STROKE SYSTEMS OF CARE IN KENTUCKY

OCTOBER 18, 2023

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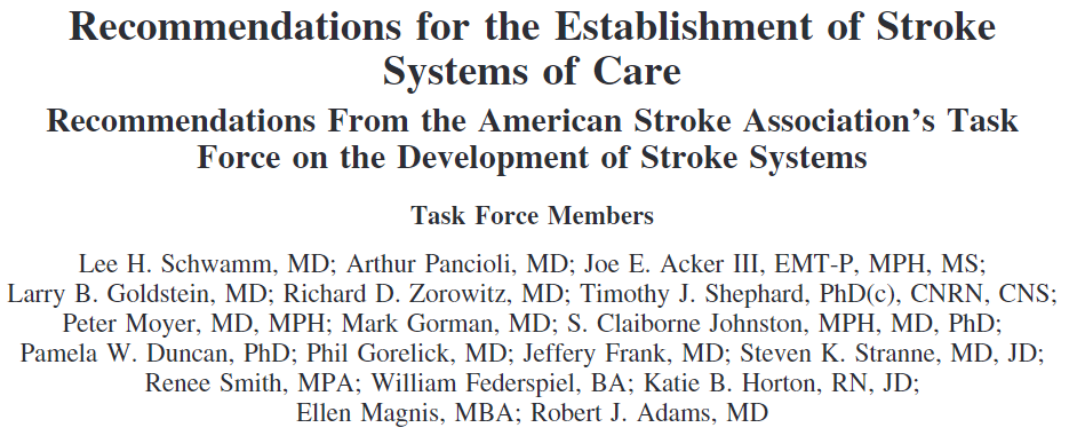
OBJECTIVES

- The audience will be able to discuss recommendations for improving stroke systems of care nationally
- The audience will be able to discuss current and future initiatives focused on improving stroke systems of care in Kentucky
- The audience will be able to discuss the current model/framework utilized to improve stroke systems of care in Kentucky

STROKE SYSTEMS OF CARE BACKGROUND

IOM fragmentation of the delivery of healthcare services frequently results in suboptimal treatment, safety concerns, and inefficient use of healthcare resources. Recommend establishment of coordinated systems of care that integrate preventive and treatment services and promote patient access to evidence based care



Recommendations for the Establishment of Stroke Systems of Care

Recommendations From the American Stroke Association's Task Force on the Development of Stroke Systems

Task Force Members

Lee H. Schwamm, MD; Arthur Pancioli, MD; Joe E. Acker III, EMT-P, MPH, MS; Larry B. Goldstein, MD; Richard D. Zorowitz, MD; Timothy J. Shephard, PhD(c), CNRN, CNS; Peter Moyer, MD, MPH; Mark Gorman, MD; S. Claiborne Johnston, MPH, MD, PhD; Pamela W. Duncan, PhD; Phil Gorelick, MD; Jeffery Frank, MD; Steven K. Stranne, MD, JD; Renee Smith, MPA; William Federspiel, BA; Katie B. Horton, RN, JD; Ellen Magnis, MBA; Robert J. Adams, MD

Task Force Recommendations:

- Effective interaction among stakeholders
- Organized and standardized approach to care in each component of the system
- Establish performance measures in process and outcomes to evaluate effectiveness
- Provide patients and providers with tools necessary to promote effective stroke prevention, treatment, and rehabilitation
- Ensure decisions about protocols and patient care are best for patients above geopolitical boundaries and corporate affiliations
- Identify and address obstacles to implementation
- Customized for each state, region, or locality to meet the needs of the population served

Schwamm, et al. 2005; *Stroke*

STROKE SYSTEMS OF CARE BACKGROUND

Interactions Within Stroke Systems of Care

A Policy Statement From the American Heart Association/American Stroke Association

Randall Higashida, MD, FAHA, Chair*; Mark J. Alberts, MD, FAHA, Co-Chair*;
David N. Alexander, MD; Todd J. Crocco, MD; Bart M. Demaerschalk, MD;
Colin P. Derdeyn, MD, FAHA; Larry B. Goldstein, MD, FAHA;
Edward C. Jauch, MD, MS, FAHA; Stephan A. Mayer, MD, FAHA; Neil M. Meltzer, MPH;
Eric D. Peterson, MD, FAHA; Robert H. Rosenwasser, MD, FAHA; Jeffrey L. Saver, MD, FAHA;
Lee Schwamm, MD, FAHA; Debbie Summers, RN, MSN, ACNS-BC, FAHA;
Lawrence Wechsler, MD, FAHA; Joseph P. Wood, MD, JD;
on behalf of the American Heart Association Advocacy Coordinating Committee

Additional Focus:

- Proliferation of various levels of stroke centers (CSC)
- Expanded use of telemedicine
- Advanced medical, endovascular, and surgical interventions
- Comprehensive rehabilitation strategies and programs

Recommendations:

EMS: Use of stroke screening scale; prenotification; develop triage protocols

Policy: Support for stroke center certification and public reporting of performance measures and outcomes; implement reimbursement schedules that meet the demanding care and expertise required to care for stroke patients

Hospitals: Adopt care delivery protocols that adhere to current guidelines; Transfer protocols and criteria; Interhospital handoff; support for telestroke services to provide 24/7 coverage and care when needed; Collaborate with EMS; Establish quality performance metrics

Rehab: Ensure all patients have access to post stroke care regardless of financial status or background

Higashida, et al., 2013, *Stroke*

STROKE SYSTEMS OF CARE BACKGROUND

Recommendations for the Establishment of Stroke Systems of Care: A 2019 Update

A Policy Statement From the American Stroke Association

Opeolu Adeoye, MD, MS, FAHA, Chair; Karin V. Nyström, RN, MSN, FAHA; Dileep R. Yavagal, MD; Jean Luciano, CRNP; Raul G. Nogueira, MD; Richard D. Zorowitz, MD; Alexander A. Khalessi, MD, MS, FAHA; Cheryl Bushnell, MD, MHS, FAHA; William G. Barsan, MD; Peter Panagos, MD; Mark J. Alberts, MD, FAHA; A. Colby Tiner, MA; Lee H. Schwamm, MD, FAHA; Edward C. Jauch, MD, MS, FAHA

Update to guide policy makers and public health officials:

- Proliferation of various levels of stroke centers (ASR, TSC)
- Neurocritical Care
- Improvements in Endovascular Therapy
- Mobile stroke units
- Changes in organization of healthcare policy

New Recommendations:

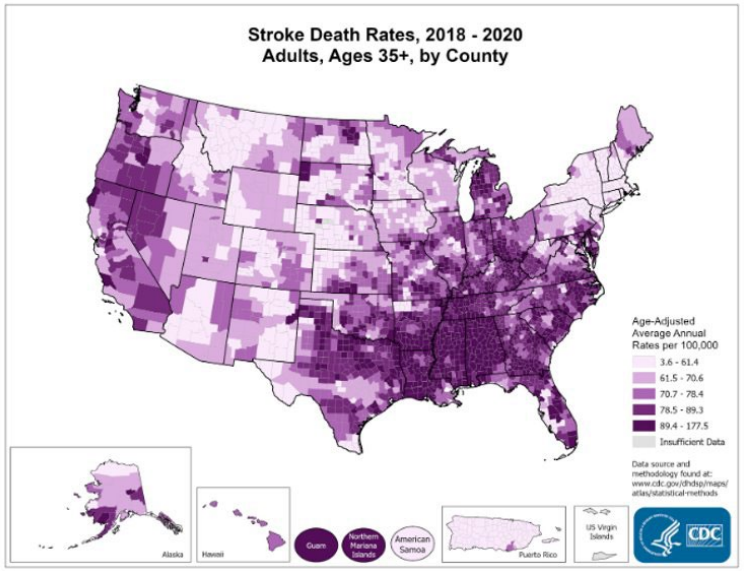
- Support local and regional education initiatives to increase stroke awareness (signs and symptoms, risk factors, primary and secondary prevention, and recovery)
- Monitor the effectiveness of community education
- Methods to systematically identify and treat risk factors for all patients at risk for stroke should be developed
- Utilization of stroke severity scale when stroke screen scale is positive to assist destination triage
- Standardized approaches to prehospital stroke assessment for 911 call centers and dispatchers
- Extra transportation times should be limited to no more than 15 minutes in patients with suspected LVO based on severity screening scale
- All levels of stroke centers should work within in an integrated fashion, providing and sharing best practices
- All stroke centers should develop a plan for the definitive identification and treatment of stroke patients with LVO
- Centers performing thrombectomy should rigorously track patient flow and outcomes
- Establish support systems to ensure all patients discharged from hospitals and other facilities to home have appropriate follow up with specialized stroke services
- Standardize post acute care
  - Screen for post acute complications
  - Provide individualized care plans
  - Referrals to community services
  - Reinforce secondary stroke prevention and self management of stroke risk factors (trained nurses, APRNs, MSSW, CHWs should play a pivotal role)
- Federal and other government institutions should enact policies that standardize the organization of stroke care throughout the continuum

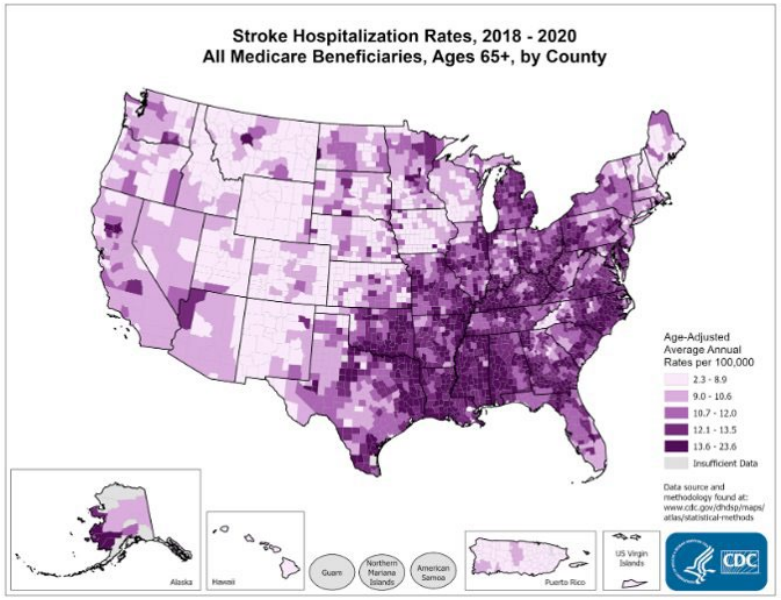
STATE OF STROKE IN KENTUCKY

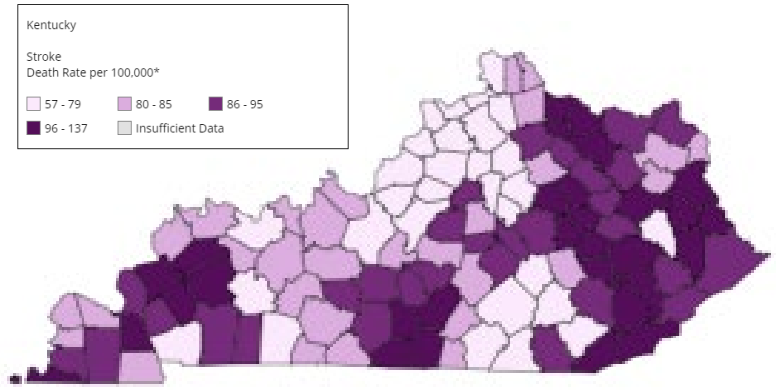
- 41% of Kentuckians have hypertension, the #1 risk factor for stroke
- 5% of adult Kentuckians report they have experienced a stroke at some time in their life
- Kentucky ranks 14th mortality rate in the US
- 6th highest cause of death in Kentucky
- The total charges for inpatient hospital stay for stroke and TIA exceeded $894 million in 2021 and $1.3 Billion in 2022

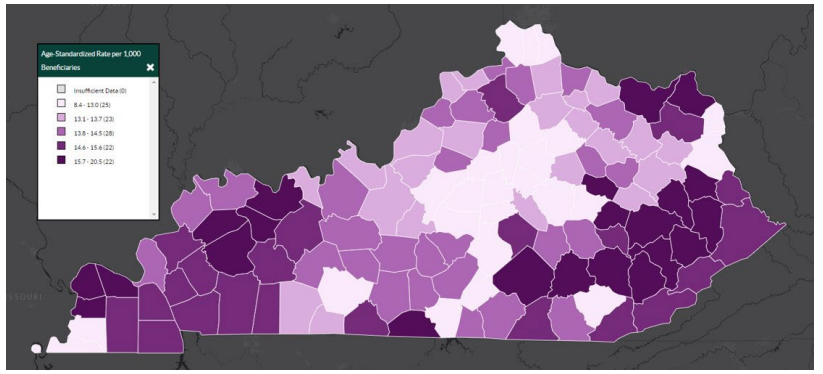
1.CDC NCHS. Stats of the States. Stroke Mortality by State, April 2023
2.CDC Wonder, April 2023
3.Kentucky Behavioral Risk Factor Surveillance. Kentucky Cabinet for Health and Family Services. 2021 Crude Prevalence.
4.Kentucky Hospital Inpatient Claims: 2021;2022; Kentucky Cabinet for Health and Family Services, Office of Health Policy

STROKE MORTALITY US/KENTUCKY
STROKE HOSPITALIZATIONS US/KENTUCKY









HOW ARE WE ADDRESSING STROKE SYSTEMS

Established 2006

Heart Disease & Stroke Prevention
TASK FORCE
KENTUCKY

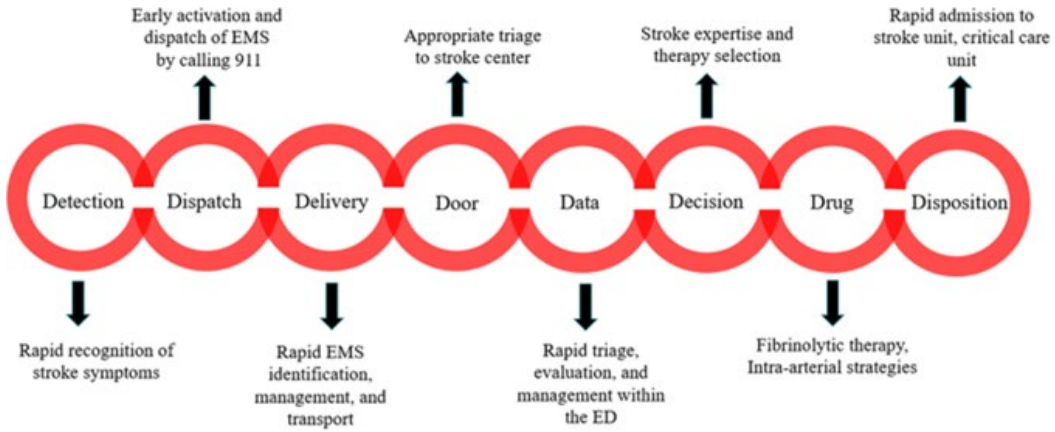
Established 2009

STROKE ENCOUNTER QUALITY IMPROVEMENT PROJECT
SEQIP

Funded 2021-Present

PAUL Coverdell
NATIONAL ACUTE STROKE PROGRAM

-CARE Collaborative
-Standardized Messaging



Adapted from Ashcraft, S., et al., 2021, *Stroke*

KENTUCKY
Heart Disease & Stroke Prevention Task Force

Strategic Map and Plan 2020-2023

Kentucky Heart Disease and Stroke Prevention Strategic Map and Plan: 2020-2023

Heart Disease & Stroke Prevention TASK FORCE KENTUCKY

Kentucky Heart Disease and Stroke Prevention Program

Improve Cerebrovascular and Cardiovascular Health for all Kentuckians

- Utilization of Evidence-Based Prevention Strategies
- Utilization of Evidence-Based Integrated Cerebrovascular and Cardiovascular Health Delivery Systems
- Secure Policy, Systems and Environmental Changes to Improve the Cerebrovascular and Cardiovascular Health of Kentuckians

- Cultivate and expand collaboration and partnerships to enhance community and clinical linkages.
- Target health care systems and providers, worksites, schools, communities, and disparate populations.
- Expand data information exchange and quality improvement.
- Conduct process and outcome evaluation.

- A1 Promote and reinforce healthy behaviors and practice standardized messaging.
- A2 Promote effective community-clinical linkages.
- A3 Promote self-measured blood pressure (SMBP) monitoring.
- B Maintain statewide cerebrovascular and cardiovascular systems of care.
  - B1 Maintain and continue to improve statewide cerebrovascular systems of care.
  - B2 Update and continue to improve statewide cardiovascular systems of care.
- C1 Enact comprehensive tobacco control policies.
- C2 Support the reduction of youth usage of electronic smoking devices.
- C3 Support early prevention related to childhood obesity.
- C4 Enhance the knowledge of heart disease and stroke prevention.

KASH

SEQIP

Heart Disease & Stroke Prevention
TASK FORCE
KENTUCKY

Standardized Messaging Vascular Risk Factors/ Signs and Symptoms of Stroke

- A1C
- Alcohol
- Blood Pressure
- Blood Pressure Medication Documents
- Cholesterol Documents
- COVID-19 Documents
- Hands Only CPR Documents
- Influenza Documents
- Overreact 2 Stroke Documents
- Physical Activity Documents
- Pill Podcast
- Signs & Symptoms of Heart Attack Documents
- Signs & Symptoms of Stroke Documents
- Smoking Documents
- Sodium Documents
- Universal Design Documents
- Weight and Diet Documents

Signs & Symptoms of Stroke Documents

The documents below have been approved by the Standardized Messaging committee for use in signs and symptoms of stroke education and awareness. Please click "download" to print and distribute these resources as necessary.

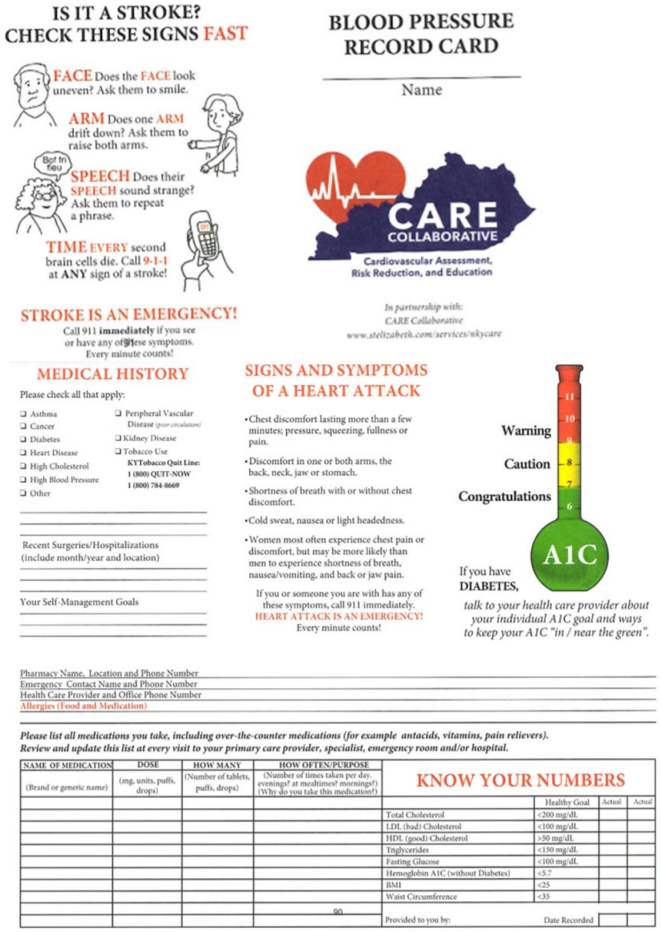
BEFAST for Stroke

Download

Spot a Stroke FAST

Download

Cardiovascular, Assessment, Risk Reduction and Education (CARE) Collaborative



Blood Pressure Record Log

DATE	NORMAL <120/80	CAUTION 120-139/80-89	HIGH ≥140/90
CARE COLLABORATIVE			

9/20/2016 Large Print BP Record Log

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WHAT IS SEQIP?

- Statewide quality improvement initiative developed by the Heart Disease and Stroke Prevention Program (HDSP), HDSP Task Force, and AHA/ASA
- Established 2009
- Designed to encourage collaboration among hospitals and stakeholders in KY
- Mission to advance acute stroke care and reduce stroke disparities in Kentucky
- Initially 16 hospitals in 2009, currently 50 hospitals with 49 contributing data to GWTG-S
- First Kentucky Stroke Registry
- All certified stroke centers are represented
- Legislative report submitted annually since 2012 – KRS 211.575
  - Governor and Legislative Research Commission

SEQIP LEADERSHIP

Co-Chairs

Kari Moore, MSN, AGACNP-BC, ANVP-BC, FAHA – University of Louisville, Department of Neurology

Jane Vantatenhove, MSN, RN, SCRN – Baptist Health Lexington

Steering Committee

Lisa Bellamy, BHS, RN, CPHQ - UK HealthCare/Norton Healthcare - Stroke Care Network
Polly Hunt, BS, BSN, RN - King's Daughters Medical Center - Ashland
Rachel Jenkins, MSN, RN – Appalachian Regional Healthcare
Abby Loechler, MPH - American Heart Association
Leslie Rossetter, BSN, RN – The Medical Center
Lacy Shumway - UK Regional Extension Center
Jessica Sumner, DNP, APRN, ACNS,-BC, CEN - Norton Healthcare
Breanna Walker, BSN, RN – Heart Disease and Stroke Prevention Program

Subcommittee Chairs

- EMS Outreach and Education
  - Lacy Shumway – UK Regional Extension Center/Coverdell Program Manager
  - Brandon Hemming, AAS, NRP-T – UofL Health
- Disease Specific Care Certification Initiatives
  - Lisa Bellamy, BHS, RN, CPHQ – UK Healthcare/Norton Healthcare Stroke Care Network
  - Rachel Jenkins, MSN, RN – ARH
  - Betty McGee, MSN, RN, CEN – St. Elizabeth
  - Polly Hunt, BSN, RN – King's Daughters Hospital - Ashland
- Data Analysis and Performance Improvement
  - Robin Curnel, MSN – UK Regional Extension Center
  - Rebecca Cheatham, MPH – UK Regional Extension Center
- Navigating the Stroke Continuum of Care
  - Carrie Crockett, MSSW, CSW – UofL Health
- Community and Public Health Education and Outreach
  - Breanna Walker, BSN, RN – KY Heart Disease and Stroke Prevention Program
- Door In Door Out (DiDo)
  - Bill Singletary, BA, BSN, RN, MBM – The Medical Center
  - Jane Van Tatenhove, MSN, RN, SCRN – Baptist Health Lexington
- Inpatient Code Stroke
  - Danielle Topliffe, BSN, RN, SCRN – UofL Health
- Stroke Coordinator Education Council
  - Rachel Jenkins, MSN, RN – Appalachian Regional Healthcare

HDSP STATE PLAN

Kentucky Heart Disease and Stroke Prevention Task Force
Strategic Map and Plan: 2020-2023

Goal B: Utilization of Evidence-Based Integrated Cerebrovascular and Cardiovascular Health Delivery Systems	
Objective B: Maintain statewide cerebrovascular and cardiovascular systems of care.	
Objective B1: Maintain and continue to improve statewide cerebrovascular systems of care.	
Strategy 1	**Action Items**
Continue to identify opportunities for improvement within current cerebrovascular systems of care.	Continue to identify and map certified stroke centers by certification levels as defined by KRS 216B.0425, and disseminate to Kentucky Board of Emergency Medical Services (KBEMS). - Acute stroke ready hospitals - Primary stroke centers - Thrombectomy-capable stroke centers - Comprehensive stroke centers
	Continue collaboration with Kentucky Hospital Association's (KHA) Rural Hospital Flexibility program.
	Continue to partner with Kentucky hospitals to increase acute stroke treatments (intravenous tissue plasminogen activator and mechanical thrombectomy).
	Continue to identify emergency medical services (EMS) agencies which have a field transport protocol for stroke and provide expert consultation/evaluation to ensure said protocols are up to date with the most current science.
	Partner with KBEMS to determine stroke specific data points available for capture and reporting.
	Implement pilot project for EMS feedback, training, and education to improve local systems of care.
	Continue collaboration with the KBEMS subcommittee, Cardiac and Stroke Care.
	Disseminate and provide access to current evidence-based dispatch protocols for stroke.
	Partner with KBEMS for continued development of inter-facility transport protocols for all stroke subtypes.
	Assess inter-facility emergent transfer needs to meet recommended time goals.
	Disseminate KBEMS inter-facility transport protocols at local and regional levels.
	Establish a pediatric stroke subcommittee.

Kentucky Heart Disease and Stroke Prevention Task Force
Strategic Map and Plan: 2020-2023

Goal B: Utilization of Evidence-Based Integrated Cerebrovascular and Cardiovascular Health Delivery Systems	
Objective B: Maintain statewide cerebrovascular and cardiovascular systems of care.	
Objective B1: Maintain and continue to improve statewide cerebrovascular systems of care.	
Strategy 2	**Action Items**
Continue Stroke Encounter Quality Improvement Project (SEQIP) through FY 2023.	Assess current SEQIP members for continued participation by March 2020.
	Recruit at least one hospital pursuing thrombectomy-capable certification by March 2022.
	Continue to utilize registry to develop and implement action plans around quality metrics and education.
	Continue to develop and disseminate Stroke Registry Data Summary in accordance with KRS 211.575, which goes to the governor and the Legislative Research Commission and includes recommendations for improving stroke systems of care.
Strategy 3	**Action Items**
Continue to engage and support hospitals maintaining and achieving stroke center certification.	Disseminate the Kentucky strategic map and plan to target hospitals by December 2020.
	Continue to provide support for stroke program development to target hospitals.
	Update and disseminate stroke resources through Kentucky Heart Disease and Stroke Prevention (KHDSP) Task Force website (KHDSPtaskforce.com) annually.
Strategy 4	**Action Items**
Continue collaboration among healthcare systems and public health to disseminate standardized messaging.	Implement action items from Goal A - Objective A1: Strategy 1: Promote and reinforce healthy behaviors and standardized messaging.

LEGISLATION – STROKE CENTER DESIGNATION

216B.0425 Certification designations for stroke care for acute care hospitals

(1) Except as otherwise provided, for purposes of this section:

(a) "Acute care hospital" means a licensed facility providing inpatient and outpatient medical or surgical services to an individual that seeks care and treatment, regardless of the individual's ability to pay for services, on an immediate and emergent basis through an established emergency department and a continuous treatment basis on its premises for more than twenty-four (24) hours; and

(b) "Acute stroke ready hospital certification," "primary stroke center certification," "thrombectomy-capable stroke center certification," and "comprehensive stroke center certification" mean certification for acute care hospitals issued by the Joint Commission, the American Heart Association, or another cabinet-approved nationally recognized organization that provides disease-specific certification for stroke care, that:

1. Complies with census-based national standards and safety goals;
2. Effectively uses evidence-based clinical practice guidelines to manage and optimize care; and
3. Uses an organized approach to measure performance.

(2) The secretary of the Cabinet for Health and Family Services shall designate as a certified stroke center any acute care hospital which has received an acute stroke ready hospital certification, a primary stroke center certification, a thrombectomy capable stroke center, or a comprehensive stroke center certification.

(3) The secretary shall suspend or revoke an acute care hospital's designation as an acute stroke ready hospital, a primary stroke center, a thrombectomy-capable stroke center, or a comprehensive stroke center if certification is withdrawn by the Joint Commission, the American Heart Association, or another cabinet-approved certifying organization.

(4) (a) The cabinet shall maintain a list of certified acute stroke ready hospitals, primary stroke centers, thrombectomy-capable stroke centers, and comprehensive stroke centers and post the list on its Web site. The cabinet shall provide the list and periodic updates to the Kentucky Board of Emergency Medical Services.

(b) The Kentucky Board of Emergency Medical Services shall share the list with each local emergency medical services provider at least annually, and as new centers and hospitals are designated and certified.

Effective: July 14, 2022 History:

History: Amended 2022 Ky. Acts ch. 33, sec. 1, effective July 14, 2022. -- Amended 2015 Ky. Acts ch. 9, sec. 1, effective June 24, 2015. -- Created 2010 Ky. Acts ch. 67, sec. 1, effective July 15, 2010.

LEGISLATION – REGISTRY/REPORT TO THE GOVERNOR AND LRC

211.575 Statewide system for stroke response and treatment

- Department of Public Health shall establish and implement a plan for achieving continuous QI in the quality of care provided under a statewide system for stroke response and treatment.
  - Includes database aligned with stroke consensus metrics
  - Utilization of GWTG or another nationally recognized program
  - Require certified stroke centers to report to the database each stroke case
- Coordination among voluntary organizations to avoid redundancy, sharing of information among HCPs
- Application of evidence-based treatment guidelines
- Statewide process for PI and data oversight
- Provide report to Governor and LRC annually

Effective: July 12, 2012

History: Created 2012 KY. Acts ch. 106, sec. 1, effective July 12, 2012

SEQIP Annual Governor's Report

- Burden of CV disease in KY
- SEQIP overview
- Executive summary with demographics to include types of stroke and performance measure results
- Full graphical data to include performance measure results for most current available data
- Recommendations to improve cerebrovascular systems of care

Kentucky Stroke Encounter Quality Improvement Project (SEQIP)

Kentucky Heart Disease and Stroke Prevention Task Force

SEQIP Registry 2021-2022 Data Summary

2023 Annual Report

Kentucky Public Health
Prevent. Promote. Protect.

June 1, 2023

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EMERGENCY MEDICAL SERVICES

Figure 22: Patients' arrival mode to SEQIP hospitals 2009-2022

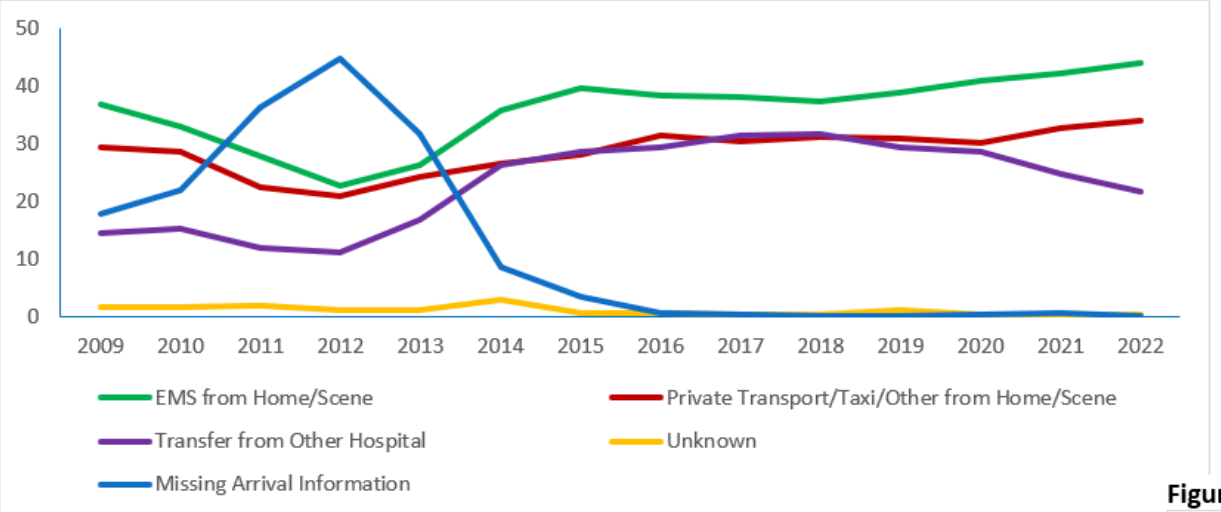
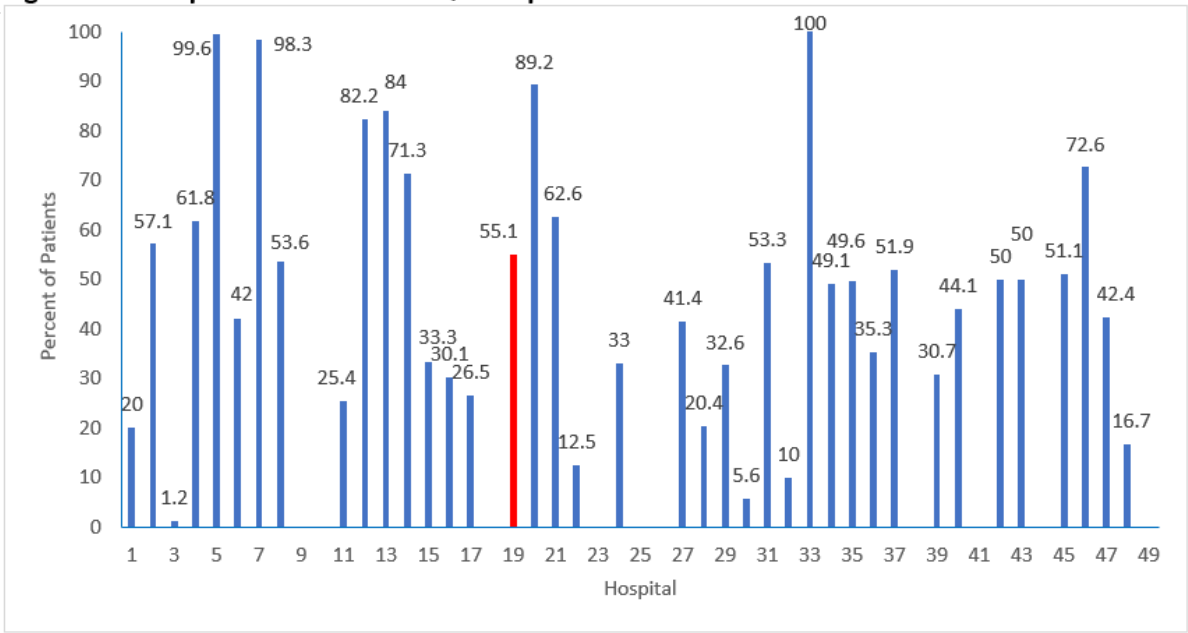


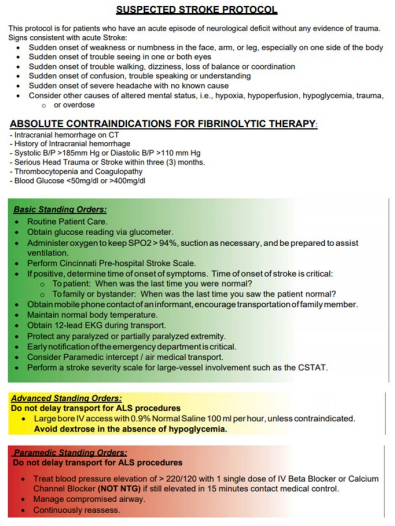
Figure 24: EMS prenotification at SEQIP hospitals 2022



Note: The bar in red represents the average EMS prenotification by SEQIP member hospitals.

KBEMS CARDIAC & STROKE SUBCOMMITTEE

- KBEMS provides oversight and recommended transport protocols
  - Local agencies can fully adopt, partially adopt, or create their own protocols that must be approved by KBEMS Medical Director
- Kentucky Board of EMS Stroke and Cardiac Subcommittee
  - Created 2013 and meets quarterly
  - Revised Recommended Stroke Transport Protocol September 2017 to include severity scale – C-STAT based on survey feedback from first responders
  - Interfacility transfer guideline post alteplase added to protocol February 2018
  - First KBEMS Annual Report 2017
  - Algorithm for Stroke Prenotification September 2018
  - Working to standardize data collection points for reporting



SUSPECTED STROKE PROTOCOL

This protocol is for patients who have an acute episode of neurological deficit without any evidence of trauma. Signs consistent with acute Stroke:

- Sudden onset of weakness or numbness in the face, arm, or leg, especially on one side of the body
- Sudden onset of trouble seeing in one or both eyes
- Sudden onset of trouble walking, dizziness, loss of balance or coordination
- Sudden onset of confusion, trouble speaking or understanding
- Sudden onset of severe headache with no known cause
- Consider other causes of altered mental status, i.e., hypoxia, hypoperfusion, hypoglycemia, trauma, overdose

ABSOLUTE CONTRAINDICATIONS FOR FIBRINOLYTIC THERAPY:

- Intracranial hemorrhage on CT
- History of Intracranial hemorrhage
- Systolic B/P >185mm Hg or Diastolic B/P >110 mm Hg
- Serious Head Trauma or Stroke within three (3) months.
- Thrombocytopenia and Coagulopathy
- Blood Glucose <50mg/dl or >400mg/dl

Basic Standing Orders:

- Routine Patient Care.
- Obtain glucose reading via glucometer.
- Administer oxygen to keep SPO2 > 94%, suction as necessary, and be prepared to assist ventilation.
- Perform Cincinnati Pre-hospital Stroke Scale.
- If positive, determine time of onset of symptoms. Time of onset of stroke is critical:
  - To patient: When was the last time you were normal?
  - To family or bystander: When was the last time you saw the patient normal?
- Obtain mobile phone contact of an informant, encourage transportation of family member.
- Maintain normal body temperature.
- Obtain 12-lead EKG during transport.
- Protect any paralyzed or partially paralyzed extremity.
- Early notification of the emergency department is critical.
- Consider Paramedic intercept / air medical transport.
- Perform a stroke severity scale for large-vessel involvement such as the CSTAT.

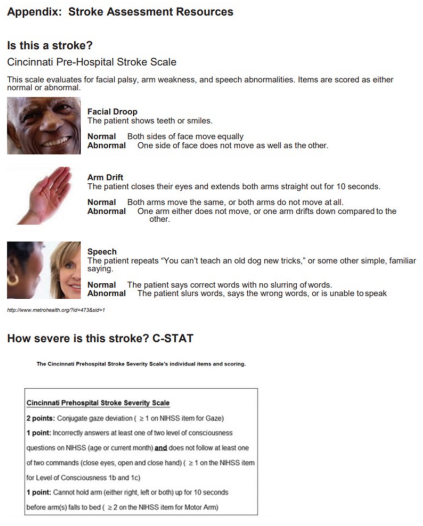
Advanced Standing Orders:
Do not delay transport for ALS procedures

- Large bore IV access with 0.9% Normal Saline 100 ml per hour, unless contraindicated.

Avoid dextrose in the absence of hypoglycemia.

Paramedic Standing Orders:
Do not delay transport for ALS procedures

- Treat blood pressure elevation of > 220/120 with 1 single dose of IV Beta Blocker or Calcium Channel Blocker **(NOT NTG)** if still elevated in 15 minutes contact medical control.
- Manage compromised airway.
- Continuously reassess.



Appendix: Stroke Assessment Resources

Is this a stroke?

Cincinnati Pre-Hospital Stroke Scale

This scale evaluates for facial palsy, arm weakness, and speech abnormalities. Items are scored as either normal or abnormal.

Facial Droop
The patient shows teeth or smiles.
Normal Both sides of face move equally
Abnormal One side of face does not move as well as the other.

Arm Drift
The patient closes their eyes and extends both arms straight out for 10 seconds.
Normal Both arms move the same, or both arms do not move at all.
Abnormal One arm either does not move, or one arm drifts down compared to the other.

Speech
The patient repeats "You can't teach an old dog new tricks," or some other simple, familiar saying.
Normal The patient says correct words with no slurring of words.
Abnormal The patient slurs words, says the wrong words, or is unable to speak

http://www.metrohealth.org/?id=473&std=1

How severe is this stroke? C-STAT

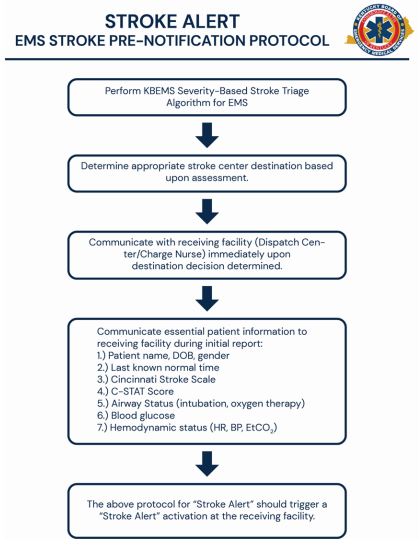
The Cincinnati Prehospital Stroke Severity Scale's individual items and scoring.

Cincinnati Prehospital Stroke Severity Scale

2 points: Conjugate gaze deviation (≥ 1 on NIHSS item for Gaze)

1 point: Incorrectly answers at least one of two level of consciousness questions on NIHSS (age or current month) **and** does not follow at least one of two commands (close eyes, open and close hand) (≥ 1 on the NIHSS item for Level of Consciousness 1b and 1c)

1 point: Cannot hold arm (either right, left or both) up for 10 seconds before arm(s) falls to bed (≥ 2 on the NIHSS item for Motor Arm)



STROKE ALERT
EMS STROKE PRE-NOTIFICATION PROTOCOL

Perform KBEMS Severity-Based Stroke Triage Algorithm for EMS

↓

Determine appropriate stroke center destination based upon assessment.

↓

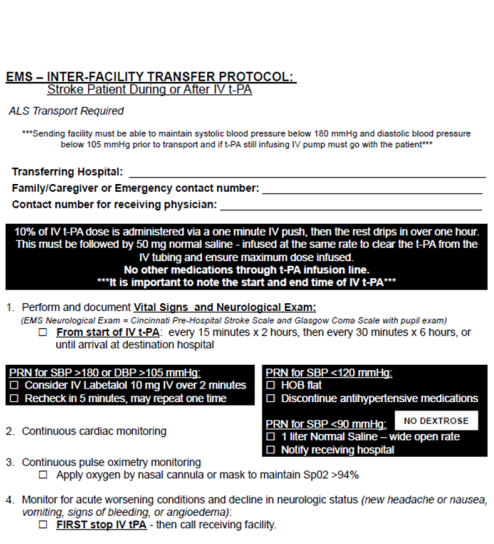
Communicate with receiving facility (Dispatch Center/Charge Nurse) immediately upon destination decision determined.

↓

Communicate essential patient information to receiving facility during initial report:
1.) Patient name, DOB, gender
2.) Last known normal time
3.) Cincinnati Stroke Scale
4.) C-STAT Score
5.) Airway Status (intubation, oxygen therapy)
6.) Blood glucose
7.) Hemodynamic status (HR, BP, $EtCO_2$)

↓

The above protocol for "Stroke Alert" should trigger a "Stroke Alert" activation at the receiving facility.



EMS – INTER-FACILITY TRANSFER PROTOCOL:
Stroke Patient During or After IV t-PA

ALS Transport Required

Sending facility must be able to maintain systolic blood pressure below 180 mmHg and diastolic blood pressure below 105 mmHg prior to transport and if t-PA still infusing IV pump must go with the patient

Transferring Hospital: _____
Family/Caregiver or Emergency contact number: _____
Contact number for receiving physician: _____

10% of IV t-PA dose is administered via a one minute IV push, then the rest drips in over one hour. This must be followed by 50 mg normal saline - infused at the same rate to clear the t-PA from the IV tubing and ensure maximum dose infused.
No other medications through t-PA infusion line.
*****It is important to note the start and end time of IV t-PA*****

1. Perform and document **Vital Signs and Neurological Exam:**
   (EMS Neurological Exam = Cincinnati Pre-Hospital Stroke Scale and Glasgow Coma Scale with pupil exam)
   ☐ **From start of IV t-PA**: every 15 minutes x 2 hours, then every 30 minutes x 6 hours, or until arrival at destination hospital

PRN for SBP >180 or DBP >105 mmHg:
☐ Consider IV Labetalol 10 mg IV over 2 minutes
☐ Recheck in 5 minutes, may repeat one time

PRN for SBP <120 mmHg:
☐ HOB flat
☐ Discontinue antihypertensive medications

PRN for SBP <90 mmHg: NO DEXTROSE
☐ 1 liter Normal Saline – wide open rate
☐ Notify receiving hospital

2. Continuous cardiac monitoring
3. Continuous pulse oximetry monitoring
   ☐ Apply oxygen by nasal cannula or mask to maintain Sp02 >94%
4. Monitor for acute worsening conditions and decline in neurologic status *(new headache or nausea, vomiting, signs of bleeding, or angioedema)*:
   ☐ **FIRST stop IV tPA** - then call receiving facility.

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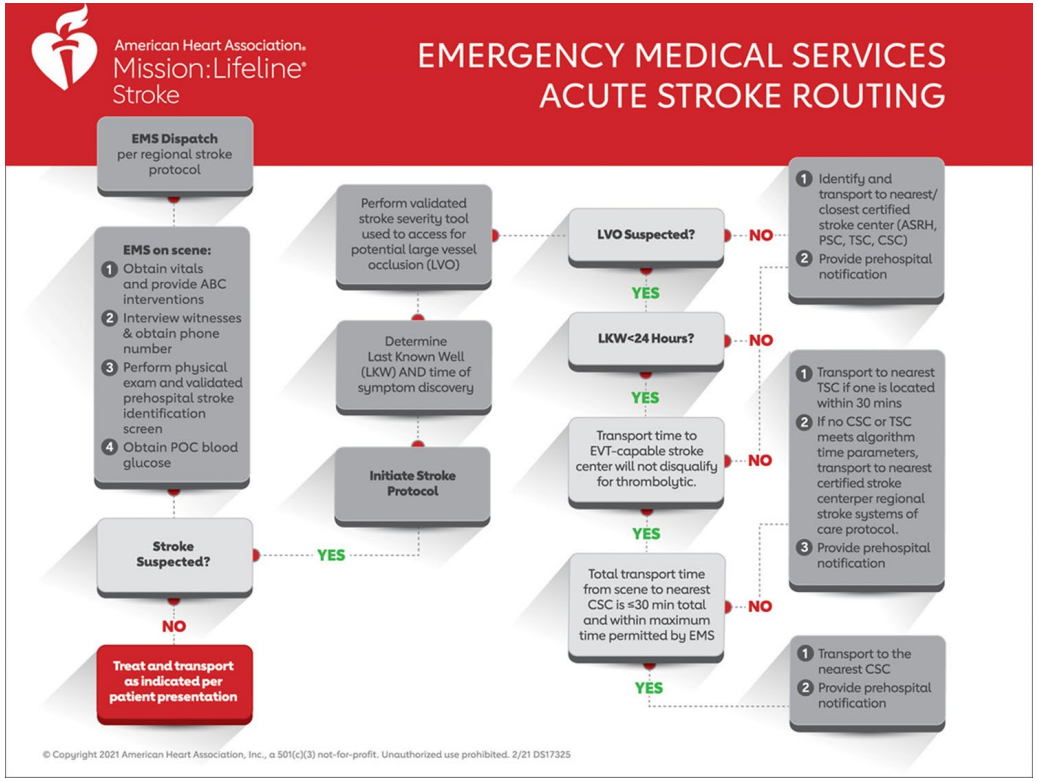
LVO DETECTION AND DESTINATION PLANS



STROKE ENCOUNTER QUALITY IMPROVEMENT PROJECT SEQIP

American Heart Association.

What is your prehospital assessment detecting- Stroke or Large Vessel Occlusion?

In collaboration with the Greater Louisville hospitals, the KY Stroke Encounter Quality Improvement Project (SEQIP) wants to arm you with tools to help to identify these patients in the field and relay this information to your hospital destination.
Please join us for this webinar at 12pm or 4pm on these dates:

September 14th at 12 pm: https://heart.zoom.us/meeting/register/tJAvcuirpzgtGdHmxmXQyle8r0j5euQFvfMi.
September 14th at 4pm: https://heart.zoom.us/meeting/register/tJIlce-trDItHdAokVWG68CzYP-GIf0rvumv.
September 16th at 12pm: https://heart.zoom.us/meeting/register/tJMocumhrj0iE9bP0-WpE5QA85j_uS0jGYuA.
September 16th at 4pm: https://heart.zoom.us/meeting/register/tJIscOisqzgtHdXL5OxDzIdPGWgoWLMi4i4m.
September 22nd at 12pm: https://heart.zoom.us/meeting/register/tJ0ofu-uqjMtGNTgv_axKqD3ZizToFjFC6Xg.
September 22nd at 4pm: https://heart.zoom.us/meeting/register/tJ0ofu-uqjMtGNTgv_axKqD3ZizToFjFC6Xg.
September 24th at 12pm: https://heart.zoom.us/meeting/register/tJEqceipqTsrE9Bd4MpnxNjxW9V-dS1WTyPU.
September 24th at 4pm: https://heart.zoom.us/meeting/register/tJErdO2orzwtG9QX-EHuIzrHQoV-oJKU7d1g.
September 28th at 12 pm: https://heart.zoom.us/meeting/register/tJ0pceCupzgtHtPp8bSoRUB5XleKG6XgibTZ.
September 28th at 4pm: https://heart.zoom.us/meeting/register/tJ0vdeyqqDstG9zMMlcAvl7uNQ8vj22yNlS-.

BAPTIST HEALTH

NORTON HEALTHCARE

UofL Health

Evaluation of the Impact of C-STAT Education Among Pre-Hospital Emergency Medical Services for Identification of Possible Large Vessel Occlusion Stroke: The ICE-LVO Study.

Stroke Severity Scale Training – Ground Services

Agency	Total Number Trained
Fern Creek	76
PRP	98
St. Matthews	151
Jtown	37
Okolona	30
Anchorage/Middletown	98
Louisville Metro	150
Spencer County	30
Ohio County	5
Frankfort Fire	64
Breckenridge County	25

Total Trained = 764 EMS providers @ 11 Agencies

Louisville Metro Destination Protocol 7/11 agencies serve the Louisville Metropolitan area

LOUISVILLE METRO EMERGENCY MEDICAL SERVICES
LOUISVILLE, KENTUCKY

GREG FISCHER
MAYOR

Edward J. Meiman III
Executive Director

To: EMS Operations Personnel

From: Chris Lokits, Major
Raymond Orthober, MD

Date: November 10, 2022

Subject: C-Stat Positive Patient (ELVO Stroke) Destination

After consultation with our community healthcare systems and experts in the field, we are instituting changes to the destinations we transport patients who are positive on the CSTAT scale. These changes are in recognition of the emergent nature of large vessel occlusion strokes and the specialized, time sensitive care which is required to attain the best possible outcome. Effective immediately, any patient who, after assessment, is determined to have positive finding on the CSTAT scale shall be transported to an ELVO receiving facility – Baptist Louisville, Brownsboro or UofL Hospital. Every effort should be made to ensure that patient is transported to the facility within their preferred healthcare system e.g. Baptist Health, Norton Healthcare or UL Health. Like other time sensitive diagnoses, if a patient's clinical status is unstable and the EMS providers are unable to manage the patient, the patient may be transported to a closer facility that provides the appropriate level of care.

Adult Destination Guidelines

Adult-Type of Emergency	Baptist Louisville	Baptist Health LaGrange	UofL Health Jewish Hospital	UofI Health Shelbyville Hospital	UofI Health Medical Center-East	UofL Health Medical Center-South	UofI Health Medical Center-Southwest	UofL Health Mary and Elizabeth Hospital	Norton Hospital-Downtown	Norton Hospital-Audubon	Norton Women & Children's Hospital	Norton Hospital-Brownsboro	VA Medical Center	University of Louisville Hospital	Clark Memorial Hospital	Baptist Health Floyd
Medical 1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Acute Medical 2	X		X	X				X	X	X	X	X	X	X	X	X
STEMI 3	X		X					X	X	X		X		X	X	X
Stroke 4	X	X	X					X	X	X	X	X		X		X
ELVO (aka LVO) Stroke 4a	X											X		X		
Acute Surgical 5	X		X	X				X	X	X	X	X		X	X	X
Burn Center 6														X		
Burns 6	X		X	X	X	X	X	X	X	X	X	X		X	X	X
HazMat Decon-Non Mass Cas (Daily) 7		X												X		X
HazMat Decon-Mass Casualty 7	X	X	X	X	X	X		X	X	X	X		X	X	X	X
Poison and Drug OD	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Psychiatric	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Level 1 Trauma 8														X		
Trauma 8	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Gynecological 9	X	X	X	X					X	X	X			X	X	X
Obstetrical 10	X	X							X		X			X	X	X
Newborn 11	X	X									X			X	X	X

CERTIFIED STROKE CENTERS
SEQIP DATA

SEQIP MEMBERSHIP

SEQIP Hospitals, 2009

St. Elizabeth Hospital, Edgewood

Central Baptist, Lexington
University of Kentucky Hospital, Lexington

Baptist Health, Louisville
Jewish Hospital, Louisville
Norton Hospital, Louisville
Norton Audubon Hospital, Louisville
Norton Suburban Hospital, Louisville
Sts. Mary and Elizabeth Hospital, Louisville
University of Louisville Hospital, Louisville

Baptist Health, Paducah

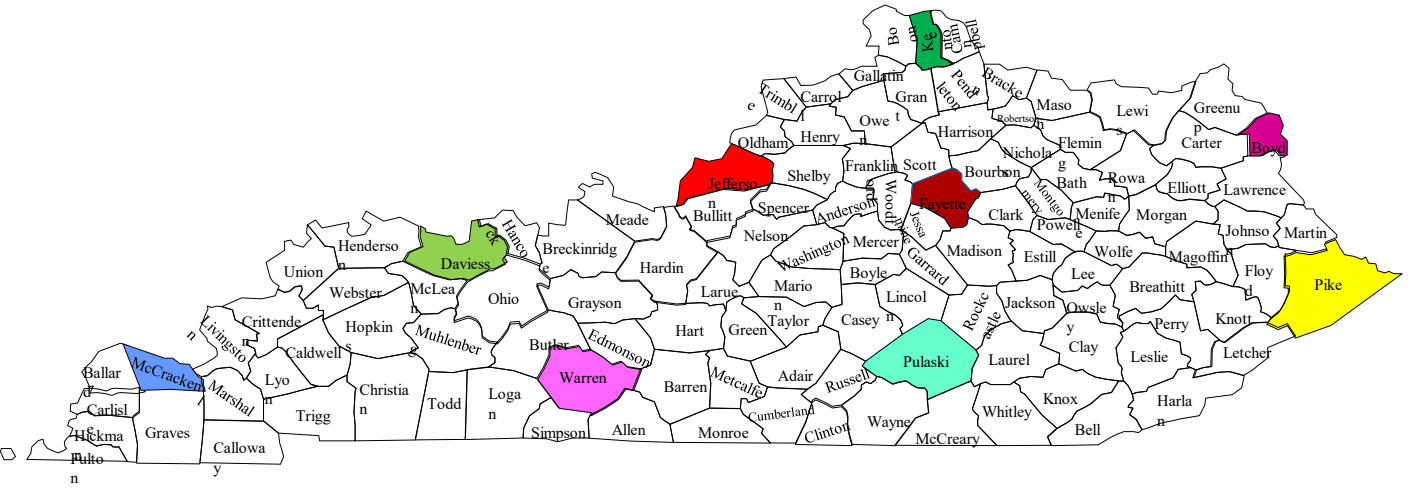
King's Daughter's Medical Center, Ashland

Lake Cumberland Regional Hospital, Somerset

Owensboro Health, Owensboro

Pikeville Medical Center, Pikeville

The Medical Center, Bowling Green



16 Hospitals participating

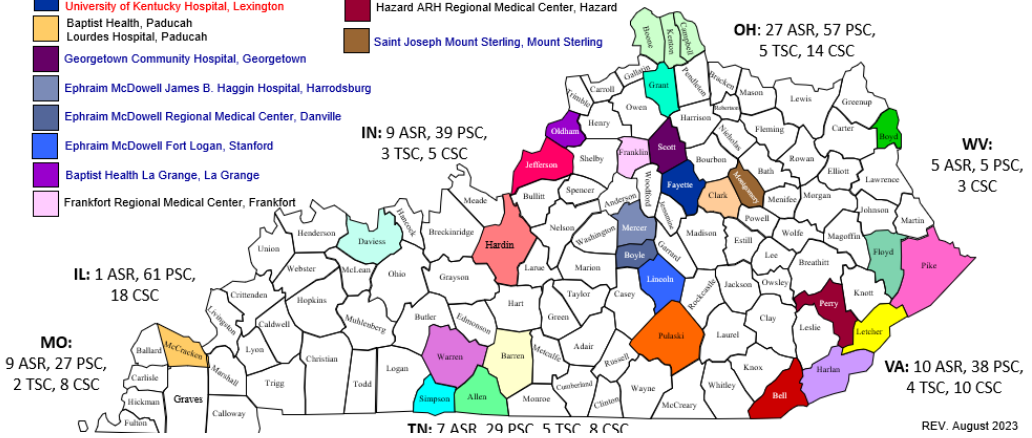
2023 Stroke Centers – 42 Certified Centers

The Joint Commission, ACHC and DNV Certified Stroke Centers in KY:
Acute Stroke Ready Hospitals (17) Primary Stroke Centers in Kentucky (20)
Thrombectomy-Capable Stroke Center (1) Comprehensive Stroke Centers (4)

St. Elizabeth, Covington
St. Elizabeth, Edgewood
St. Elizabeth, Florence
St. Elizabeth, Ft. Thomas
St. Elizabeth, Grant
Baptist Health, Louisville
Jewish Hospital, Louisville
Norton Hospital, Louisville
Norton Audubon Hospital, Louisville
Norton Brownsboro Hospital, Louisville
Norton Women's & Children's Hospital, Louisville
Sts. Mary and Elizabeth Hospital, Louisville
University of Louisville Hospital, Louisville
Baptist Health, Lexington
Saint Joseph Hospital, Lexington
University of Kentucky Hospital, Lexington
Baptist Health, Paducah
Lourdes Hospital, Paducah
Georgetown Community Hospital, Georgetown
Ephraim McDowell James B. Haggin Hospital, Harrodsburg
Ephraim McDowell Regional Medical Center, Danville
Ephraim McDowell Fort Logan, Stanford
Baptist Health La Grange, La Grange
Frankfort Regional Medical Center, Frankfort

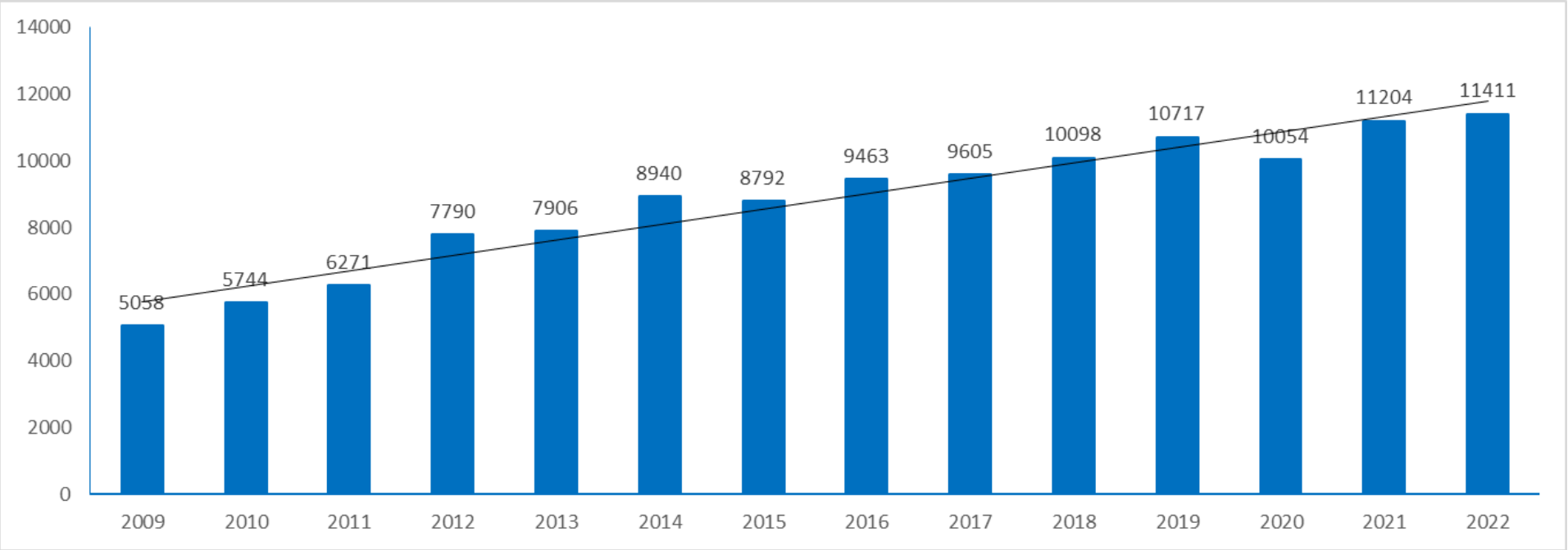
Baptist Health Hardin, Elizabethtown
Harlan ARH Hospital, Harlan
Highlands ARH Regional Medical Center, Prestonsburg
ARH Our Lady of the Way, Martin
Clark Regional Medical Center, Winchester
King's Daughter's Medical Center, Ashland
Lake Cumberland Regional Hospital, Somerset
Middlesboro ARH Hospital, Middlesboro
Hazard ARH Regional Medical Center, Hazard
Saint Joseph Mount Sterling, Mount Sterling

Owensboro Health, Owensboro
Pikeville Medical Center, Pikeville
The Medical Center, Bowling Green
TriStar Greenview Regional Hospital, Bowling Green
The Medical Center, Scottsville
T.J. Samson Community Hospital, Glasgow
The Medical Center at Franklin, Franklin
Whitesburg ARH Hospital, Whitesburg



- **50 Hospitals**
- **3 EMS agencies**
- **1 Acute Rehab Hospital**

REGISTRY VOLUME/STATE VOLUME



- 2022 State Volume: 15,785
- 2021 State Volume: 16,133
- 2020 State Volume: 10,994 =
- 2019 State Volume: 11,677
- 2018 State Volume: 11,636

Primary Dx: AIS, ICH, SAH, TIA

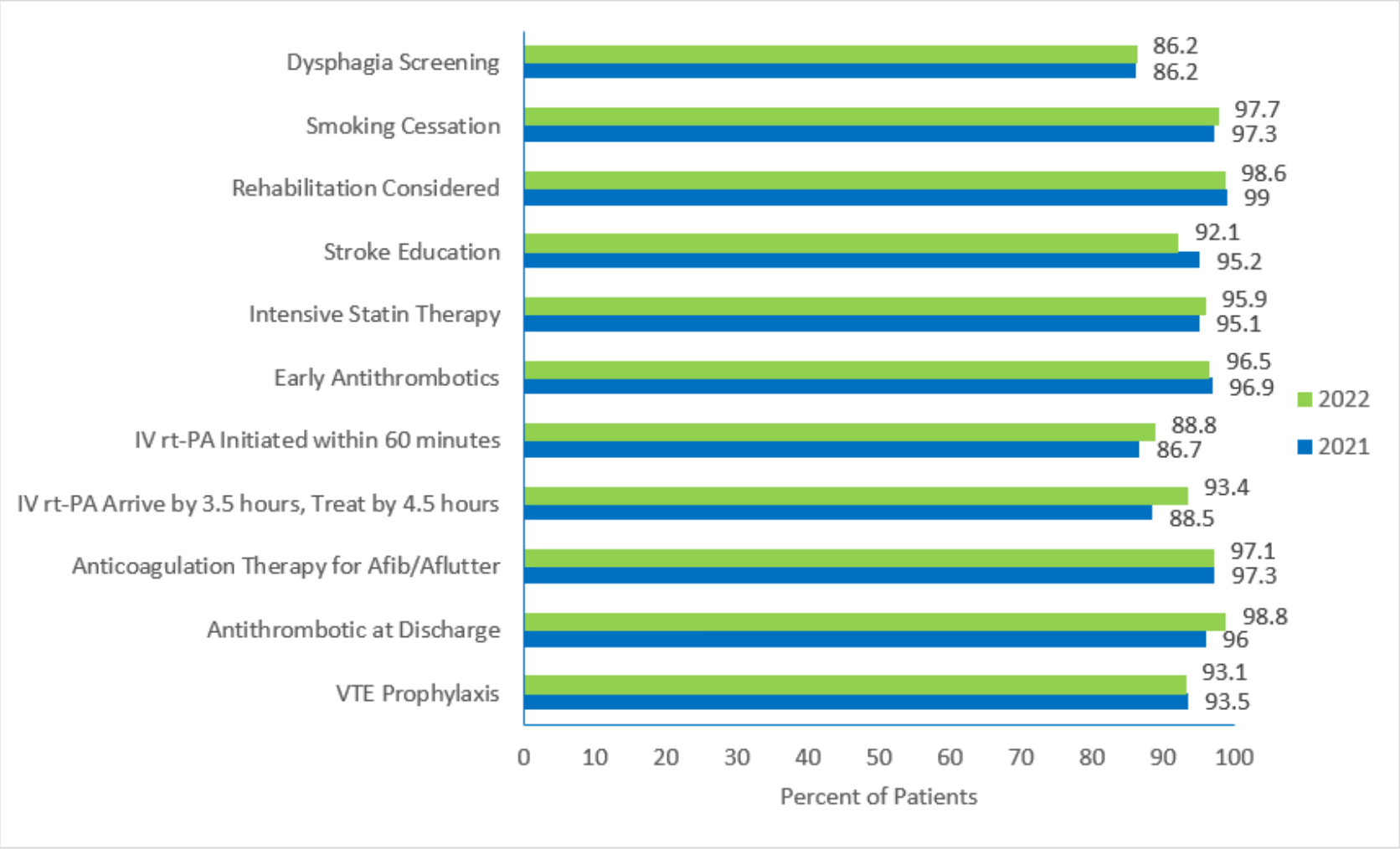
Source: Kentucky Hospital Inpatient Claims; Cabinet for Health and Family Services

- 73% of stroke/TIA patients in 2022 SEQIP data*
- 70% of stroke/TIA patients in 2021 SEQIP data*
- 90% of stroke/TIA patients in 2020 SEQIP data
- 90% of stroke/TIA patients in 2019 SEQIP data
- 87% of stroke/TIA patients in 2018 SEQIP data

*COVID Furloughs/Cyber Attack/IRP changes/ Site additions

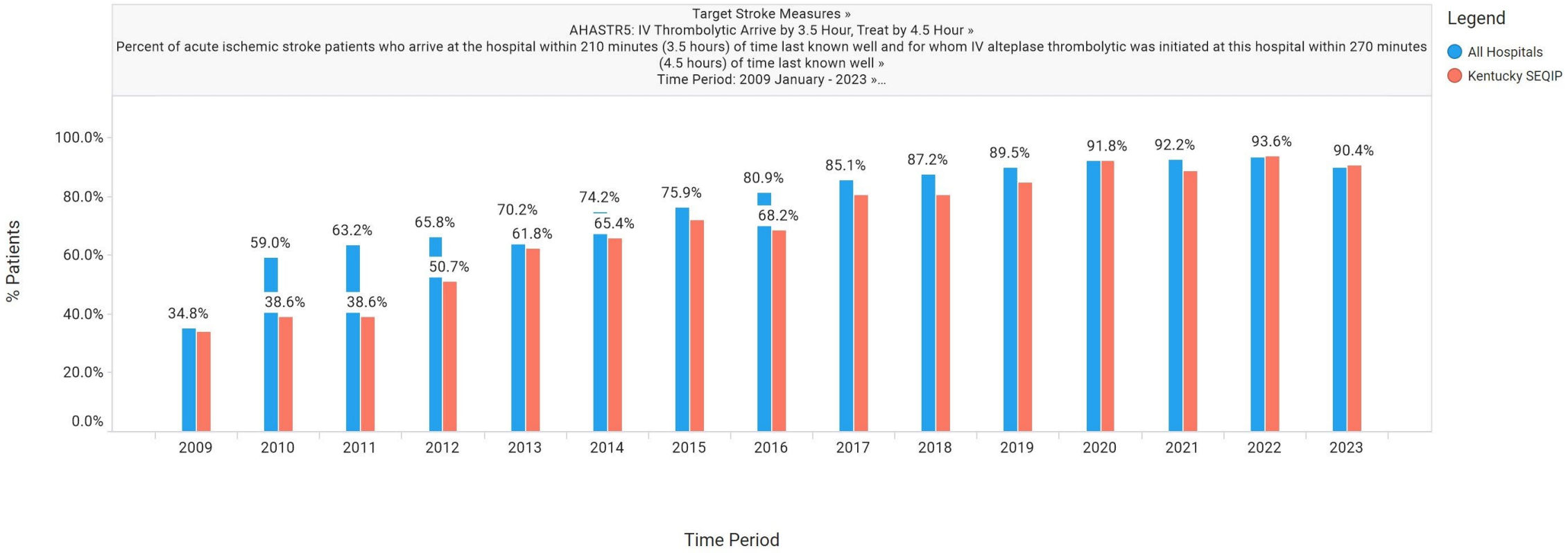
STROKE PERFORMANCE MEASURES

Figure 10: GWTG®-S performance measures 2021-2022



THROMBOLYTIC THERAPY: ARRIVE BY 3.5 HOURS, TREAT BY 4.5 HOURS

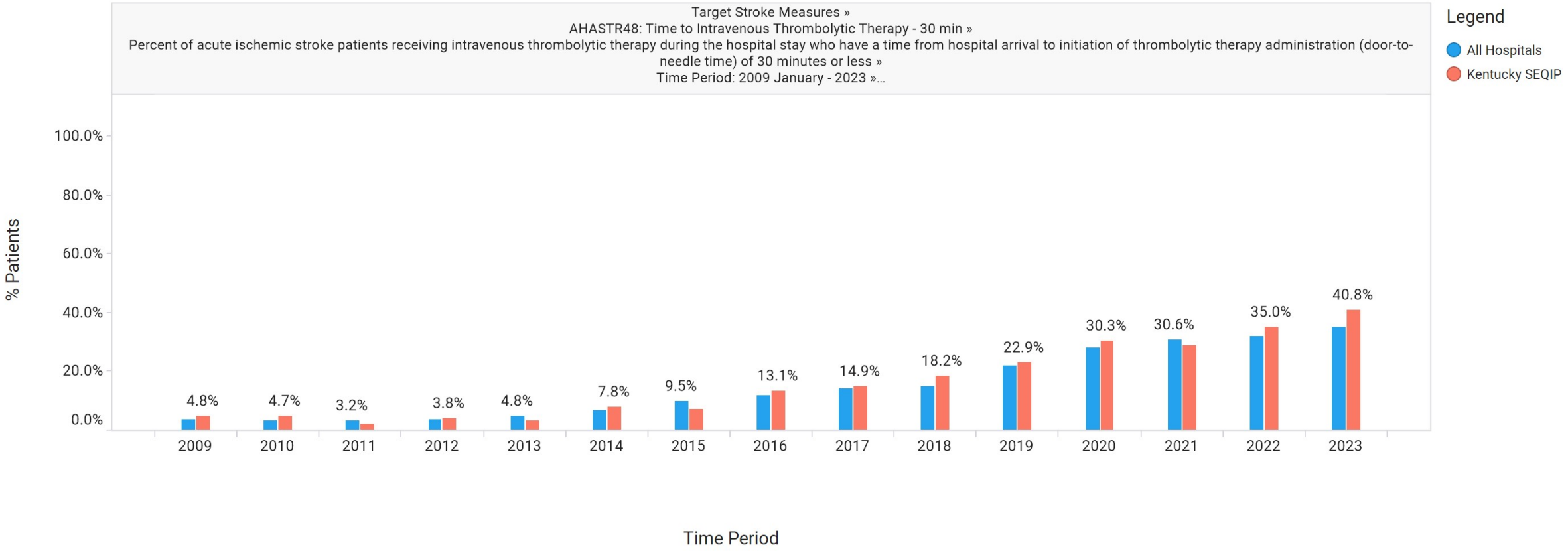
Measure Summary



Kentucky Stroke Registry, GWTG-S; September 25, 2023

DTN TIMES

Measure Summary



Kentucky Stroke Registry, GWTG-S; September 25, 2023

UNIVERSITY OF LOUISVILLE

ENDOVASCULAR THROMBECTOMY

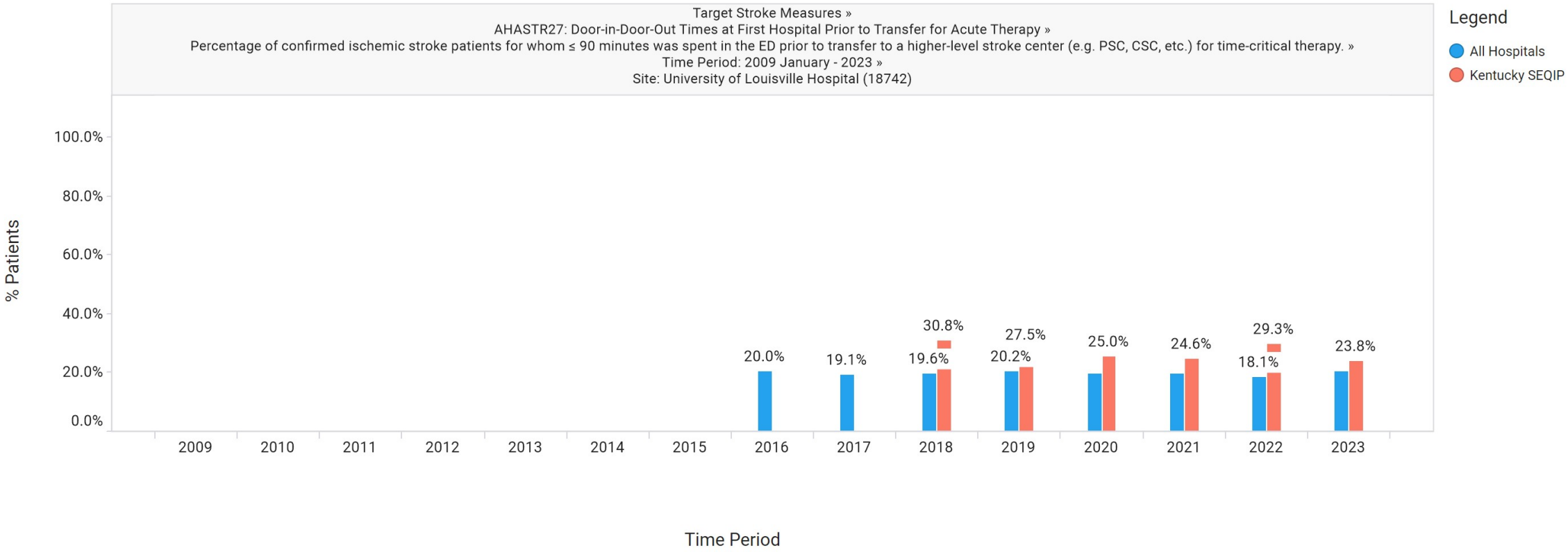
Table 3: Endovascular thrombectomy performance 2022

Performance measure	Kentucky SEQIP hospitals (n=5)	All GWTG-S® stroke registry hospitals performing EVT
Percent of patients with a door to puncture of blood vessel within 90 minutes	76%	68%
Percent of patient's blood flow restored within 120 minutes of arrival	66%	78%
Percent of patient's blood flow restored (TICI 2B or higher)	79%	71%
Percent of patients with a favorable outcome (mRS 0-2) in 90 days	39%	38%

Source: GWTG®-S registry.

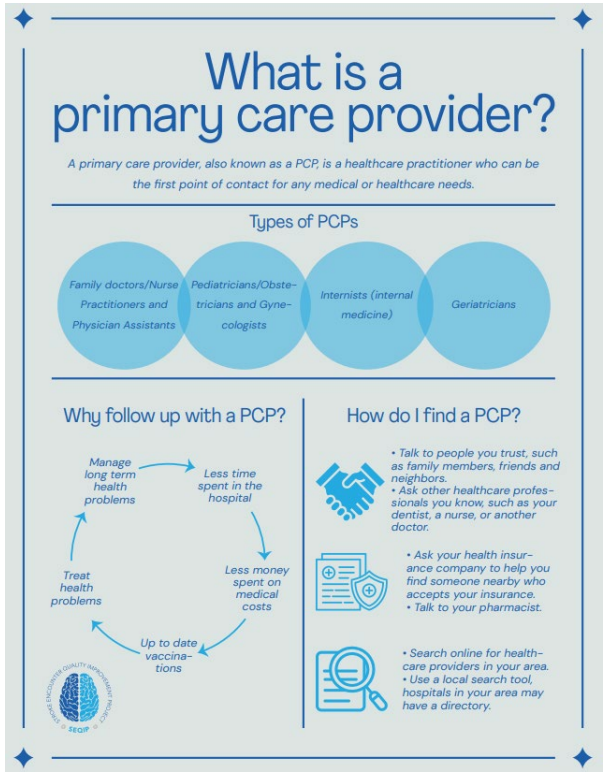
DOOR IN DOOR OUT

Measure Summary



RESOURCES POST DISCHARGE

- Community resource list;
- Preparing for follow up appointments;
- Questions to ask during follow up appointments;
- List of stroke support groups;
- Importance of having a primary care provider;
- Pseudobulbar affect educational handout;
- Caregiver stress; and
- Effects of stress



What is a primary care provider?

A primary care provider, also known as a PCP, is a healthcare practitioner who can be the first point of contact for any medical or healthcare needs.

Types of PCPs

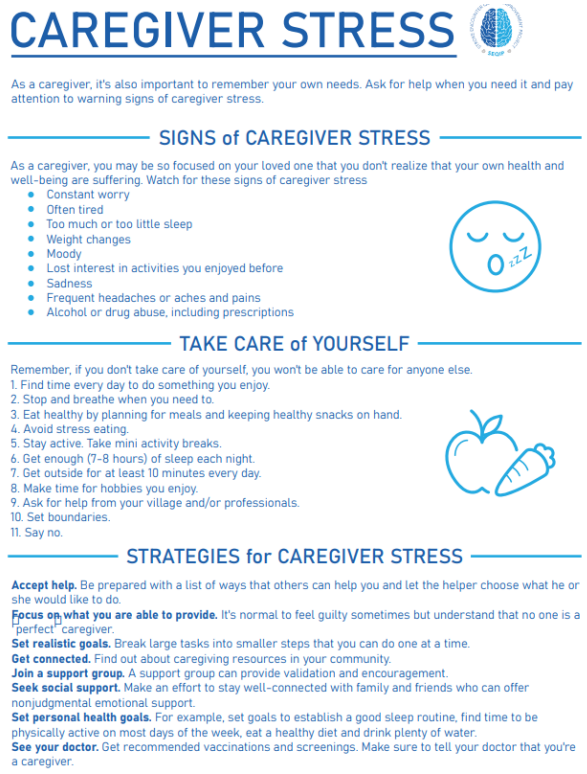
- *Family doctors/Nurse Practitioners and Physician Assistants*
- *Pediatricians/Obstetricians and Gynecologists*
- *Internists (internal medicine)*
- *Geriatricians*

Why follow up with a PCP?

- *Manage long term health problems*
- *Less time spent in the hospital*
- *Less money spent on medical costs*
- *Up to date vaccinations*
- *Treat health problems*

How do I find a PCP?

- *Talk to people you trust, such as family members, friends and neighbors.*
- *Ask other healthcare professionals you know, such as your dentist, a nurse, or another doctor.*
- *Ask your health insurance company to help you find someone nearby who accepts your insurance.*
- *Talk to your pharmacist.*
- *Search online for healthcare providers in your area.*
- *Use a local search tool, hospitals in your area may have a directory.*



CAREGIVER STRESS

As a caregiver, it's also important to remember your own needs. Ask for help when you need it and pay attention to warning signs of caregiver stress.

SIGNS of CAREGIVER STRESS

As a caregiver, you may be so focused on your loved one that you don't realize that your own health and well-being are suffering. Watch for these signs of caregiver stress

- Constant worry
- Often tired
- Too much or too little sleep
- Weight changes
- Moody
- Lost interest in activities you enjoyed before
- Sadness
- Frequent headaches or aches and pains
- Alcohol or drug abuse, including prescriptions

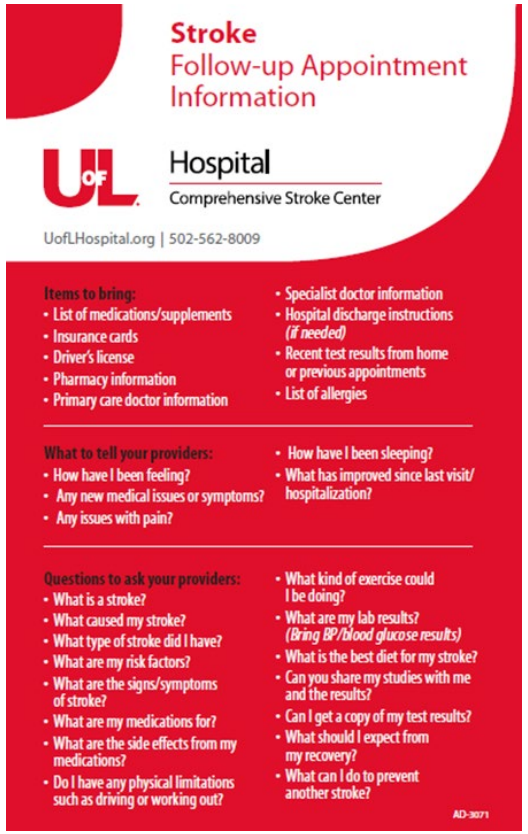
TAKE CARE of YOURSELF

Remember, if you don't take care of yourself, you won't be able to care for anyone else.

1. Find time every day to do something you enjoy.
2. Stop and breathe when you need to.
3. Eat healthy by planning for meals and keeping healthy snacks on hand.
4. Avoid stress eating.
5. Stay active. Take mini activity breaks.
6. Get enough (7-8 hours) of sleep each night.
7. Get outside for at least 10 minutes every day.
8. Make time for hobbies you enjoy.
9. Ask for help from your village and/or professionals.
10. Set boundaries.
11. Say no.

STRATEGIES for CAREGIVER STRESS

Accept help. Be prepared with a list of ways that others can help you and let the helper choose what he or she would like to do.
Focus on what you are able to provide. It's normal to feel guilty sometimes but understand that no one is a "perfect" caregiver.
Set realistic goals. Break large tasks into smaller steps that you can do one at a time.
Get connected. Find out about caregiving resources in your community.
Join a support group. A support group can provide validation and encouragement.
Seek social support. Make an effort to stay well-connected with family and friends who can offer nonjudgmental emotional support.
Set personal health goals. For example, set goals to establish a good sleep routine, find time to be physically active on most days of the week, eat a healthy diet and drink plenty of water.
See your doctor. Get recommended vaccinations and screenings. Make sure to tell your doctor that you're a caregiver.



Stroke Follow-up Appointment Information

UofL Hospital
Comprehensive Stroke Center

UofLHospital.org | 502-562-8009

Items to bring:
- List of medications/supplements
- Insurance cards
- Driver's license
- Pharmacy information
- Primary care doctor information
- Specialist doctor information
- Hospital discharge instructions *(if needed)*
- Recent test results from home or previous appointments
- List of allergies

What to tell your providers:
- How have I been feeling?
- Any new medical issues or symptoms?
- Any issues with pain?
- How have I been sleeping?
- What has improved since last visit/ hospitalization?

Questions to ask your providers:
- What is a stroke?
- What caused my stroke?
- What type of stroke did I have?
- What are my risk factors?
- What are the signs/symptoms of stroke?
- What are my medications for?
- What are the side effects from my medications?
- Do I have any physical limitations such as driving or working out?
- What kind of exercise could I be doing?
- What are my lab results? *(Bring BP/blood glucose results)*
- What is the best diet for my stroke?
- Can you share my studies with me and the results?
- Can I get a copy of my test results?
- What should I expect from my recovery?
- What can I do to prevent another stroke?

AD-3071

CURRENT SEQIP INITIATIVES

- Standardized Community Messaging
- EMS Education/Data
- Reperfusion therapy times
- Post Discharge Care Resources
- Door In Door Out – DiDo
- Inpatient Code Stroke
- EMS Education LVO Module
- Paul Coverdell National Acute Stroke Program Measures
- Stroke Coordinator Education Council

REDUCING STROKE MORTALITY IN KENTUCKY

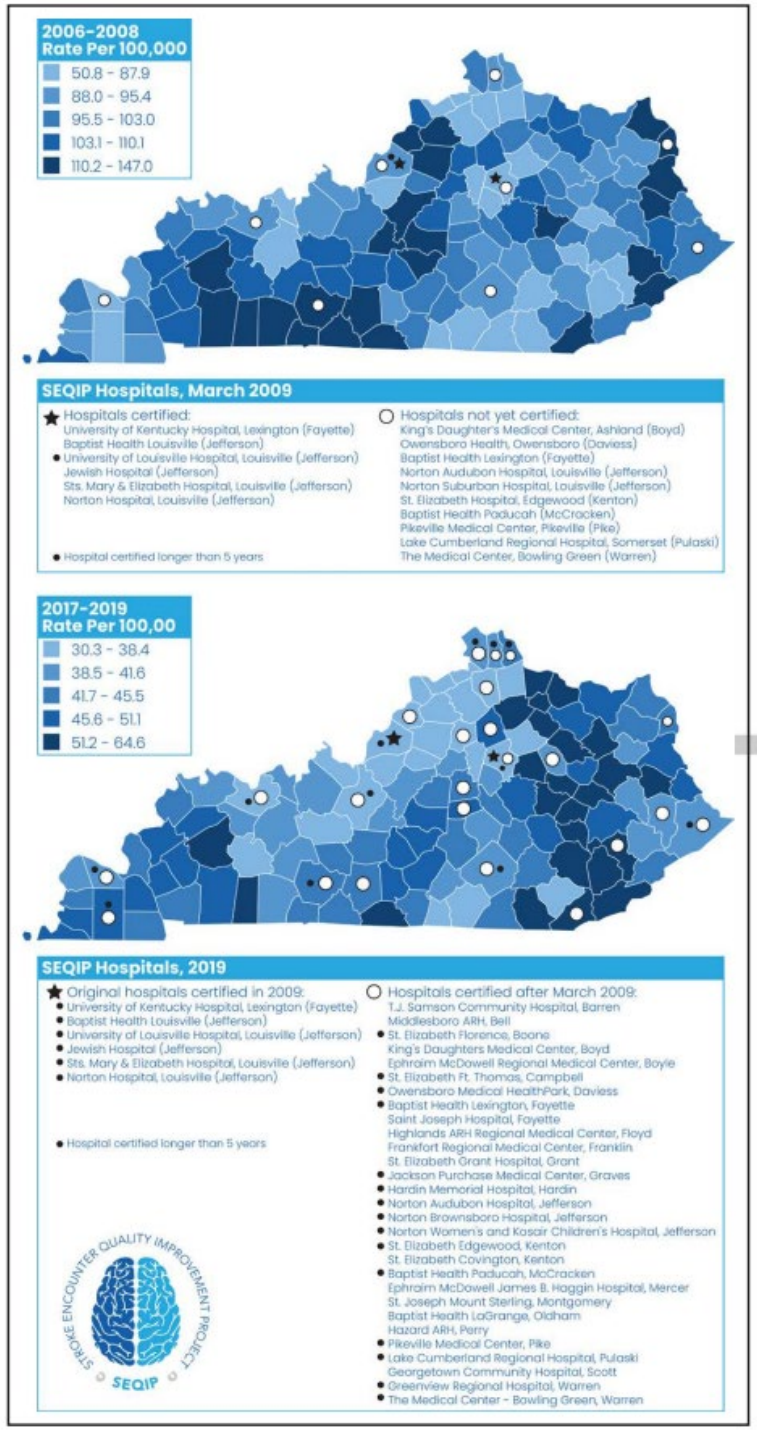


Figure 2. 2006 to 2008 Kentucky Stroke Mortality and Stroke Encounter Quality Improvement Project (SEQIP)/Certified Stroke Center Location; 2017 to 2019 Kentucky Stroke Mortality and SEQIP/Certified Stroke Center Location.

Adapted from the Centers for Disease Control and Prevention Interactive Atlas for Heart Disease and Stroke with permission. Copyright © 2019.

RECOGNITION FOR IMPROVING STROKE SYSTEMS IN KY

Division for Heart Disease and Stroke Prevention

Overreact Campaign

Partnered with Genentech and AHA/ASA on evaluating impact of local Overreact Campaign

- Louisville 1 of 4 US cities with the campaign
- Data pre and post ad campaign
  - Arrival mode to hospital
  - Alteplase utilization
  - Zip code analysis
  - Outcomes

Reducing Cardiovascular Disparities Through Community-Engaged Implementation Research

A National Heart, Lung, and Blood Institute Workshop Report

George A. Mensah, Richard S. Cooper, Anna Maria Siega-Riz, Lisa A. Cooper, Justin D. Smith, C. Hendricks Brown, John M. Westfall, Elizabeth O. Ofili, LeShawndra N. Price, Sonia Arteaga, Melissa C. Green Parker, Cheryl R. Nelson, Bradley J. Newsome, Nicole Redmond, Rebecca A. Roper, Bettina M. Beech, Jada L. Brooks, Debra Furr-Holden, Samson Y. Gebreab, Wayne H. Giles, Regina Smith James, Tené T. Lewis, Ali H. Mokdad, Kari D. Moore, Joseph E. Ravenell, Al Richmond, Nancy E. Schoenberg, Mario Sims, Gopal K. Singh, Anne E. Sumner, Roberto P. Treviño, Karriem S. Watson, M. Larissa Avilés-Santa, Jared P. Reis, Charlotte A. Pratt, Michael M. Engelgau, David C. Goff Jr, Eliseo J. Pérez-Stable

Mensah, G., et al., 2018, Circulation

GIS MAPPING GWTG-S DATA TO EVALUATE, DEVELOP, AND IMPLEMENT TARGETED STROKE MESSAGING TO THE COMMUNITY, REFERRAL FACILITIES, AND EMS

ABSTRACT PRESENTED AHA QCOR APRIL 2019

Using Geographic Information Systems (GIS) to Analyze Statewide Get With The Guidelines-Stroke (GWTGS) Data
A Feasibility Project from the Kentucky Stroke Encounter Quality Improvement Project (SEQIP)

Kari Moore, Louisville, KY; Allison Merritt, Frankfort, KY; Alexander Kuhn, Columbus, OH, Amy Graham, Louisville, KY for SEQIP

Background

The Stroke Encounter Quality Improvement Project is a collaboration between certified stroke centers in Kentucky, the American Heart Association/American Stroke Association and the Kentucky Department of Public Health to implement statewide quality initiatives to improve the care of stroke patients. Since 2008, 23 hospitals participating in SEQIP have entered 56,513 ischemic stroke patient records into

Purpose

Geographic information systems (GIS) tools can expand our understanding of care and outcomes based on patient location. The purpose of this project was (1) to demonstrate the methods of linking a disease management registry with GIS mapping and analysis program, (2) to understand challenges when performing this link, and (3) to derive meaningful insight on stroke care and outcomes based by zip codes.

Methods

Registry data was derived from GWTGS and downloaded by the KDPH. The information was converted to a database file for use in ArcGIS. Geocoding was performed and after excluding those who had missing or incomplete zip codes, records were geocoded annually from 2013-October 2018. The data were then matched to one of 945 zip codes in Kentucky. Data was summarized by zip code and calendar year for:

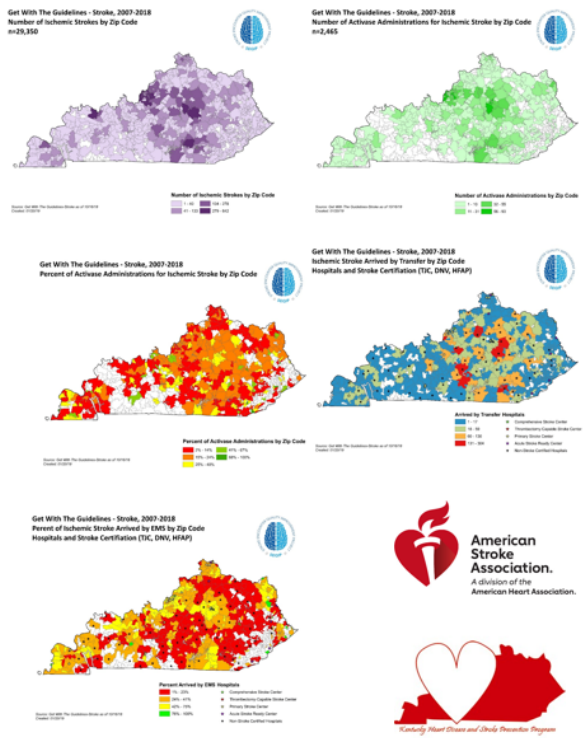
- Number ischemic strokes
- Number ischemic strokes that received IV alteplase administration
- Rate ischemic strokes receiving IV alteplase
- Number of ischemic stroke patients transferred

Results

After excluding patients with missing or incorrectly formatted zip codes, data from 29,350 GWTGS patients records were joined and

Conclusions

This feasibility project provides an example of a useful application of GIS analyses with a data registry. Using GIS mapping and methodology can assist hospital stroke coordinators and public health officials in developing and implementing interventions to improve systems of care and outcomes by targeted messaging to the community, referral facilities, and EMS. Further analysis is planned including hospital and EMS locations, socioeconomic, demographic and marketing/consumer preference data is planned to better understand variations by zip codes.



UNIVERSITY OF LOUISVILLE

SPECIAL REPORT

Recommendations for Regional Stroke Destination Plans in Rural, Suburban, and Urban Communities From the Prehospital Stroke System of Care Consensus Conference

A Consensus Statement From the American Academy of Neurology, American Heart Association/American Stroke Association, American Society of Neuroradiology, National Association of EMS Physicians, National Association of State EMS Officials, Society of NeuroInterventional Surgery, and Society of Vascular and Interventional Neurology: Endorsed by the Neurocritical Care Society

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SEQIP Stroke Performance Measures and Outcomes; A 10-Year Analysis

Hospital Stroke Performance Measure	2009 n=16*	2018 n=23*	OR (95% CI)†
VTE Prophylaxis	9%	97%	315.7 (263.8-377.8)
Dysphagia Screening	72%	93%	5.1 (4.5, 5.7)
Stroke Education	65%	97%	16.8 (14, 20.3)
Anticoagulation for atrial fibrillation/flutter	92%	98%	5.0 (3, 8.7)
LDL Documented	82%	95%	4.3 (3.7, 4.9)
Rehabilitation Considered	94%	99%	7.6 (5.8, 10.01)
Early Antithrombotic	95%	98%	2.2 (1.7, 2.7)
Antithrombotic at Discharge	98.5%	99.6%	3.6 (2.3, 5.6)
Smoking Cessation	98.5%	99.7%	4.8 (1.9, 13.6)
In Hospital Mortality	8%	5%	0.7 (0.6, 0.8)
Discharge Home Disposition	45%	50%	1.2 (1.2, 1.3)
IV Alteplase n = 4404	**2009 n=16***	**2018 n=23***	**OR (95% CI)†**
% All Ischemic Strokes Receiving IV Alteplase	5%	9%	2 (1.6, 2.4)
IV alteplase arrive by 2 hours, treat by 3 hours	60%	89%	5.2 (3.6-7.7)
IV alteplase arrive by 3.5 hours, treat by 4.5 hours	28%	66%	5 (4, 6.4)
Door to Needle Time (Median Minutes)	73	46	57 mins (40.4, 73.4)
Door to Needle Time ≤ 60 Minutes	25%	84%	15.7 (10.1, 24.4)
Door to Needle Time ≤ 45 Minutes	8%	50%	12.1 (6.4, 22.9)
Door to Needle Time ≤ 30 Minutes	5%	19%	4.6 (2.1, 10.1)
In Hospital Mortality	11%	4%	0.3 (0.2, 0.5)
Discharge Home Disposition	28%	48%	2.3 (1.6, 3.4)
Walk Independently at Discharge	32%	44%	1.6 (1.1, 2.2)

Kentucky State Registry (GWTG-S® Data)

*n= number of hospitals submitting registry data

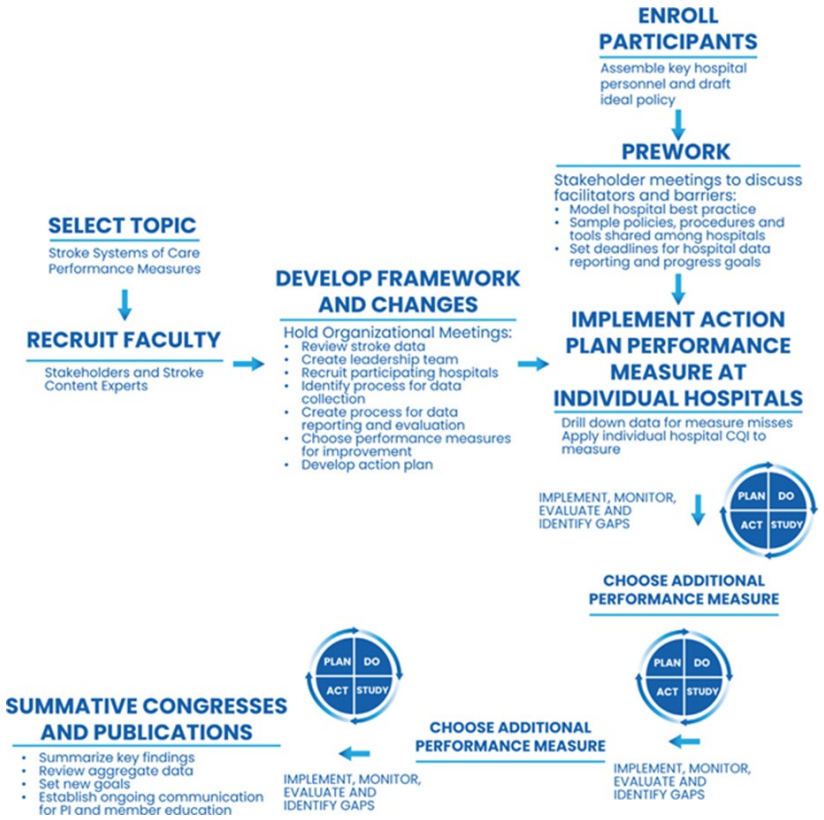
† The OR's were all significant at < 0.001

TOPICAL REVIEW

Section Editors: Janice L. Hinkle, RN, PhD, CNRN, and Elaine Miller, PhD, RN, CRRN

Improving Stroke Measure Compliance and Outcomes Through Hospital Collaboration

Kari D. Moore, MSN, RN, AGACNP-BC, ANVP-BC; Debbie Summers, MSN, RN, AHCNS-BC;
Susan E. Wilson, DNP, ANP-BC



Kentucky Stroke Systems of Care Model

Burden of Stroke
- Review baseline data
- Establish mission, bylaws, and charter
- Identify improvement measures based on patient centered goals

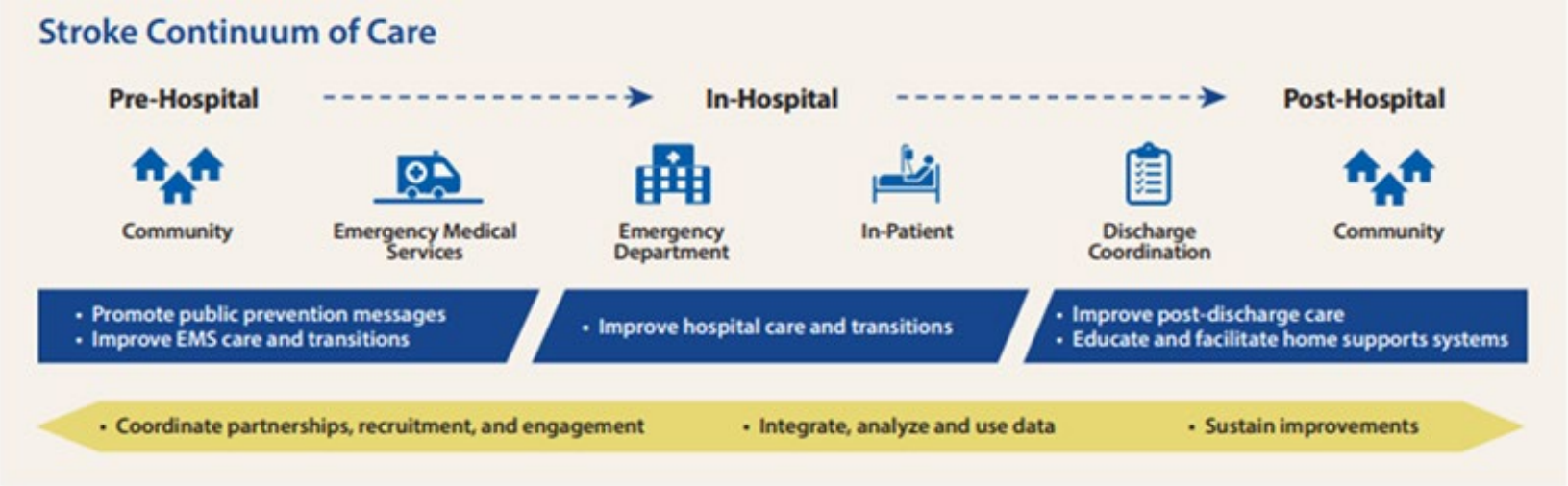
Evidence Based Practice
- Identify barriers and facilitators
- Share best practices, tools, and pathways
- Develop and initiate action plans

Key Stakeholders
- Certified and non-stroke certified hospitals
- EMS agencies
- Department for Public Health
- Nursing and physician leaders
- AHA/ASA advocacy
- Team exercises to build trust

Identify gaps in performance measures
- Abstraction
- Validation
- Analysis
- Share and discuss data

PAUL COVERDELL NATIONAL ACUTE STROKE REGISTRY

CDC PAUL Coverdell NATIONAL ACUTE STROKE PROGRAM



Start Date: June 30, 2021

Principal Investigators/Key Personnel:

- Dr. Larry Goldstein (UK)
- Brent McKune (UK)
- Kari Moore (UofL)
- Dr. Kerri Remmel (UofL)
- Dr. Karen Roper (UKDFCM)

Purpose:

- Coordination and expansion of existing efforts in Kentucky to improve stroke-related health outcomes
- Work with Kentucky health care systems and community providers to implement comprehensive stroke systems
- Prevention in high-risk populations
- Optimize care delivery for those who have had a stroke

Strategy:

Creation of the Kentucky Stroke Improvement Cooperative (KSIC)

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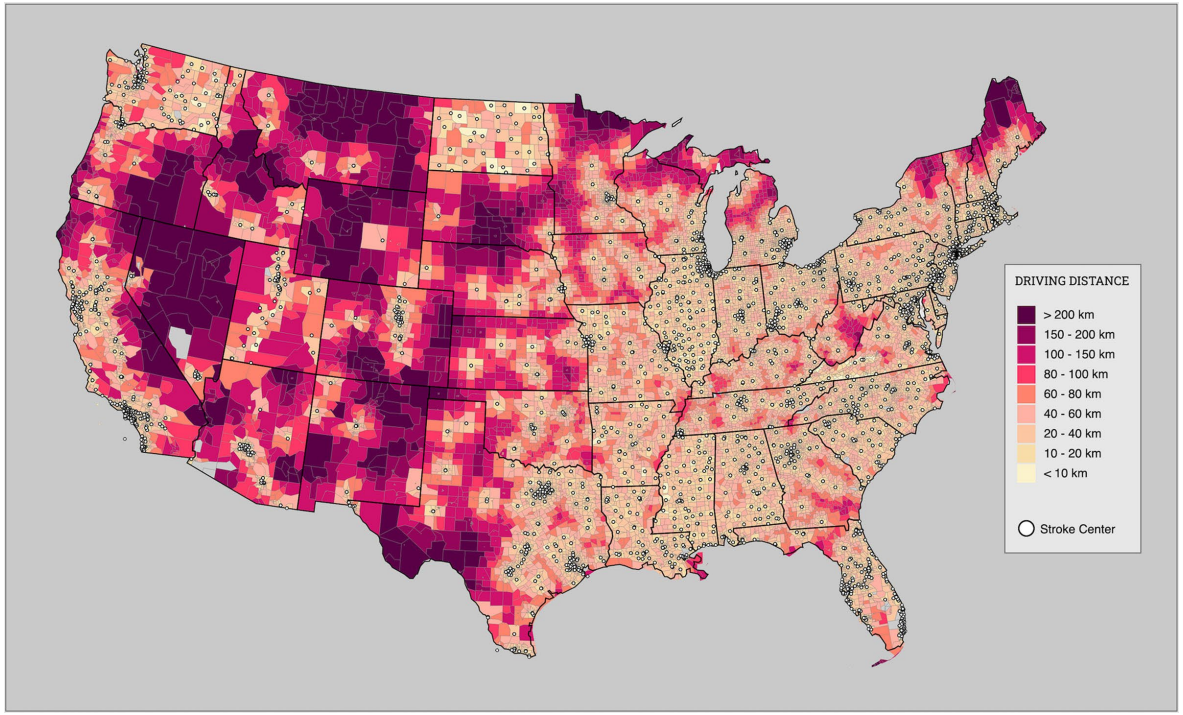
NEXT STEPS: 2024-2028



- Create maps by zip code health equity data to identify persons at highest risk; SDOH
- GIS mapping; map drive times to certified stroke centers
- Evaluate reperfusion therapy rates by highest risk persons
- Disseminate minority specific education materials to targeted communities
- Regionalize QI initiatives in collaboration with EMS

Yu, et al., 2021, *Stroke*

SUMMARY

- SEQIP created to improve cerebrovascular Stroke Systems of care
- Increased membership from 16 to 50 hospitals, 1 acute rehab hospital, 3 EMS agencies and other stakeholders
- Certified stroke centers increased from 6 to 42
- SEQIP sustained with no funding
- Significantly increased alteplase utilization and decreased DTN times c/w national data
- Ongoing performance improvement
- Ongoing collaboration with EMS, hospitals, and community partners
- Ongoing advocacy and sharing of best practices to drive policy
- Sustain funding for and collaboration with Coverdell partners