

# **Stroke Encounter Quality Improvement Project**

*Kentucky SEQIP Stroke Registry Data Summary*

## **Kentucky Heart Disease & Stroke Prevention Program**



Prepared for:

**Governor Steven L. Beshear**  
**Legislative Research Commission**  
**June 1, 2015**



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### PURPOSE

This data summary report is compiled in response to KRS 211.575, which requires the Kentucky Department for Public Health (KDPH) to establish and implement a plan to address continuous quality improvement for stroke care. KDPH is required to provide this annual report to the Governor and the Legislative Research Commission that includes data, related findings, and recommendations to improve the delivery of stroke care efforts in Kentucky.

### BACKGROUND

In 2008, the **Kentucky Stroke Encounter Quality Improvement Project** (SEQIP), a statewide quality improvement initiative, was developed through a collaborative effort between the Kentucky Heart Disease and Stroke Prevention (HDSP) Program, the Kentucky HDSP Task Force, and the American Heart Association/American Stroke Association (AHA/ASA). SEQIP was the first Kentucky Stroke Registry focusing on quality improvement initiatives. The goal was to implement evidence-based integrated cardiovascular health delivery systems and to support and advance the quality of care available to stroke patients in Kentucky.

SEQIP was designed to encourage collaboration between hospitals and stakeholders in Kentucky in order to improve the quality of care given to stroke patients. At inception, 16 hospitals were geographically chosen and invited to participate to represent the state as a whole. Quality and process improvement reports were generated and reviewed by SEQIP member hospitals. As the initiative has grown, additional hospitals have joined the effort. The data presented in this document is based on 18 certified stroke centers for which data is available for calendar year 2013. By the end of 2013, all 21 certified stroke centers in Kentucky were engaged in SEQIP. Currently there are 28 participating hospital systems engaged in SEQIP, 23 of which are certified stroke centers. Data from these additional centers will be reflected in future reports.

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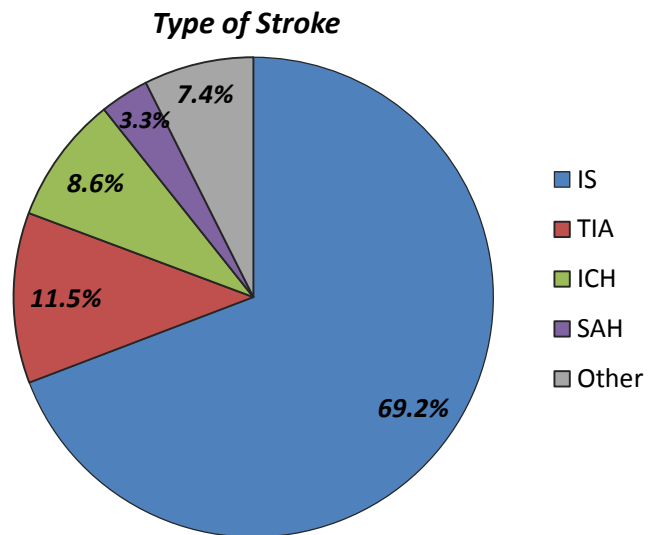
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### DEFINITIONS

- **Cerebrovascular event:** sudden loss of consciousness, sensation, or voluntary motion caused by rupture or obstruction (as by a clot) of a blood vessel of the brain
  
- **Ischemic Stroke (IS):** occurs when an artery to the brain is blocked resulting in inadequate blood supply and oxygen to the brain causing tissue death
  
- **Intracerebral Hemorrhage (ICH):** occurs when a diseased blood vessel within the brain bursts, allowing blood to leak inside the brain
  
- **Subarachnoid Hemorrhage (SAH):** occurs when a blood vessel just outside the brain ruptures. The area of the skull surrounding the brain (the subarachnoid space) rapidly fills with blood
  
- **Transient Ischemic Attack (TIA):** occurs when a blood clot temporarily blocks an artery and part of the brain does not get the blood flow it needs. The symptoms occur rapidly and usually last for a short time before resolving completely and leaving no permanent damage

### **DEMOGRAPHICS**

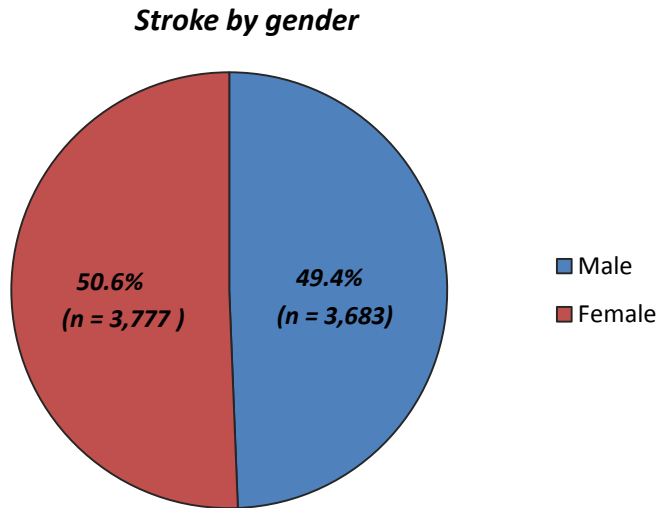
This report was compiled using de-identified patient data for participating SEQIP hospitals in Kentucky for calendar year 2013. The chart below displays the percentage of cerebrovascular events in Kentucky SEQIP hospitals. The most common type of stroke for 2013 was ischemic or IS (69.2%) followed by intracerebral hemorrhage or ICH (8.6%) and subarachnoid hemorrhage or SAH (3.3%). Additionally, transient ischemic attack (TIA) accounts for (11.5%) of SEQIP cases.



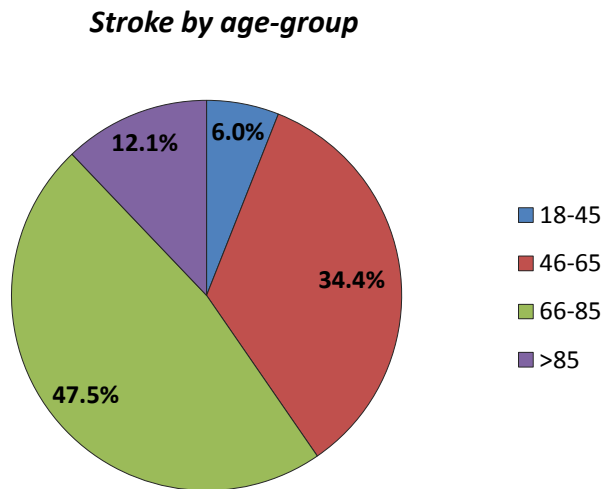
**Other:**  
*Stroke not otherwise specified = 0.4%*  
*No Stroke related Diagnosis = 0.3%*  
*Elective Carotid Intervention only = 3.2%*  
*Missing Diagnosis = 3.5%*

## WHO IS AFFECTED?

The chart below shows the breakdown of stroke by gender; 50.6% occurred in females compared to 49.4% in males.



The chart below shows the distribution of stroke by age-group. The majority of strokes occurred in people 66 years and older (59.6%).



### DEMOGRAPHICS

In the United States, on average, every 40 seconds someone has a stroke. Stroke is projected to affect an additional 3.4 million people by 2030.

Nationally, there are approximately 55,000 more strokes in women than men. SEQIP data for 2013 reveal slightly higher distribution of women having strokes compared to men.

In 2013, 7,460 stroke patients were admitted to the SEQIP hospitals in Kentucky.

Of all strokes, 40.4% occurred in the age group of 18 to 65 years. The AHA 2015 stroke statistics report indicates strokes occurring at a younger age are on the rise with an increased incidence of stroke in blacks and whites age 20-54.

The mean age for all stroke patients was 69.5 years and the median was 70 years.

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### PERFORMANCE MEASURES

**Early Antithrombotics:** patients receiving antithrombotic therapy by hospital day two

**Rehabilitation:** patients with stroke evaluated for rehabilitation services

**Stroke Education:** patients and caregivers educated on warning signs of stroke, their individual risk factors, medications, calling 9-1-1, and scheduling follow up appointments with their physicians

**Dysphagia Screening:** patients receiving a swallowing evaluation before being given any food, liquids or medications by mouth to insure they will not inhale food or water which can cause pneumonia

**Low Density Lipoprotein (LDL):** patients with LDL levels > 100 discharged on cholesterol lowering medication

**Smoking Cessation:** patients with history of tobacco use and their caregivers advised to quit smoking

**Anticoagulation for atrialfibrillation:** patients receiving medication to prevent blood clots that have a particular disturbance of their heart rhythm

**DVT Prophylaxis:** patients receiving deep vein thrombosis (DVT) prophylaxis by the end of hospital day two

**Antithrombotics at discharge:** ischemic stroke patients prescribed medication to prevent blood clots at discharge

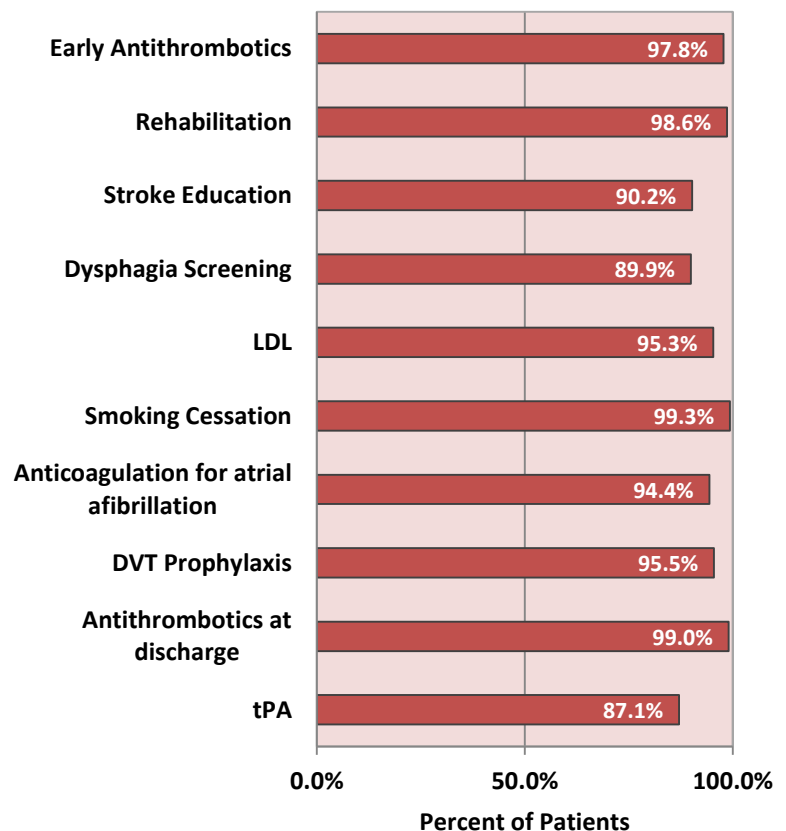
**Tissue Plasminogen Activator (tPA):** patients arriving within two hours of symptom onset and receiving intravenous IV-tPA – (a “clot busting” drug) within three hours of symptom onset

### **PERFORMANCE MEASURES**

Kentucky SEQIP hospitals utilize the performance measures found in the AHA/ASA’s nationally recognized Get With The Guidelines® – stroke hospital based quality improvement module that uses a data set platform with patient confidentiality standards. SEQIP collects data on 10 measures related to stroke that are evidence-based guidelines for the treatment and management of acute ischemic stroke from hospital admission to discharge.

The chart below is based on data reported by the participating hospitals between January and December 2013. The performance measures were developed by the Joint Commission, AHA, and the Centers for Disease Control and Prevention (CDC) for optimal treatment of ischemic strokes.

**Performance Measures**



**Kentucky SEQIP Hospitals Stroke Registry Data Summary**

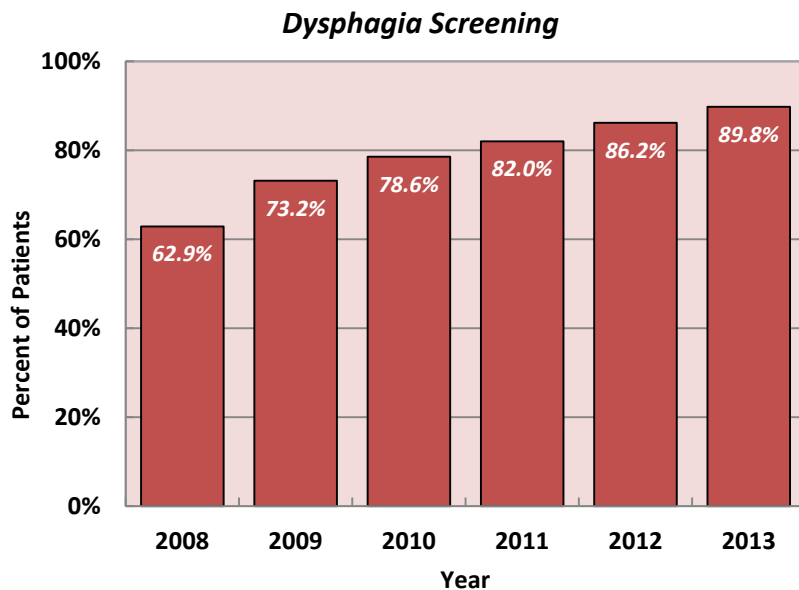
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**DYSPHAGIA SCREENING**

SEQIP member hospitals collaborate to choose performance measures, share best practices, and develop an action plan to address their quality improvement efforts. The first performance measurement chosen in 2008 was screening for dysphagia.

Dysphagia, or difficulty in swallowing, is a common occurrence in acute stroke. Early screening helps to manage stroke patients who could be vulnerable to weight loss, fluid depletion, malnutrition, and aspiration of food or liquid that can cause pneumonia. Patients who are unable to consume food or fluid by mouth may have poorer outcomes and prolonged hospital stays.

The chart below demonstrates that screening for dysphagia continues to improve and increased from 62.9% in 2008 to 89.8% in 2013. During the six year period from 2008 to 2013, dysphagia screening at certified stroke centers increased by 42.8%.



**CAUSES OF NUTRITIONAL IMPAIRMENT AFTER STROKE**

**Primary Factor**

- Dysphagia

**Secondary Factor**

- Upper limb paralysis
- Disturbance of sensory function
- Depression
- Cognitive changes affecting eating (e.g., attention-concentration deficit, forgetting to eat, eating too fast or too slowly)

**Dysphagia Screening Action Plan**

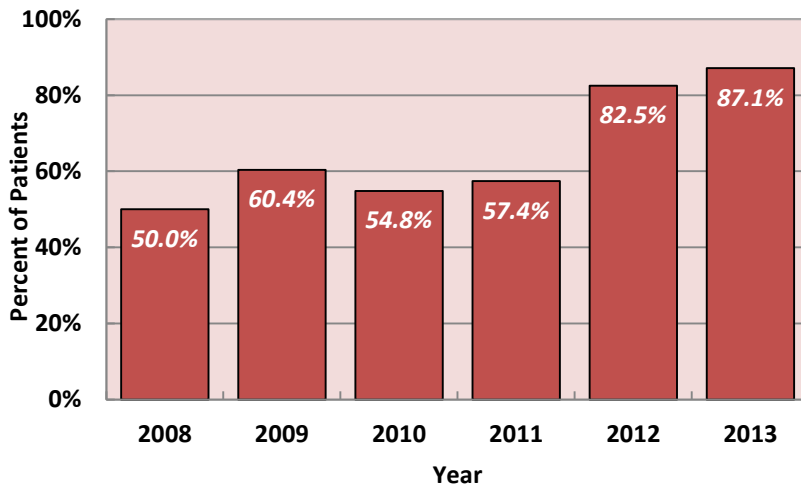
The hospitals identified and recruited a team of professionals (e.g., speech therapist, occupational therapist, physical therapist, discharge planner, dietician, and nurse) that developed policies to integrate dysphagia screening, including who, how, and when it would be performed. In addition, the stroke care staff received quarterly sessions on stroke training and education, which were later monitored for quality improvement.

### **IV tPA ADMINISTRATION**

The second performance measure SEQIP hospitals chose to target in 2010 was the percentage of eligible patients receiving IV tPA at their facilities. Specifically, this indicator measures the percentage of eligible ischemic stroke patients who arrive at the hospital emergency room within 120 minutes of symptom onset and receive IV tPA within 180 minutes of symptom onset. During calendar year 2013, the rate of IV tPA administration at SEQIP hospitals in eligible patients was 87.1%. This represents a significant improvement over prior years.

The chart below demonstrates that IV tPA administration for eligible patients continues to improve and increased from 50% in 2008 to 87.1% in 2013. Hence, compliance with this measure at Kentucky’s primary stroke centers has shown a 74.2% increase in that six year time frame.

**IV-tPA Administration**



At the end of 2012, SEQIP hospitals also began participating in the American Stroke Association’s quality improvement initiative, “Target Stroke.” The initiative’s focus is to improve door to needle times - time from arrival in the hospital to IV administration of tPA. Best practices on this process were a continued emphasis in 2014 and 2015.

### CAUSES OF FAILURE TO ADMINISTER IV tPA

#### Primary Factors

- Many hospitals are not able to evaluate stroke patients rapidly enough to meet the 3-hour time window once patients arrive
- Some physicians remain resistant to administering IV tPA

#### IV tPA Administration Action Plan

SEQIP hospitals examined each step from door to decision in the stroke patient’s chain of survival upon arrival to the emergency room. Processes and opportunities for improvement were identified. Barriers contributing to delay in treatment included waiting for critical lab results and for the pharmacy to mix IV tPA. Once hospitals identified their challenges, SEQIP meetings provided a forum for the exchange of best practices in improving administration of IV tPA to those eligible patients. Evidence has also shown that time to treatment makes a difference in outcomes. The earlier patients are treated from time of onset of symptoms, the better the outcomes. 1.9 million neurons are lost every minute of ischemia. Hence the saying, “Time is Brain.”

Sharing of best practice and support continues among hospitals to increase administration of IV tPA to eligible patients as well as improve door to needle times.



### **PRE-HOSPITAL MODE OF TRANSPORT**

#### **STROKE SYMPTOMS**

**Sudden** numbness or weakness of face, arm or leg – especially on one side of the body

**Sudden** confusion, trouble speaking or understanding

**Sudden** trouble seeing in one or both eyes

**Sudden** trouble walking, dizziness, loss of balance, or coordination

**Sudden** severe headache with no known cause

Anyone experiencing these symptoms or noticing these symptoms in another should immediately dial 9-1-1. It is also important to note the time the person was last known to be normal or at their baseline.

#### **2-Year SEQIP Initiative**

- Dissemination and education on the KBEMS recommended inter-facility stroke transfer protocol
- Data collection of additional quality metrics related to EMS transport protocols

#### **Notification and Response of Emergency Medical Services (EMS) for Stroke**

The notification and response of EMS for a stroke involves a complex interaction between the public, the applicable EMS programs, and the relevant hospital emergency departments.

The CDC recommends hospitals develop partnerships with local EMS providers and educate communities about the symptoms of stroke and the importance of dialing 9-1-1 when someone is experiencing symptoms of a stroke for timely treatment. It is also important for EMS and emergency dispatch operators to be trained in stroke symptom recognition and be able to assist these patients in quickly getting to the nearest hospital that is able to provide the “clot-busting” drug IV tPA within the three-hour window from symptom onset.

SEQIP has formed a work group to assess current stroke dispatch protocols and dispatcher stroke education by county in the Commonwealth. A work group has also been formed to develop a platform and a mechanism for dissemination of stroke education for EMS providers. The work group is working to develop online modules that meet the interactive format that the EMS providers prefer. Discussions are ongoing in an effort to meet their needs.

#### **Kentucky Board of EMS (KBEMS) Cardiac & Stroke Care Subcommittee**

Treatment is most effective if administered within three hours of symptom onset. EMS transport of stroke patients to a hospital equipped to treat strokes generally results in better outcomes in terms of reduced disability or death compared to patients who arrive by car or other forms of personal transport. Based on patients presenting to SEQIP hospitals in 2013, only 27.9% of stroke patients used EMS prior to hospital admission.



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The Kentucky Board of EMS (KBEMS) Cardiac & Stroke subcommittee has representation from SEQIP hospitals, which recognize the benefits of EMS involvement in acute stroke treatment and are in the process of developing an effective network of care in collaboration with EMS. SEQIP has also partnered with the KBEMS Cardiac & Stroke subcommittee to review the recommended stroke transport protocol and the inter-facility transfer protocol. Once these documents are finalized, SEQIP is committed to assisting the KBEMS Cardiac & Stroke subcommittee in educating and disseminating the protocols to EMS agencies throughout the state. In 2015, the passage of Senate Bill 10 (SB10) further supported this development by adding acute stroke ready hospitals and Certified Comprehensive Stroke Centers to Kentucky's existing designation program. SB 10 also defines the Department for Public Health's responsibilities for the program and requires local EMS entities to develop medical and transport protocols for stroke patients.

### **RECOMMENDATIONS**

Based on findings in this report, SEQIP hospitals recommend:

- Continued focus on improving dysphagia screening and IV tPA administration;
- Monitoring IV tPA door to needle times and achieving door to needle times  $\leq 60$  minutes in at least 50% of patients who receive IV tPA to coincide with national standards for stroke center certification;
- Continuing community education focused on calling 9-1-1 for stroke symptoms;
- Securing a commitment from SEQIP hospitals to enter data into the Get With The Guidelines<sup>®</sup> – stroke hospital based quality improvement module for all EMS transport and IV tPA documentation fields; and
- Implementing and monitoring the SEQIP two year plan for EMS initiatives & transport protocols

### **SUMMARY**

SEQIP hospitals have achieved significant quality improvement with their performance measures, dysphagia screening, and IV tPA administration. Hospitals in Kentucky continue to demonstrate their commitment to improving stroke systems of care. As of March 25, 2015 there are 21 certified primary stroke centers and two certified comprehensive stroke centers in the Commonwealth. All certified hospitals are engaged in SEQIP. Furthermore, SEQIP is a kyhealthnow strategy for the Reducing Cardiovascular Deaths by 10% goal.

From data provide by the Office for Health Policy for 2013, there were 14,801 stroke patients admitted to all hospitals in Kentucky. SEQIP hospitals collected data on 7,460 stroke patients, representing 50.4% of all strokes in Kentucky.

SEQIP's goal is to utilize data to impact advocacy and legislative initiatives that will drive systems change in the Commonwealth. Development of strong systems of care benefits all patients with stroke and those at risk of having a stroke. Strong partnerships and committed stakeholders are the infrastructure for building stroke systems of care that will improve patient outcomes through prevention and treatment.

**211.575 Statewide system for stroke response and treatment.**

- (1) As used in this section, "department" means the Department for Public Health.
- (2) The Department for Public Health shall establish and implement a plan for achieving continuous quality improvement in the quality of care provided under a statewide system for stroke response and treatment. In implementing the plan, the department shall:
  - (a) Maintain a statewide stroke database to compile information and statistics on stroke care as follows:
    1. The database shall align with the stroke consensus metrics developed and approved by the American Heart Association, the American Stroke Association, the Centers for Disease Control and Prevention, and the Joint Commission;
    2. The department shall utilize the "Get With The Guidelines-Stroke" quality improvement program maintained by the American Heart Association and the American Stroke Association or another nationally recognized program that utilizes a data set platform with patient confidentiality standards no less secure than the statewide stroke database established in this paragraph; and
    3. Require primary stroke centers as established in KRS 216B.0425 to report to the database each case of stroke seen at the facility. The data shall be reported in a format consistent with nationally recognized guidelines on the treatment of individuals within the state with confirmed cases of stroke;
  - (b) To the extent possible, coordinate with national voluntary health organizations involved in stroke quality improvement to avoid duplication and redundancy;
  - (c) Encourage the sharing of information and data among health care providers on methods to improve the quality of care of stroke patients in the state;
  - (d) Facilitate communication about data trends and treatment developments among health care professionals involved in the care of individuals with stroke;
  - (e) Require the application of evidence-based treatment guidelines for the transition of stroke patients upon discharge from a hospital following acute treatment to community-based care provided in a hospital outpatient, physician office, or ambulatory clinic setting; and
  - (f) Establish a data oversight process and a plan for achieving continuous quality improvement in the quality of care provided under the statewide system for stroke response and treatment, which shall include:
    1. Analysis of the data included in the stroke database;
    2. Identification of potential interventions to improve stroke care in specific geographic regions of the state; and
    3. Recommendations to the department and the Kentucky General Assembly for improvement in the delivery of stroke care in the state.
- (3) All data reported under subsection (2)(a) of this section shall be made available to the department and all government agencies or contractors of government agencies which are responsible for the management and administration of emergency medical services throughout the state.
- (4) On June 1, 2013, and annually on June 1 thereafter, the department shall provide a report of its data and any related findings and recommendations to the Governor and to the Legislative Research Commission. The report also shall be made available on the department's website.
- (5) Nothing in this section shall be construed to require the disclosure of confidential information or data in violation of the federal Health Insurance Portability and Accountability Act of 1996.

**Effective:** July 12, 2012

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