January 2024

GEORGIA COVERDELL ACUTE STROKE REGISTRY

2023 Data Summary (2022 Data)

GEORGIA DEPARTMENT OF PUBLIC HEALTH

CONTENTS

DEFINITIONS

Stroke: brain tissue death; can be the result of a thrombus (blocked artery) or a hemorrhage (ruptured artery) which prevents blood flow to the brain.

Transient ischemic attack: temporary blockage of cerebral blood flow. that causes a short-lived neurological deficit.

Deep Vein Thrombosis (DVT): blood clot located in a large vein; a potential complication of stroke.

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.

Dysphagia: difficulty of swallowing; a potential complication of stroke that can lead to aspiration and result in pneumonia.

Antithrombotic: medication administered to prevent platelets or clotting factors in the blood from forming a blood clot.

Anticoagulation: administration of medications to prevent clotting of the blood.

Recombinant tissue plasminogen activator (rtPA): a thrombolytic (clot-busting) medication administered to eligible acute ischemic stroke patients to reestablish blood supply to the brain.

Door-to-Treatment Time: Time elapsed from when an eligible stroke patient arrives at the hospital to when rtPA is administered.

Door-to-Imaging Time: Time elapsed from when an eligible stroke patient arrives at the hospital to when brain imaging scan is initiated.

GEORGIA COVERDELL ACUTE STROKE REGISTRY

STROKE BURDEN

- In 2022, 21,795 Georgians were hospitalized for acute stroke or transient ischemic attack at 119 Georgia hospitals.
- Total stroke hospitalization charges were more than $2.2 billion, with a median charge per patient of $54,430.
- Based on the Georgia Coverdell Acute Stroke Registry and Georgia death data, mortality from acute ischemic stroke and its complications in Georgia during 2022 was estimated to be:
    - 7.1 percent at 30 days post-incident
    - 15.0 percent at 1-year post-incident

OVERVIEW OF THE REGISTRY

- The Georgia Coverdell Acute Stroke Registry (GCASR) is named in honor of the late Senator Paul Coverdell of Georgia, who died of a massive stroke in 2000.
- The registry is funded by the Centers for Disease Control and Prevention (CDC) as part of the Paul Coverdell National Acute Stroke Program (PCNASP). It is a partnership between the Georgia Department of Public Health (DPH) Division of Epidemiology, DPH Office of EMS, Emory University, American Heart Association, Alliant Health Solutions, Georgia Hospital Association, CDC/PCNASP, and the participating hospitals, rehabilitation centers, and Emergency Medical Services (EMS) agencies.
- Hospitals and EMS agencies join GCASR voluntarily. During 2022, 48 EMS agencies and 87 hospitals participated in GCASR, of which 8 were Joint Commission- or Det Norske Veritas-certified and DPH-designated comprehensive stroke centers, 2 were thrombectomy-capable stroke centers, 41 were primary stroke treatment centers, and 26 were remote stroke treatment centers.
- Based on the 2022 Georgia hospital discharge data, GCASR-participating hospitals serve about 97.5 percent of stroke admissions in Georgia.

THE GCASR GOALS

GOAL 1:

REDUCE MORBIDITY, MORTALITY, AND DISABILITY DUE TO STROKE,

GOAL 2:

REDUCE THE INCIDENCE OF RECURRENT STROKE, AND STROKE-RELATED DISPARITY IN GEORGIA

By:

1. Monitoring and improving the quality of pre-hospital, in-hospital, and post-hospital discharge care of stroke patients.
2. Encouraging collaboration among EMS providers, hospitals, rehabilitation facilities, home health services, and other institutions in Georgia concerned with stroke care quality improvement.

QUALITY INDICATORS

- The quality of care received by stroke patients is measured by indicators representing care processes included in clinical recommendations.
- Quality indicator calculations include identification of patients for whom a care process would have been recommended, and a determination of how many of those patients received the recommended care.
- The 13 GCASR in-hospital care quality indicators are:

  1. Administration of tissue plasminogen activator
  2. Dysphagia screening
  3. Administration of antithrombotic medication within 48 hours
  4. Deep vein thrombosis (DVT) prophylaxis
  5. Prescription for lipid lowering medication
  6. Delivery of stroke education
  7. Smoking cessation counseling or treatment
  8. Rehabilitation assessment
  9. Prescription for antithrombotic medication at discharge
  10. Prescription for anticoagulant medication for patients with atrial fibrillation
  11. NIH stroke scale score recorded
  12. Door-to-image time
  13. Intravenous recombinant tissue plasminogen activator (rtPA) within 60 minutes of hospital arrival

- Defect-free care is defined as the delivery of care meeting all quality indicators for which a patient is eligible.
- Based on the Georgia EMS Information System (GEMSIS) data, three performance measures are used to monitor the quality of pre-hospital care:

  1. On-the-scene time <15 minutes,
  2. Transports with a stroke screen completed and recorded, and
  3. Transports with blood glucose checked and recorded.

GCASR & GEMSIS DATA

YEAR 2022

- Analysis included data from 119,794 stroke patients' admissions to GCASR-participating hospitals during 2018 to 2022 and 11,841 presumed stroke patients transported by 48 EMS agencies from the field in 2022.
- Ischemic stroke and transient ischemic attack accounted for 85 percent of admissions (Fig 1).
- Other chronic conditions such as Hypertension, dyslipidemia, diabetes mellitus and coronary artery heart disease are more common among stroke patients than the general population (Table 1).

PRE-HOSPITAL

- In Georgia during 2022, among patients transported by EMS with a provider impression of stroke/cerebrovascular accident or transient ischemic attack:
  - 88 percent had their last known well-time documented.
  - 80 percent had a stroke screen completed and recorded.
  - 94 percent had their blood glucose checked and recorded.
  - Median on-the-scene time was 16 minutes, and 43 percent had an on-scene time less than 15 minutes.
  - Median travel time from scene to hospital was 14 minutes.
  - Median time from 911 call to hospital arrival was 46 minutes.

Figure 1. Types of Stroke, GCASR Admissions, 2022 (n=25,534)

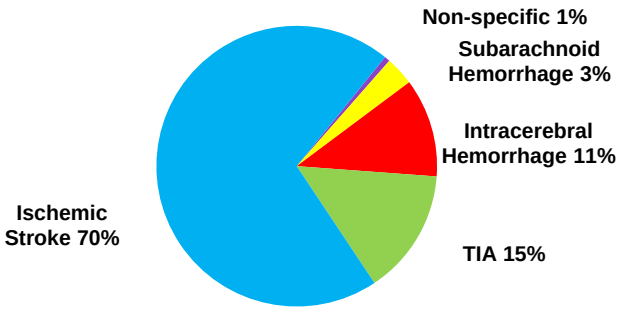


Table 1. Most frequent co-morbidities among stroke patients (n=25,534) and prevalence among adult Georgians, GCASR, 2022

Co-Morbidity	Acute Stroke Patients (%)[a]	Adult Georgians (%)[b]
Hypertension	78.2	36.6*
Dyslipidemia	45.7	36.6*
Diabetes Mellitus	35.0	12.1
CAD[c]/Prior MI	19.1	6.3
Atrial Fibrillation/Flutter	13.8	--
Smoking	20.6	12.5

Note: a - GCASR 2022; b - Georgia Behavioral Risk Factor Surveillance System 2022 (*2021); c – Coronary Artery Disease/Prior Myocardial Infarction

IN-HOSPITAL

- In 2022, among 25,534 acute stroke admissions in GCASR facilities:
    - Ischemic stroke and transient ischemic attack accounted for 85 percent of admissions (Figure 1).
    - Fifty-six percent of stroke admissions from the field were for patients brought to the hospital by EMS, 44 percent by private transportation.
    - Hospitals received pre-notification from EMS for 62 percent of the stroke admissions brought by EMS.
    - Of the total 25,534 GCASR patients in 2022, 27 percent were previously admitted with stroke and eight percent had a previous TIA admission.
    - Seventy-eight percent of stroke admissions had a history of hypertension, of which 75 percent were on antihypertensive medication during the week before their admission for acute stroke.
    - Of the 25,534 GCASR admissions, 369 were newly diagnosed with diabetes during admission for acute stroke.
    - About 58 percent of all stroke admissions in Georgia resulted in discharge to home.

ISCHEMIC STROKE

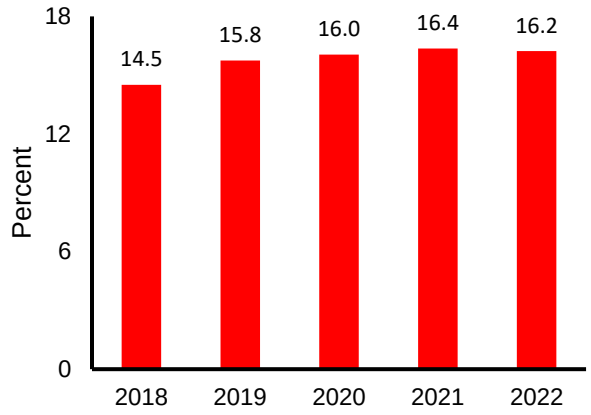
- For ischemic stroke patients, prompt thrombolytic treatment, if eligible, is critical for better survival and functional outcomes.
    - In 2022, among ischemic stroke patients admitted to GCASR hospitals with symptom onset time noted, 27.4 percent (2,896/10,582) arrived at the emergency department within 2 hours from the last time they were known to be well.
    - Among these, 73.9 percent (2,140/2,896) had their brain image taken within 25 minutes of hospital arrival and 36.0% percent (1,044/2,896) were eligible, without contraindications, for rtPA.
    - Among the rtPA-eligible patients, 94.7 percent (989/1,044) received intravenous thrombolytic treatment within 3 hours after symptom onset.
    - Among eligible patients treated with a thrombolytic agent, 54 percent (546/1,007) and 77 percent (775/1,007) received intravenous rtPA within 45 minutes and within an hour of arrival at the emergency department, respectively.
    - In 2022, the median time to receive rtPA for eligible ischemic stroke patients arriving within two hours of symptom onset was 43 minutes.

CHANGE OVER TIME (GCASR HOSPITALS), 2018-2022

- Overall, tPA administration among ischemic stroke patients increased from 14.5 percent in 2018 to 16.2 percent in 2022 (Figure 2).
- The percentage of patients who received defect-free care has not improved from 2018 to 2022 (Figure 3).
- The median time from symptom discovery to hospital arrival among patients with ischemic stroke remained consistently longer than two hours from 2018 to 2022 (Figure 4).
- A stroke alert system expedites in-hospital patient care. An increase is observed from 2018 (54%) to 2022 (62%) (Figure 5).
- Nine of ten eligible ischemic stroke patients received r-tPA intravenously consistently from 2018 to 2022.
- Those who received the treatment within 45 minutes of hospital arrival increased from 46 percent in 2018 to 54 percent in 2022 (Figure 6).
- The median time from hospital arrival to administering rtPA intravenously (door-to-treatment time) was shortened from 48 minutes in 2018 to 43 minutes in 2022, a reduction of 10 percent (Figure 7) whereas the median time from hospital arrival to taking a brain image did not show consistent reduction (Figure 8).

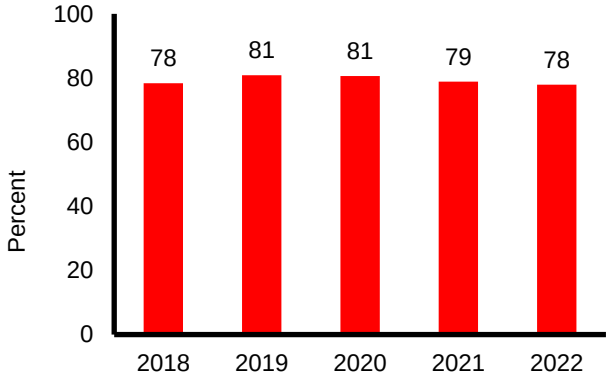
CHANGE OVER TIME, 2018-2022

Figure 2. Percentage of ischemic stroke patients receiving intravenous or intra-arterial tPA treatment, GCASR, 2018-2022 (n=85,142)



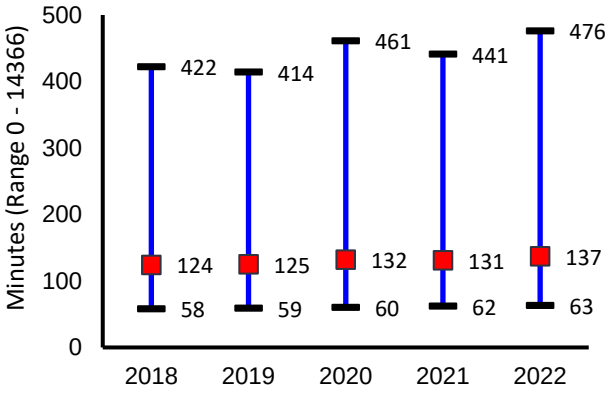
Note: In 2008, only 4.9 percent received IV rtPA.

Figure 3. Percentage of acute stroke patients who received defect-free care, GCASR, 2018-2022 (n=91,258)



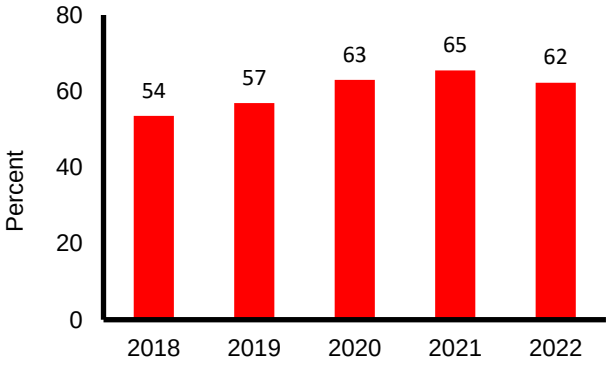
Note: In 2008, 37 percent had defect-free care.

Figure 4. Trend in median symptom onset to hospital arrival time among Acute Ischemic Stroke patients, GCASR, 2018-2022 (n=42,115)



Note: In 2008, the median symptom onset to hospital arrival time was 122 minutes.

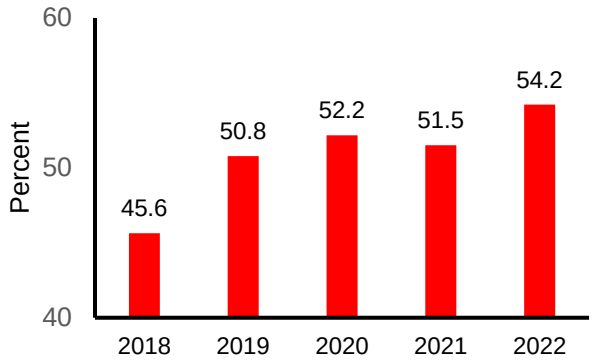
Figure 5. Percentage of stroke patients transported by EMS with hospital pre-notification, GCASR, 2018-2022 (n=55,818)



Note: In 2008, 48.4 percent of stroke patients transported by EMS had hospital prenotification.

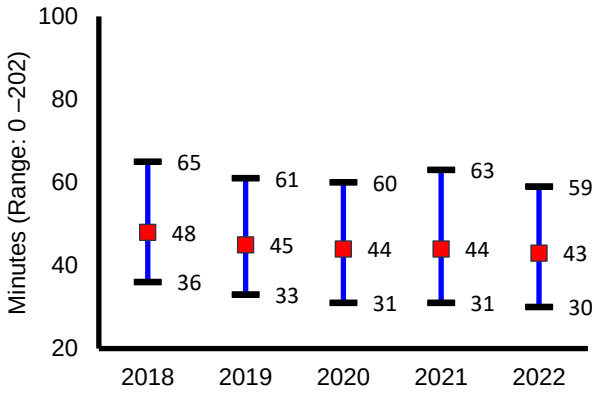
CHANGE OVER TIME, 2018-2022

Figure 6. Percentage of eligible ischemic stroke patients treated with intravenous rtPA within 45 minutes of hospital arrival, GCASR, 2018-2022 (n=5,180)



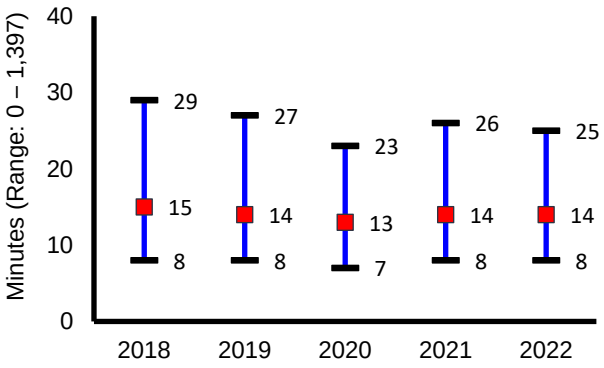
Note: In 2008, 8.7 percent of eligible ischemic stroke patients received IV rtPA within 45 minutes of hospital arrival.

Figure 7. Trend in median door-to-treatment time among eligible ischemic stroke patients treated with intravenous rtPA, GCASR, 2018-2022 (n=4,941)



Note: In 2008, the median door-to-treatment time was 82 minutes.

Figure 8. Trend in median door-to-imaging time among ischemic stroke patients who arrived at a hospital within 120 minutes of symptom onset, GCASR, 2018-2022 (n=14,484)



Note: In 2008, the median door-to-imaging time was 31 minutes.

FOR MORE INFORMATION ON GCASR, PLEASE VISIT

http://dph.georgia.gov/georgia-coverdell-acute-stroke-registry

ACUTE CARE HOSPITALS PARTICIPANTS GEORGIA COVERDELL ACUTE STROKE REGISTRY, JANUARY 2024