

Optimizing Stroke Care at Missouri Delta Medical Center by Improving Door Times Utilizing the American Heart Association's Get With The Guidelines®-Stroke Rural Measures in a Rural Emergency Department



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Background

Missouri Delta Medical Center (MDMC) is a 144-bed large rural hospital, with 17 Emergency Department (ED) beds, located in rural Sikeston (Scott County), MO. Rural residents have a 30% increased risk for stroke mortality compared with urban residents.¹ The 2010-2020 Heart Disease and Stroke 35+ Age Adjusted Death Rate per 100,000 for Scott County, MO is 511.7, significantly higher than the state median at 442.05/100,000, driving MDMC to take action.² MDMC is designated as a Level III Stroke Center by Missouri's Time Critical Diagnosis System. In 2022, MDMC enrolled in Get With The Guidelines®(GWTG)-Stroke through participation in the American Heart Association's (AHA) Rural Health Care Outcomes Accelerator Program (RHCOA) to improve emergency department (ED) throughput and time to treatment for the suspected stroke patients.

Objective

After enrolling in GWTG-Stroke, collecting and reviewing data, MDMC identified a need to decrease Door-to-CT times for suspected Acute Ischemic Stroke (AIS) patients. 2023 baseline data showed that 59% of all suspected AIS patients had an arrival to CT time within 25 minutes and 18% were transferred out within the recommended 90 minutes. "Immediate CT scanning provides high value for patients with acute stroke" and is a key component to the overall Door-In-Door-Out (DIDO) process for AIS patients who are transferred out for advanced therapy.³ MDMC pulled a multidisciplinary team together to review, modify and develop new processes to address these opportunities. The multidisciplinary team consisted of the ED Director, ED physicians, Stroke Medical Director, nursing, radiology, registration, emergency medical services (EMS) and air medical representation.

Methods

ED throughput processes were updated using multiple quality improvement techniques, and implementation began in August 2023. Updated processes included:

- Fostered a judgment-free feedback environment
- Reinforced the importance of early Pre-hospital stroke notification
- Directly transporting suspected AIS patients to CT from the triage area or EMS.
- Empowered EMS to draw time-critical labs en route, ensuring a seamless handoff to phlebotomy staff while maintaining proper chain of custody.

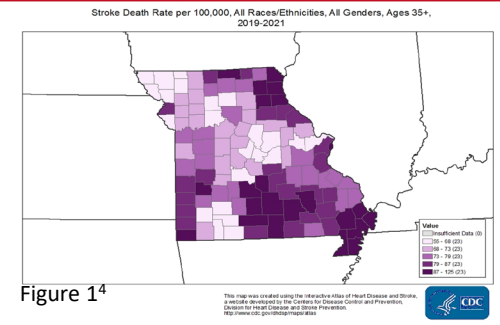


Figure 1⁴

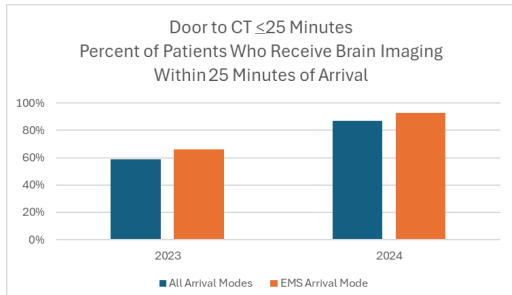


Figure 2⁵

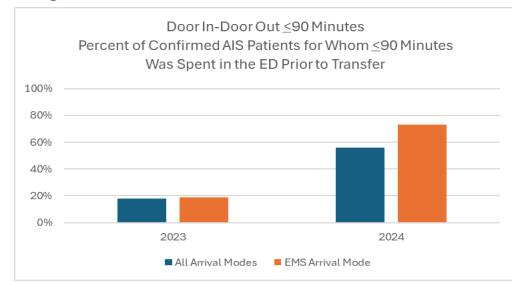


Figure 3⁵

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- Standardized order set in the hospital electronic medical record (EMR).
 - Ensured uniform Code Stroke activation criteria across all teams.
 - Implemented a One-call transfer system with Mercy South, Stroke Receiving Center.
- Implementing the new processes included educational in-services to frontline clinical teams, including radiology, nurses, techs, ED providers, and EMS. EMS education was supplemented by providing medics with a Code Stroke Algorithm, and inclusion in any Mock Code Stroke drills organized by MDMC

Results

GWTG-Stroke Measure	2023 Percent	2024 Percent	Percent Improvement
Arrival to CT ≤25 Minutes All Arrival Modes	59%	85%	47% ↑
Arrival to CT ≤25 Minutes EMS Arrivals	66%	93%	41% ↑
Door In Door Out ≤90 Minutes All Arrival Modes	18%	56%	194% ↑
Door In Door Out ≤90 Minutes EMS Arrivals	19%	73%	285% ↑

Conclusions

Enhancements in Emergency Department throughput for acute ischemic stroke patients at MDMC were achieved through the collaboration of a dedicated internal multidisciplinary team, prompt data entry into GWTG-Stroke with subsequent data reviews, committed EMS partners, and active engagement from the stroke receiving center. Adopting a System of Care approach proved essential to driving these improvements.

References

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2. Definitive Health, 2010-2020 County 35+ Age-Adjusted Rate per 100,000 Heart Disease/Stroke Deaths, July 2022.
3. [Guidelines for the Early management of patients With Acute Ischemic Stroke. 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke.](#) Originally published 30 October 2019. *Stroke*. Volume 50, Number 12 <https://doi.org/10.1161/STR.0000000000000211>
4. [CDC National Center For Health Statistics](#)
5. Get With The Guidelines – Stroke , Missouri Delta Medical Center, Rural Achievement Measures