation advice or counseling	99	99	99
% of ischemic stroke patients who were prescribed antithrombotic at discharge	99	99	99
% of ischemic stroke patients with atrial fibrillation who received anticoagulation therapy	97	98	97
% of eligible ischemic stroke patients who were discharged on statin medication	99	99	99
% of stroke patients who were assessed for rehabilitation services	99	99	99
Patient Education			
% of patients and/or caregiver that received educational materials during the hospital stay addressing all stroke education areas ¹	97	96	96
Aggregate			
% of patients with defect-free ² in-hospital care	78	75	78
Total number of patients	22,625	24,012	24,008

Abbreviation: **ED** – Emergency Department; **EMS** – Emergency Medical Service; **GCASR** – Georgia Coverdell Acute Stroke Registry; **LKW** – Last Known Well; **NIH** – National Institute of Health; **TIA** – Transient Ischemic Attack; **rtPA** – Recombinant tissue plasminogen activator

¹Stroke education areas include activation of EMS, follow-up after discharge, medication adherence, risk factors, and sign and symptoms of stroke.

²Defect-free care is defined as the delivery of care meeting all quality indicators for which a patient is eligible.

REFERENCES

1. Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, Provisional Mortality on CDC WONDER Online Database Data are from the final Multiple Cause of Death Files, 2018-2021, and from provisional data for years 2022-2024, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/mcd-icd10-provisional.html> on Feb 7, 2024.
2. Centers for Disease Control and Prevention (CDC). Prevalence and most common causes of disability among adults: United States, 2005. MMWR Morb Mortal Wkly Rep. 2009;58:421–426. Available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5816a2.html>
3. The National Institute of Neurological Disorders and Stroke rt-PA Stroke Study Group. Tissue plasminogen activator for acute ischemic stroke. N Engl J Med. 1995; 333:1581–1588. Available at: <http://www.nejm.org/doi/full/10.1056/NEJM199512143332401#t=article> doi: 10.1056/NEJM199512143332401
4. Virani SS, Alonso A, Aparicio HJ, Benjamin EJ, Bittencourt MS, Callaway CW, et al; on behalf of the American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2021 update: a report from the American Heart Association. Circulation. 2021; 143(8):e254–e743. doi: 10.1161/CIR.0000000000000950.
5. Liao Y, Greenlund KJ, Croft JB, et al. Factors Explaining Excess Stroke Prevalence in the US Stroke Belt. Stroke. 2009;40:3336–3341. Available at: <http://stroke.ahajournals.org/content/40/10/3336.full> (<https://doi.org/10.1161/STROKEAHA.109.561688>)
6. Georgia Behavioral Risk Factor Surveillance System Data 2021. Chronic Disease, Healthy Behaviors, and Injury Epidemiology, Georgia Department of Public Health. For more information: <http://dph.georgia.gov/georgia-behavioral-risk-factor-surveillance-system-brfss>
7. Georgia Coverdell-Murphy Act. SB 549, Section 31-11-116. 14 May 2008, Official Code of Georgia Annotated, 2008. Available at: <http://www.legis.ga.gov/Legislation/20072008/85749.pdf>
8. Amendment to Georgia Coverdell-Murphy Act. House Bill 853, 26 April 2016. Accessed on Dec 15, 2017 at: <http://www.legis.ga.gov/Legislation/en-US/display/20152016/HB/853>
9. Ido MS, Bayakly R, Frankel M, Lyn R, Okosun IS. Administrative data linkage to evaluate a quality improvement program in acute stroke care, Georgia, 2006-2009. Prev Chronic Dis. 2015;12:E05. doi: 10.5888/pcd12.140238.

10. Ido MS, Okosun IS, Bayakly R, Clarkson L, Lugtu J, Floyd S, et al. Door to intravenous tissue plasminogen activator time and hospital length of stay in acute ischemic stroke patients, Georgia, 2007-2013. *J Stroke Cerebrovasc Dis.* 2016;25(4):866-71. doi: 10.1016/j.jstrokecerebrovasdis.2015.12.025.
11. Ralph L. Sacco R, Emelia J. Benjamin EJ, Joseph P. Broderick JP, Mark Dyken M, J. Donald Easton JD, William M. Feinberg WM, et. Al. Risk Factors. *Stroke.* 1997;28:1507-1517. Available at <http://stroke.ahajournals.org/content/28/7/1507.full> (<https://doi.org/10.1161/01.STR.28.7.1507>)
12. Population Projections, United States, 2004–2030, by state, age and sex, on CDC WONDER Online Database, September 2005. Accessed at <http://wonder.cdc.gov/population-projections.html> on Jan 4, 2022.