EMS Acute Stroke Care Toolkit

Sample County EMS System

Date of Toolkit Generation: 6/3/2007

Toolkit Date Range: 1/1/2007-6/3/2007

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EMS System Level of Service: EMT-Paramedic

EMS Similar System by Population Group: Wilderness EMS System = 25,000 people or less

EMS Similar System by Area Group: Rural EMS System = between 300 and 500 square miles

The EMS Acute Stroke Care Toolkit is a comprehensive analysis of an EMS System's stroke patient's demographics and care for the date range indicated above. This report provides a description of the care provided by the EMS System from several perspectives. Included in this EMS Toolkit is an analysis of EMS System performance, individual EMS personnel performance, and EMS patient care. Included in this Toolkit are comparative Benchmarks with other similar EMS Systems and with the entire state of North Carolina.

This Toolkit is divided into many sections representing a different component of an EMS System, its personnel, or patient care. With each section of this Toolkit, interventions are recommended based on the analysis of each EMS System. Each EMS System is encouraged to review this report fully along with the recommended interventions which could lead to EMS System stroke care improvement. After an intervention has been implemented within an EMS System and 3 to 6 months of EMS data (depending on the incidence of Stroke) has been collected within PreMIS, the EMS System should generate the EMS Acute Stroke Toolkit again. The repeated use of this toolkit will allow each EMS System to measure and monitor its performance and improvement.

Any questions regarding this EMS Acute Stroke Care Toolkit or any other Toolkit product should be directed to the EMS Performance Improvement Center (www.EMSPIC.org).

EMS Acute Stoke Care Toolkit
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Glossary of Terms

To better understand and apply this toolkit, a glossary of terms has been provided. It is most beneficial to read this glossary prior to reviewing the EMS Toolkit results.

Similar System by Population: The state has been divided into 4 groups of EMS Systems based on the population of the system (county) using 2000 Census data. The terms used are for EMS Toolkit benchmarking use only and do not reflect national or state government terminology. The groups are divided as follows:

Urban EMS System = Greater than 200,000 people
Suburban EMS System = 75,001 to 200,000 people
Rural EMS System = 25,001 to 75,000 people
Wilderness EMS System = 25,000 people or less

Similar System by Area: The state has been divided into 4 groups of EMS Systems based on the square miles (area) of the system (county) using state maintained statistics. The terms used are for EMS Toolkit benchmarking use only and do not reflect national or state government terminology. The groups are divided as follows:

Large EMS System = Greater than 750 square miles
Medium EMS System = Between 500 and 750 square miles
Rural EMS System = Between 300 and 500 square miles
Wilderness EMS System = Less than 300 square miles

State System: This refers to data calculations for the entire state which includes any and all EMS systems providing data. Typically calculations of state EMS data are based on averages or 90% Fractal measurements.

Minimum Value: The lowest number or smallest value for a specific measurement.

Maximum Value: The highest number or highest value for a specific measurement.

Average Value: The average is the sum (total amount) of all of the numbers divided by the number of items for a specific measurement.

Median Value: The middle point of a group of numbers.

90% Fractal Value: The value or measurement at which 90% of all events occur. This is typically used in time measurements to better standardize performance across systems.

Standard Deviation: A measurement of the how much variation or distance there is between values. The higher the standard deviation, the greater variability there is within a measurement.

n: The number of records or events considered in the calculation or measurement.

Lights and Sirens: A lights and sirens, emergent response to or from an EMS event.

No Lights and Sirens: A normal traffic speed response (no lights and sirens) to or from an EMS event.

Section A: EMS Acute Stroke Care Overview

Purpose: This section will provides descriptive information related to the acute stroke patients who have been cared for by the EMS System during the date range selected for this EMS Toolkit.

Definition of Acute Stroke Patient

For the EMS Acute Stroke Care Toolkit, an Acute Stroke Patient is defined as any patient presenting with focal neurologic findings or mental status changes which could represent an acute stroke event. It is not always possible for EMS to determine if stroke-like symptoms are acute or long standing. For this reason all patients with documented stroke-like symptoms are used within this EMS Toolkit.

Record Selection Information:

- An Acute Stroke Patient (E01_01 Patient Care Report Number) is identified by the following criteria:
  - The Unit Notified Date is used to select the records for the Date Range
  - Incident/Patient Disposition (E20_10) = No Treatment Required; Patient Refused Care; Treated and Released; Treated, Transported by EMS; Treated, Transferred Care; Treated, Transported by Law Enforcement; or Treated, Transported by Private Vehicle
  - An "Acute **Stroke Patient"** is any patient whose age is greater than 35 years of age
- In addition to the above criteria, one of the following criteria must be met:
  - An "Acute **Stroke Patient**" is defined by the use of the following protocol (E17_01):
    - Stroke/TIA
  - Any records with the Stroke Screen documented with the following is considered a "**Acute Stroke Patient**":
    - Cincinnati Stroke Scale Non-Conclusive
    - LA Stroke Scale Non-Conclusive
    - Cincinnati Stroke Scale Positive
    - LA Stroke Scale Positive

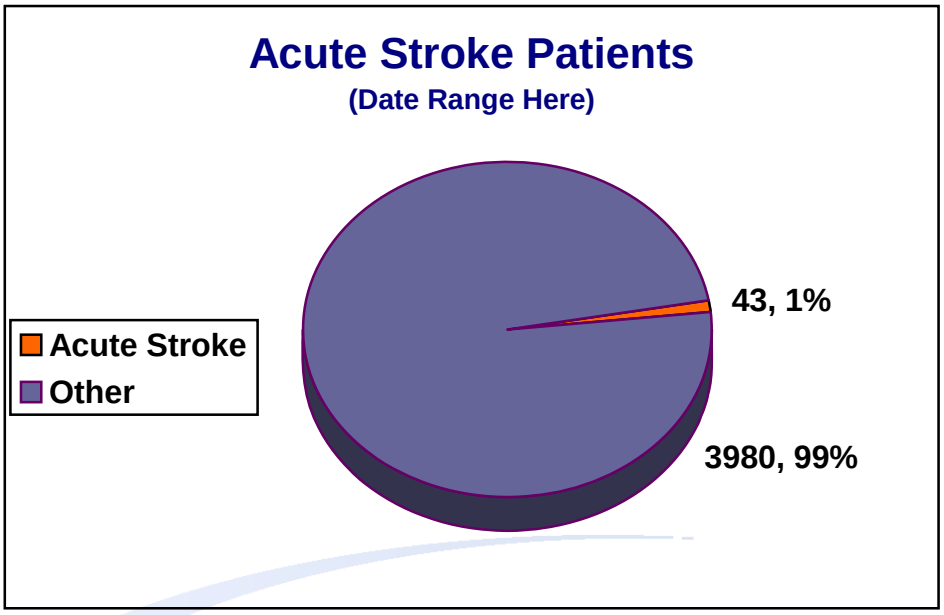
Required Data Elements

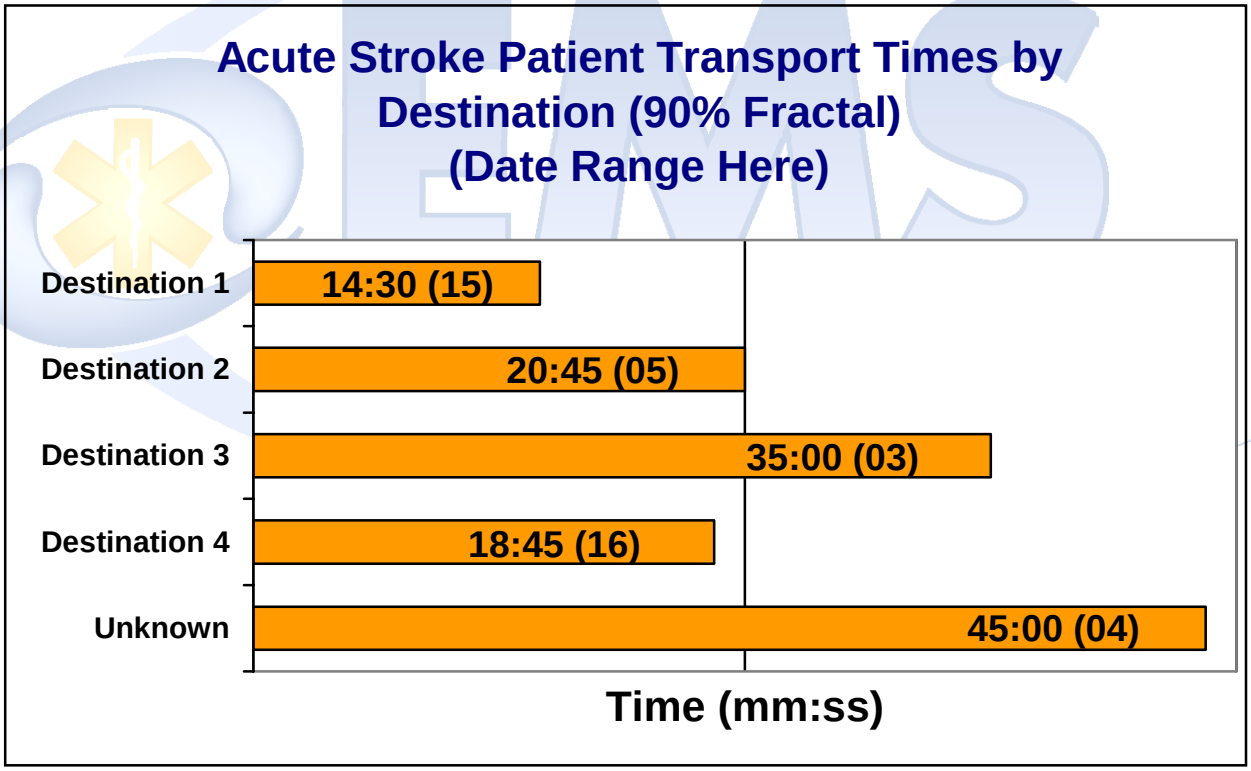
The following data elements are required to complete the analysis in this section:

- E02_04: Type of Service Requested
- E02_20: Response Mode to Scene
- E05_02: PSAP Call Date/Time
- E05_04: Unit Notified by Dispatch Date/Time
- E05_05: Unit En Route Date/Time
- E05_06: Unit Arrived on Scene Date/Time
- E05_09: Unit Left Scene Date/Time
- E05_10: Patient Arrived at Destination Date/Time
- E06_14: Age
- E06_15: Age Units
- E14_24: Stroke Screen
- E17_01: Protocols Used
- E20_01: Destination Name
- E20_10: Incident/Patient Disposition
- E20_14: Transport Mode from Scene

Sample County EMS System
Acute Stroke Care Toolkit Summary
January 1, 2007 through March, 30, 2007

	EMS System	State
Total Records found for Date Range	**5,000**	**250,000**
Total Patient Records Usable for Toolkit	**4,023 (80%)**	**200,000 (80%)**
✱ Acute Stroke Patients	43 (1%)	2,250 (1%)
✱ All Other Patients	3,980 (99%)	197,750 (99%)
Total Patients	**4,023**	**200,000**
Key EMS Time Intervals for Acute Stroke Patients		
✱ Dispatch Center Time (90% Fractal) in mm:ss	**03:15**	**02:00**
✱ EMS Wheels Rolling Time (90% Fractal) in mm:ss	**02:30**	**01:30**
✱ EMS Response Time (90% Fractal) in mm:ss	**13:30**	**14:15**
✱ EMS Scene Time (90% Fractal) in mm:ss	**12:45**	**14:00**
EMS Acute Stroke Patient Transport Times (90% Fractal) (mm:ss and number transported)		
✱ To Hospital East	**14:30 (15)**	
✱ To Hospital West	**20:45 (05)**	
✱ To Hospital South	**35:00 (03)**	
✱ To Hospital West	**18:45 (16)**	
✱ To Unknown Destination	**45:00 (04)**	





Section B: Data Quality and Completion

Purpose: This section will evaluate, analyze, and measure the completeness of the existing data submitted into PreMIS and the additional data elements collected at the time the EMS Acute Stroke Care Toolkit was generated for the selected date range.

Required Data Elements

Although many data elements are used in the EMS Stroke Care Toolkit, the following data elements are required for the EMS Toolkit to be generated.

* E02_04: Type of Service Requested
* E02_20: Response Mode to Scene
* E05_02: PSAP Call Date/Time
* E05_04: Unit Notified by Dispatch Date/Time
* E05_05: Unit En Route Date/Time
* E05_06: Unit Arrived on Scene Date/Time
* E05_09: Unit Left Scene Date/Time
* E05_10: Patient Arrived at Destination Date/Time
* E06_14: Age
* E06_15: Age Units
* E14_24: Stroke Screen
* E17_01: Protocols Used
* E20_01: Destination Name
* E20_10: Incident/Patient Disposition
* E20_14: Transport Mode from Scene

Acute Stroke Care Data Element Completion Rates

The following table lists all of the data elements which are used in the EMS Acute Stroke Care Toolkit. If any one of these data elements are missing, at least one piece of the EMS Acute Stroke Care Toolkit will either not function correctly or will be inaccurate in its description of the EMS System.

Acute Stroke Care Data Element Completion Rates

January 1, 2007 through March, 30, 2007

* Items shaded in Gray indicate that the EMS System is completing the Data Element less frequently than the State average.
* Items shaded in Red indicate that the EMS System is not collecting or providing the data to PreMIS.

Data Element	EMS System Completion Rate	State Completion Rate
D01_07: Level of Service	46%	75%
E01_01: Patient Care Report Number	100%	100%
E02_01: EMS Agency Number	100%	100%
E02_04: Type of Service Requested	100%	100%
E02_05: Primary Role of the Unit	100%	100%
E02_07: Type of Response Delay	20%	40%
E02_08: Type of Scene Delay	30%	35%
E02_09: Type of Transport Delay	50%	35%
E02_16: Beginning Odometer of Responding Vehicle	75%	80%
E02_17: On-Scene Odometer of Responding Vehicle	80%	95%
E02_18: Patient Destination Odometer of Responding Vehicle	100%	90%
E02_20: Response Mode to Scene	100%	100%
E03_01: Complaint Reported by Dispatch	75%	90%
E03_02: EMD Performed	10%	60%
E03_03: EMD Card Number	10%	20%
E04_01: Crew Member ID	90%	80%
E04_02: Crew Member Role	90%	80%
E05_02: PSAP Call Date/Time	100%	100%
E05_04: Unit Notified by Dispatch Date/Time	100%	100%
E05_05: Unit En Route Date/Time	95%	99%
E05_06: Unit Arrived on Scene Date/Time	96%	98%
E05_07: Arrived at Patient Date/Time	70%	80%
E05_09: Unit Left Scene Date/Time	0%	75%
E05_10: Patient Arrived at Destination Date/Time	98%	99%
E06_08: Patient's Home Zip Code	70%	85%
E06_11: Gender	100%	100%
E06_12: Race	80%	85%
E06_13: Ethnicity	69%	79%
E06_14: Age	100%	100%
E06_15: Age Units	100%	100%

Acute Stroke Care Data Element Completion Rates

January 1, 2007 through March, 30, 2007

* Items shaded in Gray indicate that the EMS System is completing the Data Element less frequently than the State average.
* Items shaded in Red indicate that the EMS System is not collecting or providing the data to PreMIS.

Data Element	EMS System Completion Rate	State Completion Rate
E07_01: Primary Method of Payment	80%	85%
E08_07: Incident Location Type	90%	88%
E08_13: Incident County	100%	100%
E08_14: Incident State	100%	100%
E08_15: Incident ZIP Code	85%	90%
E09_05: Chief Complaint	90%	98%
E09_06: Duration of Chief Complaint	60%	75%
E09_07: Time Units of Duration of Chief Complaint	60%	75%
E09_08: Secondary Complaint Narrative	20%	35%
E09_11: Chief Complaint Anatomic Location	100%	100%
E09_12: Chief Complaint Organ System	100%	100%
E09_13: Primary Symptom	100%	100%
E09_14: Other Associated Symptoms	60%	50%
E09_15: Providers Primary Impression	100%	100%
E09_16: Provider's Secondary Impression	75%	65%
E12_01: Barriers to Patient Care	20%	15%
E12_07: Advanced Directives	10%	12%
E14_01: Date/Time Vital Signs Taken	90%	99%
E14_02: Obtained Prior to this Units EMS Care	05%	12%
E14_03: Cardiac Rhythm	60%	75%
E14_04: SBP (Systolic Blood Pressure)	90%	85%
E14_05: DBP (Diastolic Blood Pressure)	80%	70%
E14_07: Pulse Rate	90%	89%
E14_09: Pulse Oximetry	76%	80%
E14_11: Respiratory Rate	90%	80%
E14_22: Level of Responsiveness	40%	80%
E14_23: Pain Scale	55%	70%
E14_24: Stroke Screen	30%	20%
E14_25: Thrombolytic Screen	10%	15%
E16_07: Chest/Lungs Assessment	60%	75%
E16_08: Heart Assessment	55%	80%
E16_23: Mental Status Assessment	88%	66%
E16_24: Neurological Assessment	80%	90%
E17_01: Protocols Used	85%	90%
E18_01: Date/Time Medication Administered	90%	99%
E18_02: Medication Administered Prior to this Units EMS Care	100%	100
E18_03: Medication Given	100%	100%

Acute Stroke Care Data Element Completion Rates

January 1, 2007 through March, 30, 2007

* Items shaded in Gray indicate that the EMS System is completing the Data Element less frequently than the State average.
* Items shaded in Red indicate that the EMS System is not collecting or providing the data to PreMIS.

Data Element	EMS System Completion Rate	State Completion Rate
E18_09: Medication Crew Member ID	70%	75%
E19_01: Date/Time Procedure Performed Successfully	90%	85%
E19_02: Procedure Performed Prior to this Units EMS Care	12%	18%
E19_03: Procedure	100%	100%
E19_05: Number of Procedure Attempts	90%	85%
E19_06: Procedure Successful	75%	89%
E19_09: Procedure Crew Members ID	80%	90%
E20_01: Destination/Transferred To, Name	100%	100%
E20_05: Destination State	100%	100%
E20_06: Destination County	100%	100%
E20_07: Destination Zip Code	100%	85%
E20_10: Incident/Patient Disposition	100%	100%
E20_14: Transport Mode from Scene	100%	100%
E20_15: Condition of Patient at Destination	65%	50%
E20_16: Reason for Choosing Destination	70%	65%
E20_17: Type of Destination	100%	100%
E22_01: Emergency Department Disposition	10%	05%
E22_02: Hospital Disposition	00%	01%
E23_10: Who Generated This Report	100%	100%

Additional EMS Acute Stroke Care Data Elements

There are a total of 7 data elements which are used in the EMS Acute Stroke Care Toolkit which are not collected through PreMIS. These data elements are collected at the time the EMS Toolkit is generated through an interactive web form. At the time this EMS Toolkit was generated, the following information was not provided.

Missing Additional Toolkit Data Elements January 1, 2007 through March, 30, 2007
No Additional Data Elements are Missing

Section C: County Acute Stroke Patient Statistics

Purpose: This section will evaluate, analyze, and provide insight into the frequency and Acute Cardiovascular Disease and Acute Stroke Patients within the EMS System. Information included in this section is taken from two sources:

- The Center for Disease Control and Prevention
- Data provided to PreMIS for the Date Range Selected

Based on year 2000 national census population data, the Sample County EMS System is considered a **Wilderness EMS System = 25,000 people or less**

For the EMS Toolkits, the service area (square miles) is consistent with a **Rural EMS System = between 300 and 500 square miles**

CDC Cardiovascular Disease Death Rates

The Center for Disease Control maintains Cardiovascular Disease Death Rates on every county in the United States. The Cardiovascular Disease Death Rate is the calculated based on the number of deaths related to coronary heart disease and hypertension. This chart describes the EMS System's cardiovascular disease death rate. The EMS System is also benchmarked with North Carolina and the United States. It is important to note that not all cardiovascular disease deaths are due to Acute Stroke. The higher the incidence of cardiovascular disease death rates, the higher incidence of Acute Stroke within any community. Death Rates are defined as the number of deaths per 100,000 population.

Record Selection Information:

- An Acute Stroke Patient (E01_01 Patient Care Report Number) is identified by the following criteria:
  - The Unit Notified Date is used to select the records for the Date Range
  - Incident/Patient Disposition (E20_10) = No Treatment Required; Patient Refused Care; Treated and Released; Treated, Transported by EMS; Treated, Transferred Care; Treated, Transported by Law Enforcement; or Treated, Transported by Private Vehicle
  - An "Acute **Stroke Patient"** is any patient whose age is greater than 35 years of age
- In addition to the above criteria, one of the following criteria must be met:
  - An "Acute **Stroke Patient**" is defined by the use of the following protocol (E17_01):
    - Stroke/TIA

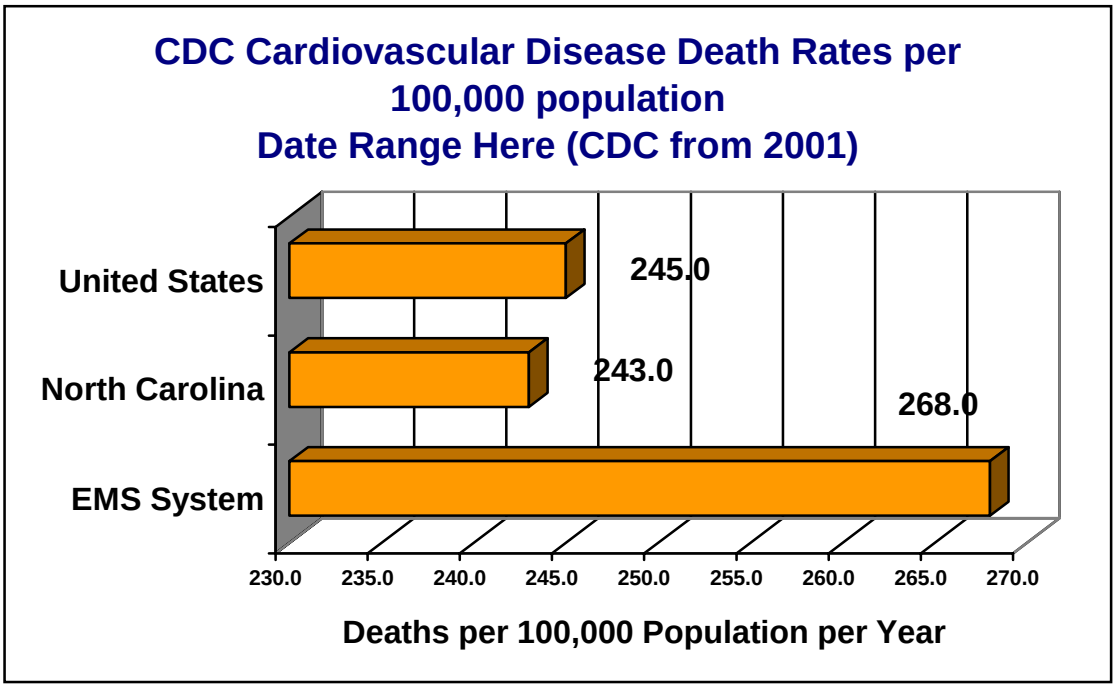
- Any records with the Stroke Screen documented with the following is considered a "**Acute Stroke Patient**":
  - Cincinnati Stroke Scale Non-Conclusive
  - LA Stroke Scale Non-Conclusive
  - Cincinnati Stroke Scale Positive
  - LA Stroke Scale Positive

Required Data Elements

The following data elements are required to complete the analysis in this section:

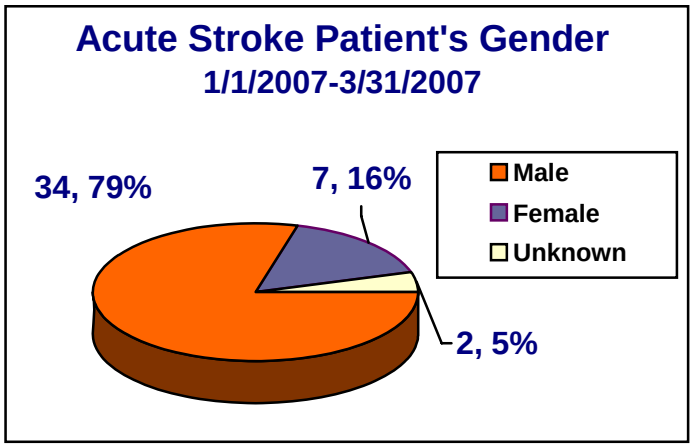
- E05_04: Unit Notified by Dispatch Date/Time
- E05_06: Unit Arrived on Scene Date/Time
- E06_06: Patient's Home County
- E06_08: Patient's Home Zip Code
- E06_11: Gender
- E06_12: Race
- E06_13: Ethnicity
- E06_14: Age
- E06_15: Age Units
- E06_16: Date of Birth
- E08_07: Incident Location Type
- E09_01: Prior Aid
- E11_05: First Monitored Rhythm of the Patient
- E14_01: Date/Time Vital Signs Taken
- E14_02: Obtained Prior to This Units EMS Care
- E14_03: Stroke Rhythm
- E14_24: Stroke Screen
- E17_01 Protocols Used
- E18_03: Medication Given
- E19_03: Procedures
- E20_10: Incident/Patient Disposition

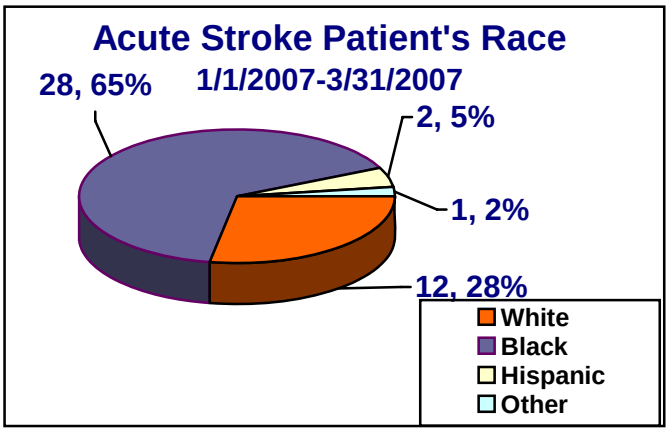
CDC Cardiovascular Disease Death Rates



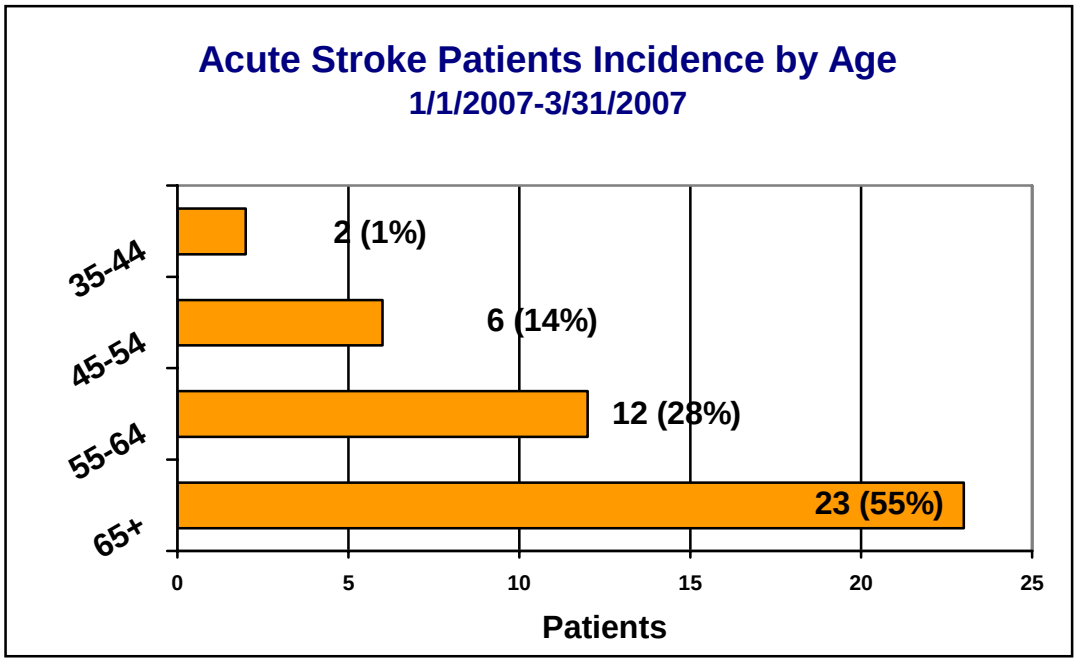
Age and Race Characteristics

The following charts describe the age, gender, and race of Acute Stroke Patients cared for by the EMS System.

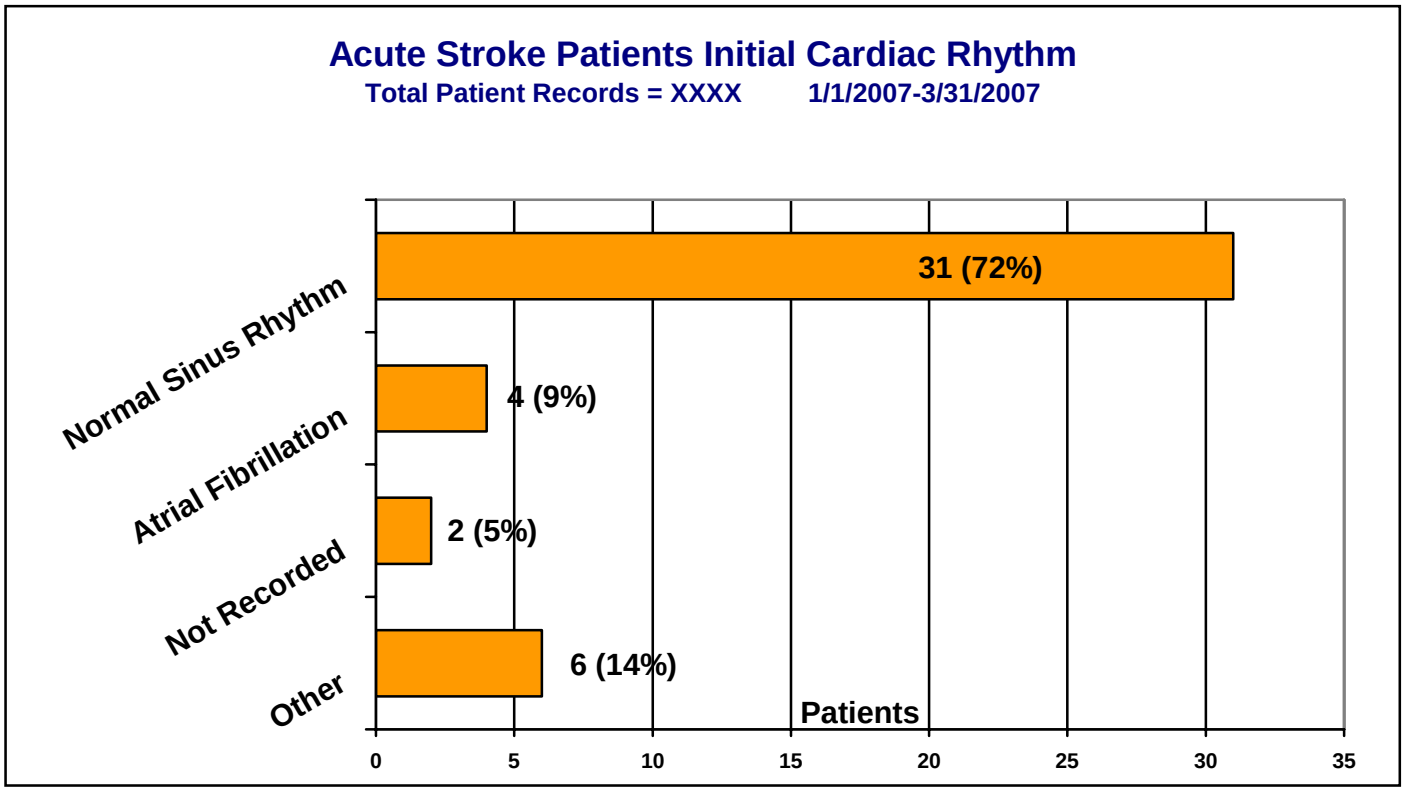




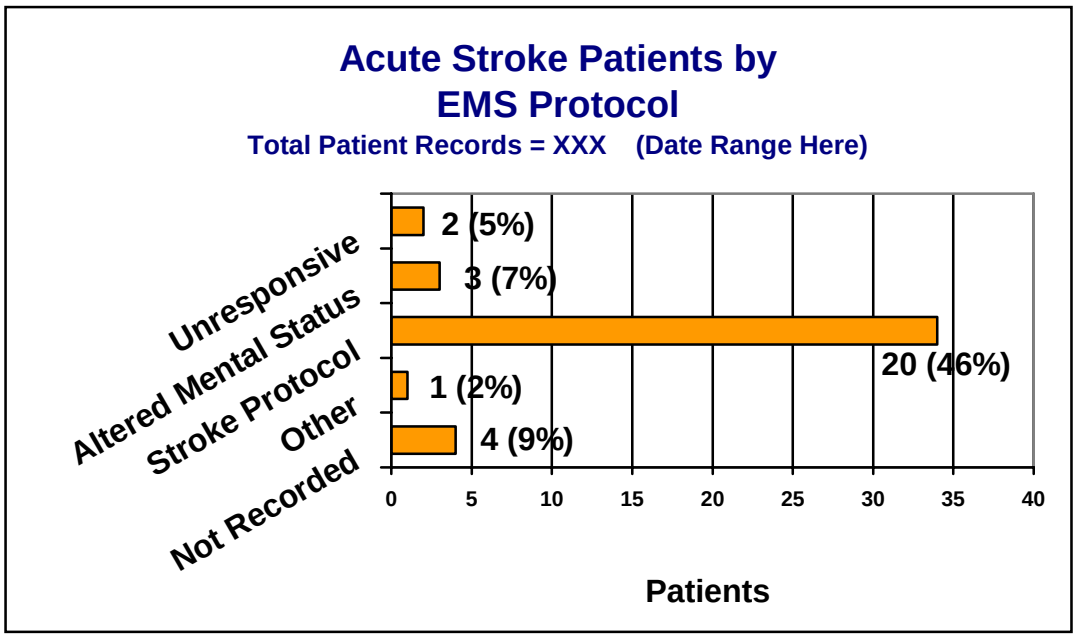
Acute Stroke Patients Age Distribution



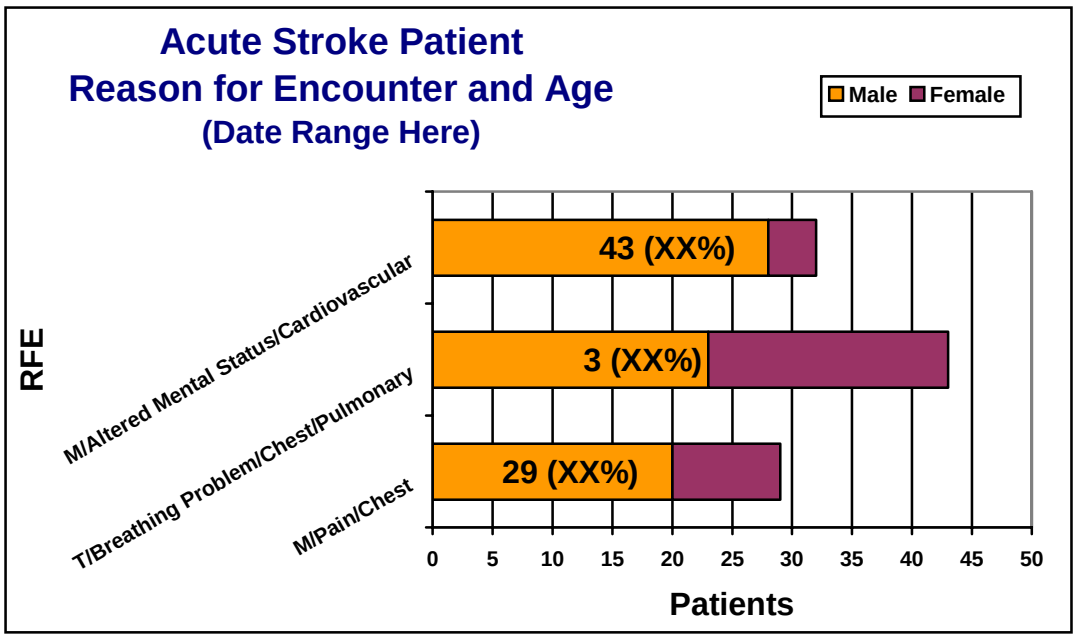
Acute Stroke Patients Initial Cardiac Rhythm



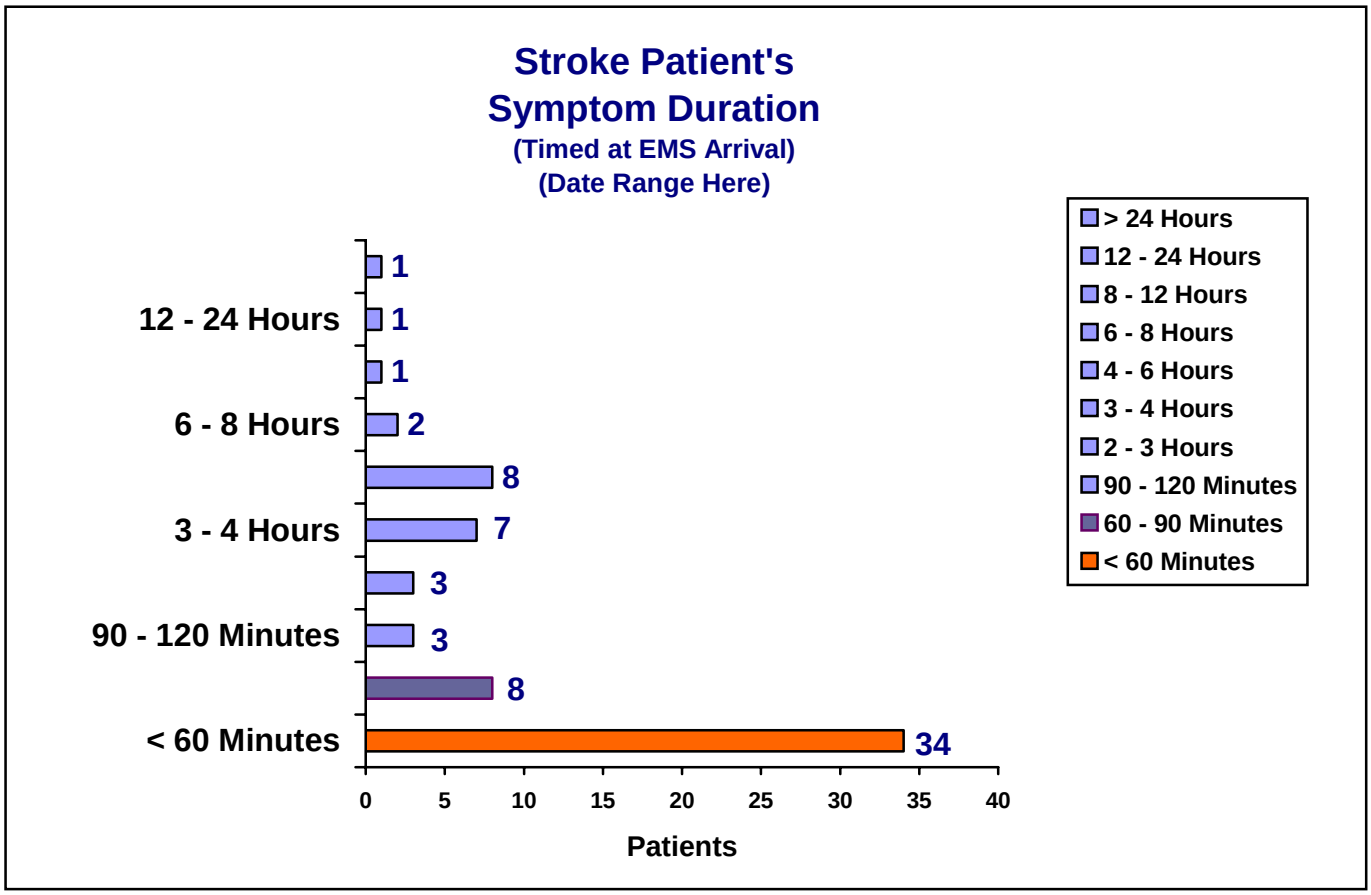
Acute Stroke Patients by EMS Protocol Used



Acute Stroke Patients based the Reason for Encounter and Age



Stroke Patients Symptom Duration Documented at EMS Arrival



Section D: EMS System Capability

Purpose: This section will describe the EMS Systems capability with respect to key functions or components important to timely EMS service delivery, reliable personnel performance, and quality patient care. Components of the EMS System evaluated in this section include:

- Dispatch Center
- EMS Personnel's Level of Care
- EMS System Structural Components
- Invasive Stroke Capable Hospital Information

Based on year 2000 national census population data, the (EMS System Name Here) EMS System is considered a Wilderness EMS System (Group X) = 25,000 people or less. For the EMS Toolkits, the service area (square miles) is consistent with a Rural EMS System (Group X) = between 300 and 500 square miles

The data elements required to complete the analysis in this section are based on the additional data elements collected either at the time this EMS Toolkit was generated or were collected as a part of the EMS System Response Toolkit. If any data elements are missing, please make sure you have generated an EMS System Response Toolkit and provided all of the information requested.

(EMS System Name Here) Statistics (Date Range Here)	EMS System	Group X (Population) Average	Group X (Sq. Miles) Average	State Average
Statistical Data				
* Population	**XXX,XXX**	XXX,XXX	XX,XXX	XXX,XXX
* Square Miles	**XXX,XXX**	XXX,XXX	XX,XXX	XXX,XXX
Census Data				
* % of the Population in Poverty	**XX%**	XX%	XX%	XX%
* % of the Population: White	**XX%**	XX%	XX%	XX%
* % of the Population: Black	**XX%**	XX%	XX%	XX%
* % of the Population: Hispanic	**XX%**	XX%	XX%	XX%
* % of the Population with a High School Degree or better	**XX%**	XX%	XX%	XX%
* Median Age	**XX**	XX	XX	XX
EMS Capabilities				
* Highest Level of Service	**EMT-P**	EMT-P (XX%)	EMT-P (XX%)	EMT-P (XX%)
* % of Population covered by First Responders	**XX%**	XX%	XX%	XX%
* % of 911 Dispatch Center Trained in Stroke Recognition	**XX%**	XX%	XX%	XX%
* % of EMS Personnel (EMT-Basic, Intermediate, and Paramedic) Trained in Stroke Recognition and Treatment	**XX%**	XX%	XX%	XX%
* Written Stroke Plan addressing patient destinations for the EMS System	**Yes/No**	XX (XX%) Yes	XX (XX%) Yes	XX (XX%) Yes
Dispatch Center				
* Basic 911	**Yes/No**	XX (XX%) Yes	XX (XX%) Yes	XX (XX%) Yes
* Enhanced 911	**Yes/No**	XX (XX%) Yes	XX (XX%) Yes	XX (XX%) Yes
* EMD	**Yes/No**	XX (XX%) Yes	XX (XX%) Yes	XX (XX%) Yes
* Phase 2 Compliance	**Yes/No**	XX (XX%) Yes	XX (XX%) Yes	XX (XX%) Yes
Hospital Capability				
* Hospital in County	**Yes/No**	XX (XX%) Yes	XX (XX%) Yes	XX (XX%) Yes
* Invasive Stroke Capable Hospital in County	**Yes/No**	XX (XX%) Yes	XX (XX%) Yes	XX (XX%) Yes
* Distance to Nearest Invasive Stroke Capable Hospital	**XX**	XX	XX	XX
* Ability to Bypass Hospital in County to go directly to Stroke Capable Hospital	**Yes/No**	XX (XX%) Yes	XX (XX%) Yes	XX (XX%) Yes

Section E: EMS System Performance

Purpose: This section will describe the EMS System's performance based on key indicators related to EMS System Response and Transport Times. Components of the EMS System evaluated in this section include:

- **E1. EMS Dispatch Center Time**
  - Defined as Unit Notified by Dispatch Time minus 911 Call Time
- **E2. EMS "Chute" Time or "Wheels Rolling" Time**
  - Defined as Unit En Route Time minus Unit Notified by Dispatch Time
- **E3. EMS Response Time**
  - Defined as Unit Arrived on Scene Time minus Unit Notified by Dispatch Time
- **E4. EMS Total Response Time**
  - Defined as Unit Arrived on Scene Time minus 911 Call Time
- **E5. EMS Scene Time**
  - Defined as Unit Left Scene Time minus Unit Arrived on Scene Time
- **E6. EMS Transport Time**
  - Defined as the Patient Arrived at Destination Time minus Unit Left Scene Time
- **E7. Total EMS Patient Contact Time**
  - Defined at the Patient Arrived at Destination Time minus 911 Call Time
- **E8. EMS Response Delays**
- **E9. EMS Scene Delays**
- **E10. EMS Transport Delays**

E1. EMS Dispatch Center Time

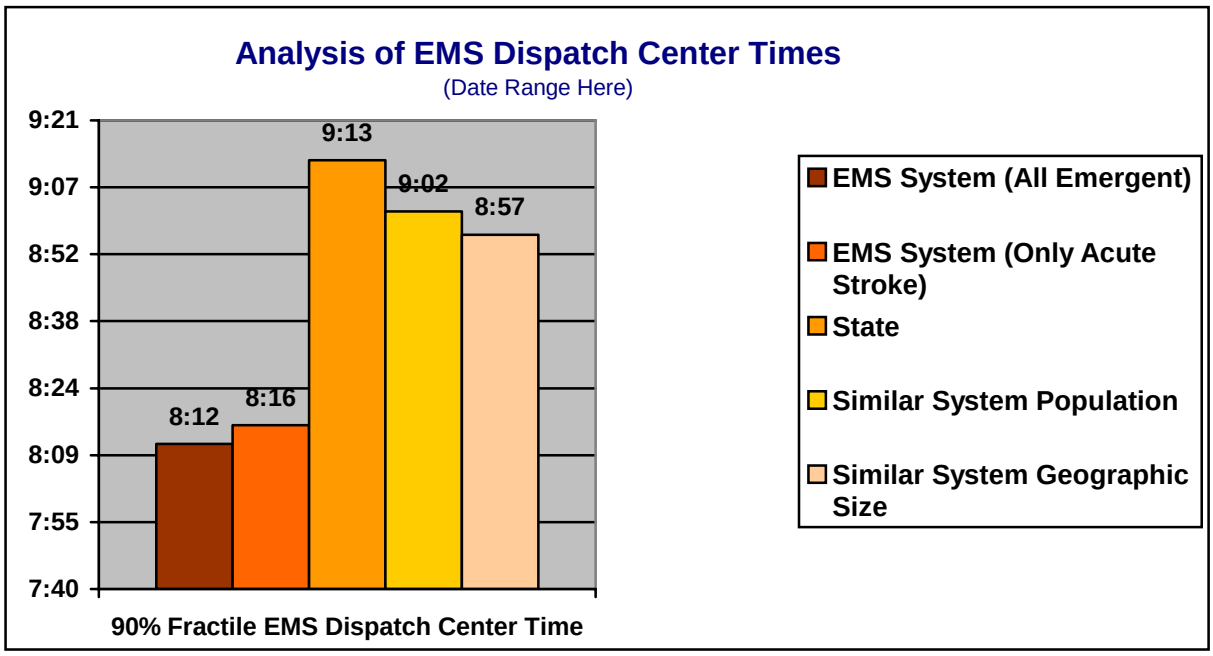
The following table describes the EMS Systems Dispatch Center Time. Dispatch Center Time is defined as the time beginning with the phone ringing in the 911 Call Center until the EMS Unit is notified to respond by dispatch.

The EMS Systems information is provided in two categories:
- All emergency "Lights and Sirens" dispatched events
- Only Acute Stroke Care Patients.

Comparison data provided for similar EMS Systems and the state are based on all emergent "Lights and Sirens" dispatched events.

Data Elements which are required for this table and chart include:
- E02_04: Type of Service Requested
- E02_20: Response Mode to Scene
- E05_04: Unit Notified by Dispatch Date/Time
- E05_02: PSAP Call Date/Time

(EMS System Name Here) EMS Dispatch Center Time (Date Range Here)						
System	Number Of Events	Minimal Value	Maximum Value	Average Value	90% Fractile	Standard Deviation
EMS System (all emergent)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
EMS System (Acute Stroke)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
State	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Pop)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Area)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS



E2. EMS "Chute" Time or "Wheels Rolling Time"

The following table describes the EMS Systems "Chute" or "Wheels Rolling Time". This time is defined as the time beginning with the EMS Unit being notified to respond by dispatch and the actual wheels moving (Unit En Route Time) time when the EMS vehicle begins moving toward the scene.

The EMS Systems information is provided in two categories:

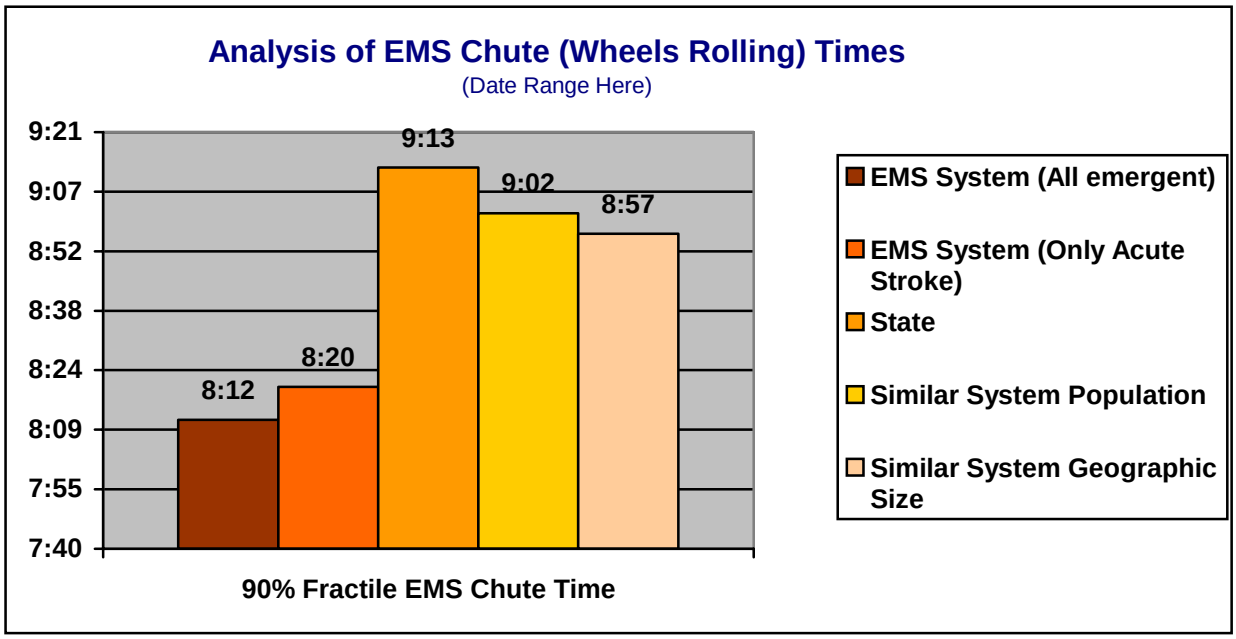
- All emergency "Lights and Sirens" dispatched events
- Only Acute Stroke Care Patients.

Comparison data provided for similar EMS Systems and the state are based on all emergent "Lights and Sirens" dispatched events.

Data Elements which are required for this table and chart include:

- E02_04: Type of Service Requested
- E02_20: Response Mode to Scene
- E05_04: Unit Notified by Dispatch Date/Time
- E05_05: Unit En Route Date/Time

(EMS System Name Here) EMS Chute (Wheels Rolling) Time (Date Range Here)						
System	Number Of Events	Minimal Value	Maximum Value	Average Value	90% Fractal	Standard Deviation
EMS System (All emergent)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
EMS System (Acute Stroke)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
State	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Pop)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Area)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS



E3. EMS System Response Time

The following table describes the EMS System's Response Time. EMS Response Time is defined as the time beginning with the EMS Unit moving toward the scene and ending when the EMS unit arrives at the scene.

The EMS Systems information is provided in two categories:

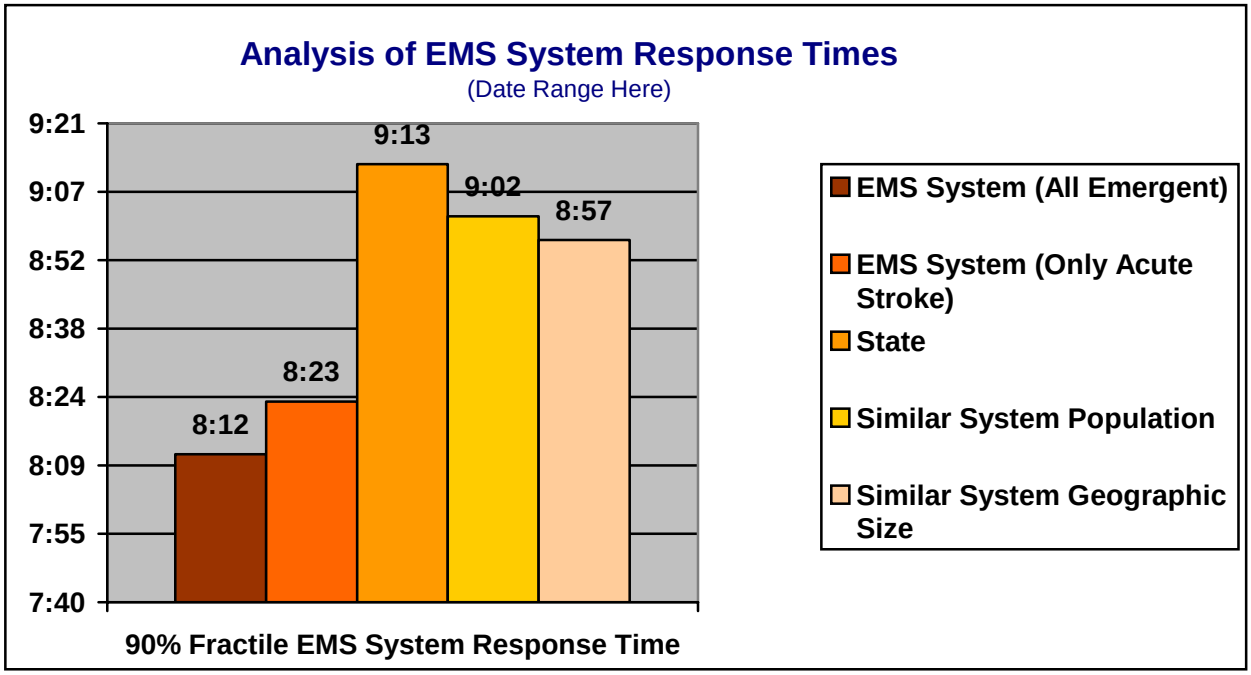
- All emergency "Lights and Sirens" dispatched events
- Only Acute Stroke Care Patients.

Comparison data provided for similar EMS Systems and the state are based on all emergent "Lights and Sirens" dispatched events.

Data Elements which are required for this table and chart include:

- E02_04: Type of Service Requested
- E02_20: Response Mode to Scene
- E05_04: Unit Notified by Dispatch Date/Time
- E05_05: Unit En Route Date/Time
- E05_06: Unit Arrived on Scene Date/Time

(EMS System Name Here) EMS System Response Time (Date Range Here)						
System	**Number Of Events**	**Minimal Value**	**Maximum Value**	**Average Value**	**90% Fractal**	**Standard Deviation**
EMS System (All Emergent)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
EMS System (Only Stroke)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
State	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Pop)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Area)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS



E4. EMS System Total Response Time

The following table describes the EMS System's Total Response Time. The Total EMS Response Time is defined as the time beginning with the phone ringing in the 911 Call Center until the EMS Unit arrives at the scene.

The EMS Systems information is provided in two categories:

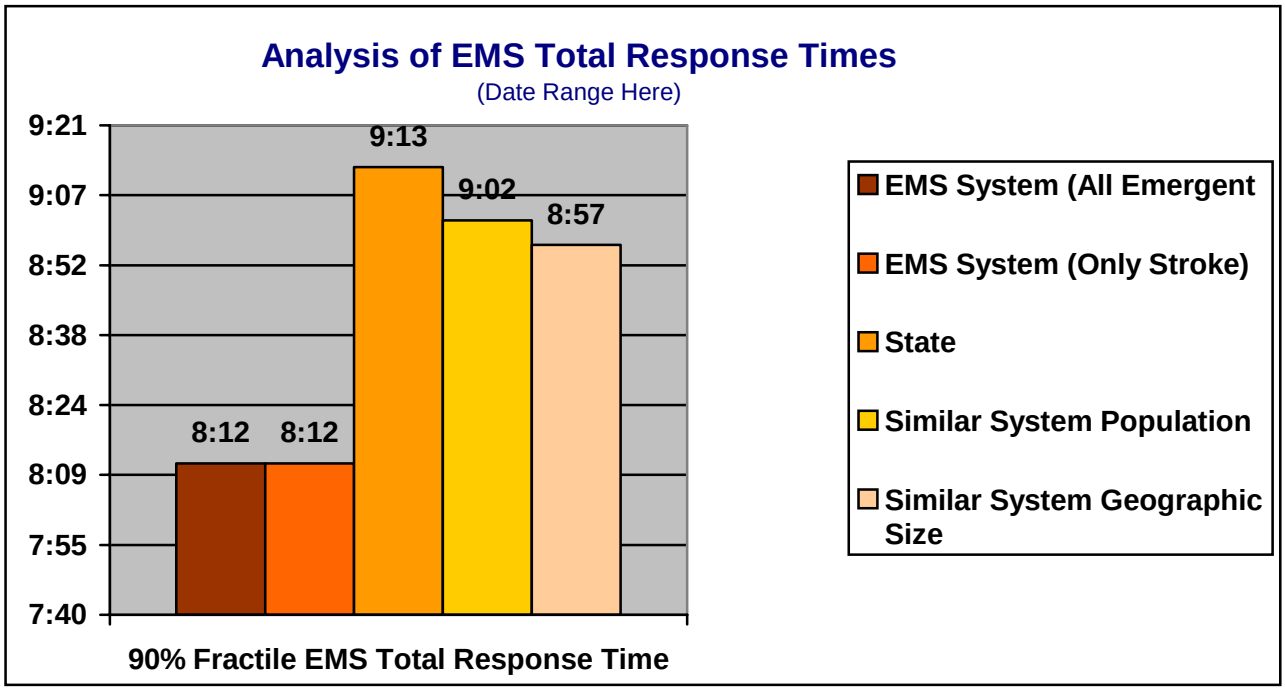
- All emergency "Lights and Sirens" dispatched events
- Only Acute Stroke Care Patients.

Comparison data provided for similar EMS Systems and the state are based on all emergent "Lights and Sirens" dispatched events.

Data Elements which are required for this table and chart include:

- E02_04: Type of Service Requested
- E02_20: Response Mode to Scene
- E05_04: Unit Notified by Dispatch Date/Time
- E05_02: PSAP Call Date/Time
- E05_06: Unit Arrived on Scene Date/Time

(EMS System Name Here) EMS Total Response Time (Date Range Here)						
System	Number Of Events	Minimal Value	Maximum Value	Average Value	90% Fractal	Standard Deviation
EMS System (All Emergent)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
EMS System (Only Stroke)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
State	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Pop)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Area)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS



E5. EMS Scene Time

The following table describes the EMS System's Scene Time. The EMS Scene Time is defined as the time beginning with the EMS Unit arriving at the scene until the EMS Unit leaves the scene with the patient en route to the destination.

The EMS Systems information is provided in two categories:

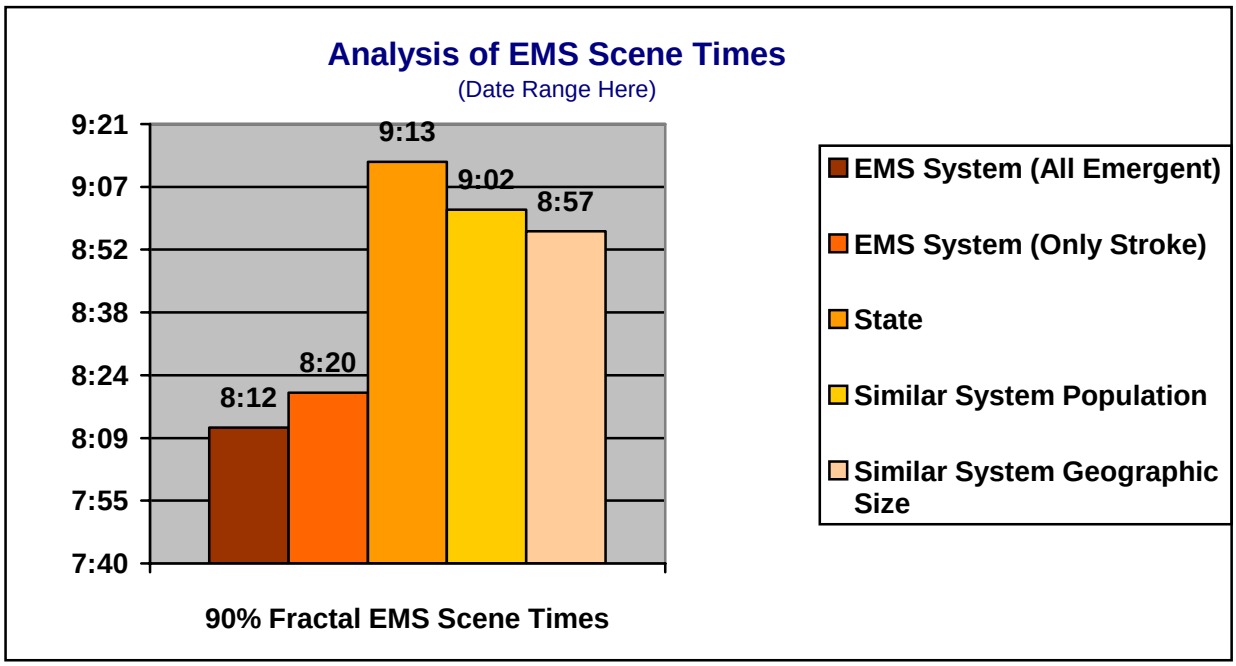
- All emergency "Lights and Sirens" transport events
- Only Acute Stroke Care Patients.

Comparison data provided for similar EMS Systems and the state are based on all emergent "Lights and Sirens" transported events.

Data Elements which are required for this table and chart include:

- E02_04: Type of Service Requested
- E05_04: Unit Notified by Dispatch Date/Time
- E05_06: Unit Arrived on Scene Date/Time
- E05_09: Unit Left Scene Date/Time
- E20_14: Transport Mode from Scene

(EMS System Name Here) EMS Scene Time (Date Range Here)						
System	Number Of Events	Minimal Value	Maximum Value	Average Value	90% Fractal	Standard Deviation
EMS System (All Emergent)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
EMS System (Only Stroke)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
State	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Pop)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Area)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS



E6. EMS System Transport Time

The following table describes the EMS System's Transport Time. The EMS Transport Time is defined as the time beginning with the EMS Unit leaving the scene with the patient until the patient arrives at the destination.

The EMS Systems information is provided in two categories:

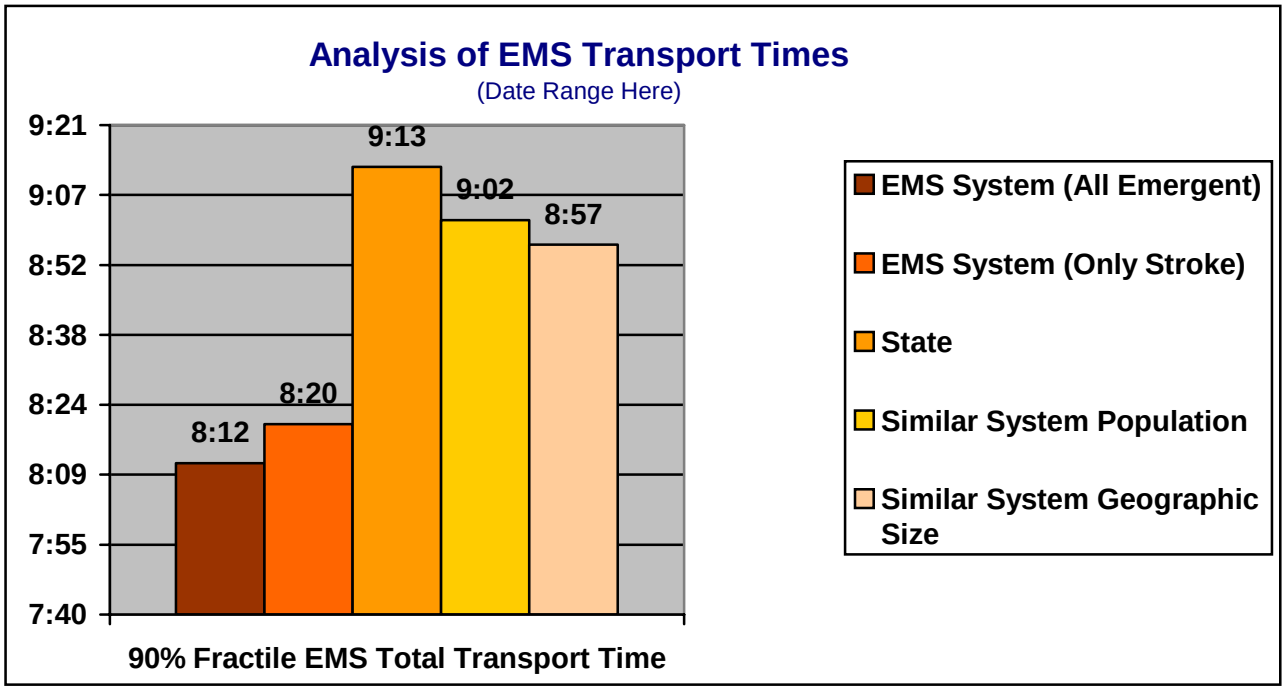
- All emergency "Lights and Sirens" transport events
- Only Acute Stroke Care Patients.

Comparison data provided for similar EMS Systems and the state are based on all emergent "Lights and Sirens" transported events.

Data Elements which are required for this table and chart include:

- E02_04: Type of Service Requested
- E05_04: Unit Notified by Dispatch Date/Time
- E05_09: Unit Left Scene Date/Time
- E05_10: Patient Arrived at Destination Date/Time
- E20_14: Transport Mode from Scene

(EMS System Name Here) EMS Transport Time (Date Range Here)						
System	Number Of Events	Minimal Value	Maximum Value	Average Value	90% Fractal	Standard Deviation
EMS System (All Emergent)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
EMS System (Only Stroke)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
State	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Pop)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Area)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS



E7. EMS Total Patient Contact Time

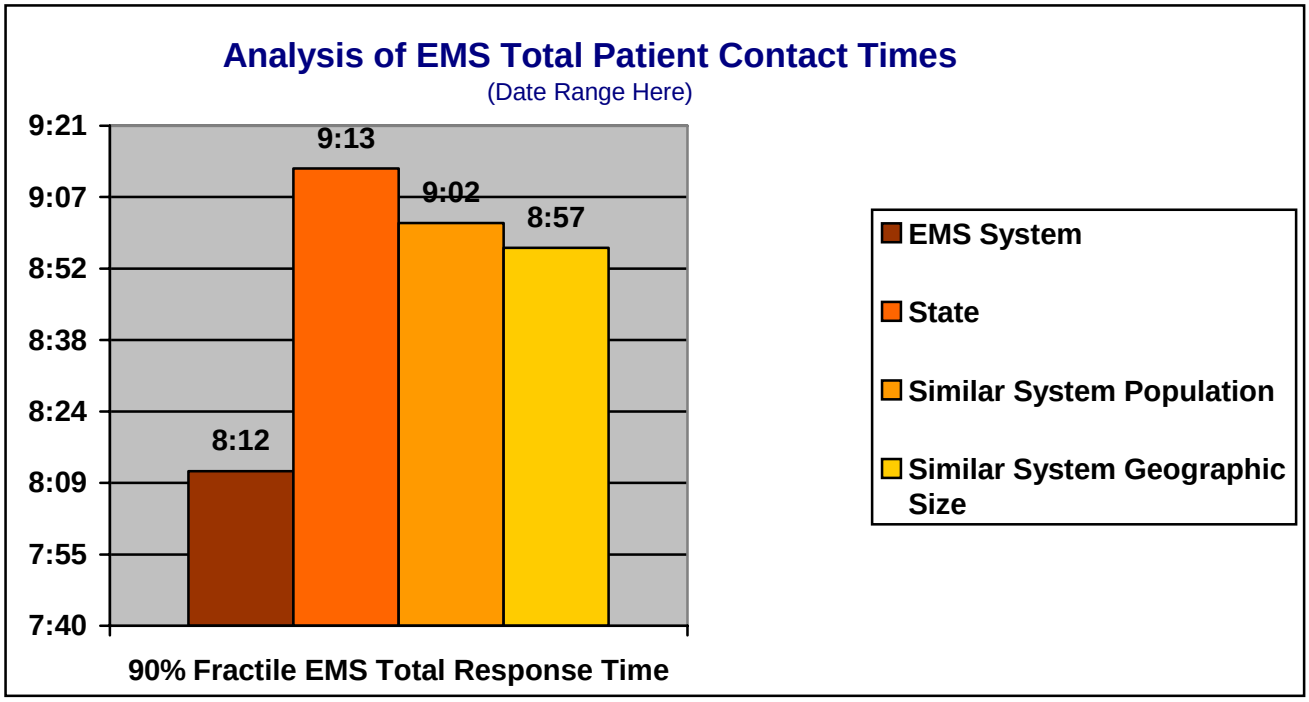
The following table describes the EMS System's Total Patient Contact Time. The EMS Total Patient Contact Time is defined as the time beginning with phone call to the 911 center and ending with the patient's arrival to the hospital destination.

For this analysis only EMS events involving Acute Stroke Care Patients were used.

Data Elements which are required for this table and chart include:

- E02_04: Type of Service Requested
- E05_04: Unit Notified by Dispatch Date/Time
- E05_02: PSAP Call Date/Time
- E05_10: Patient Arrived at Destination Date/Time

(EMS System Name Here) EMS Total Patient Contact Time (Date Range Here)						
System	Number Of Events	Minimal Value	Maximum Value	Average Value	90% Fractal	Standard Deviation
EMS System	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
State	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Pop)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS
Similar EMS System (by Area)	XX,XXX	MM:SS	MM:SS	MM:SS	MM:SS	MM:SS



E8. EMS System Response Delays

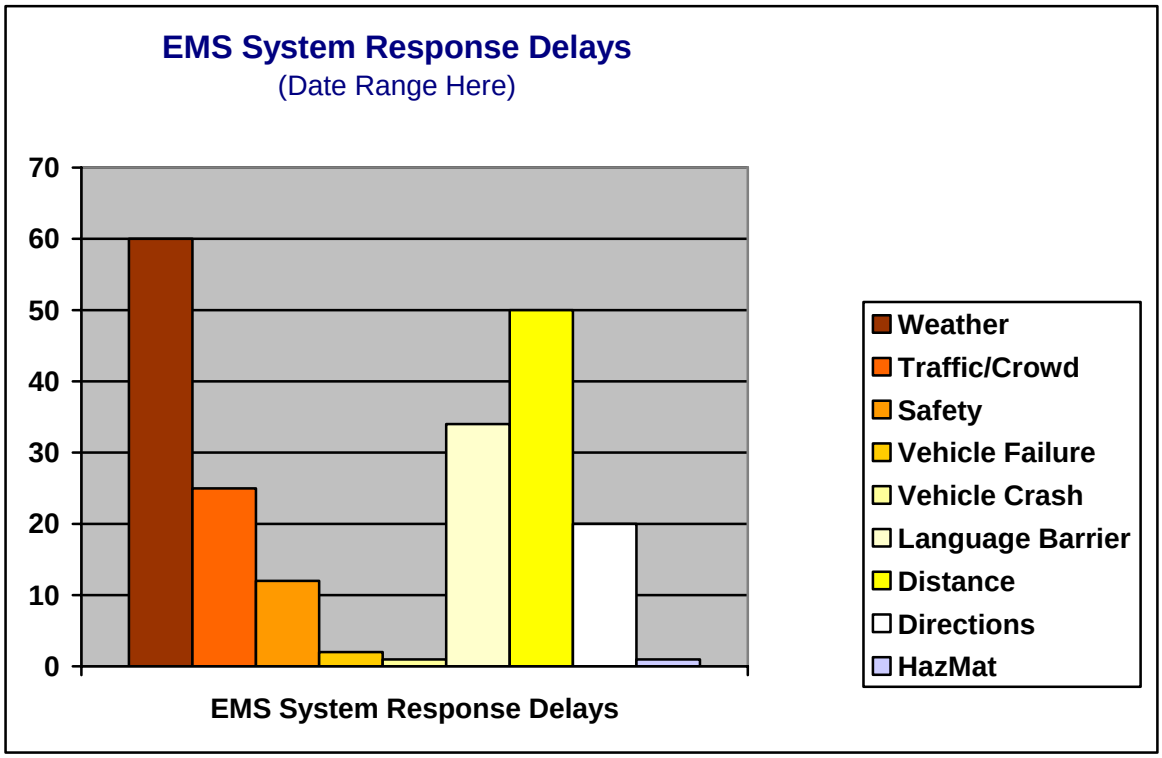
The following table describes the EMS System's Response Delays documented for the EMS Toolkit date range.

For this analysis only EMS events involving Acute Stroke Care Patients were used.

Data Elements which are required for this table and chart include:

- E05_04: Unit Notified by Dispatch Date/Time
- E02_07: Type of Response Delay

(EMS System Name Here) EMS Response Delays (Date Range Here)		
System Events	**Number Of Delays**	**Percentage Of Total EMS Responses**
Weather	XXXX	%
Traffic/Crowd	XXXX	%
Safety	XXXX	%
Vehicle Failure	XXXX	%
Vehicle Crash	XXXX	%
Language Barrier	XXXX	%
Distance	XXXX	%
Directions	XXXX	%
HazMat	XXXX	%
Total Events with Delays	**XXXX**	**%**



E9. EMS System Scene Delays

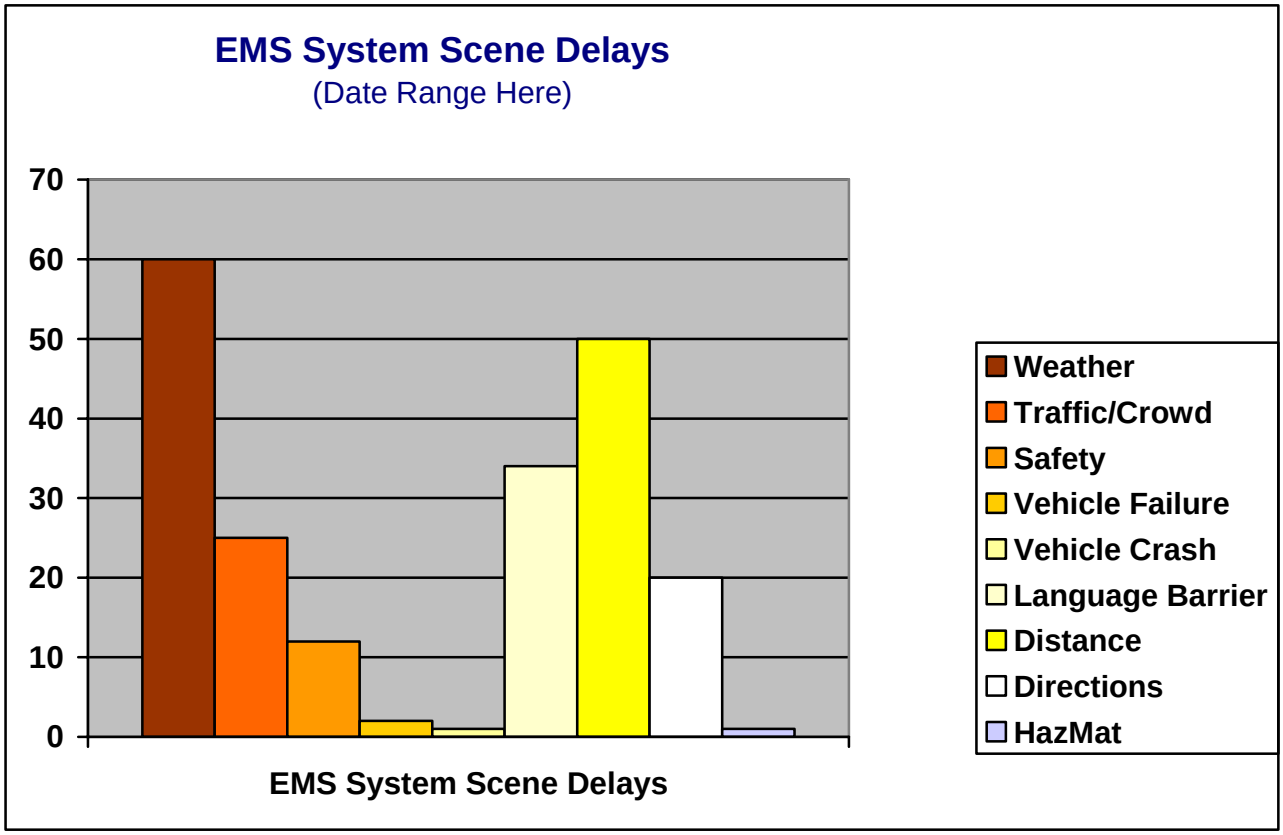
The following table describes the EMS System's Response Delays documented for the EMS Toolkit date range.

For this analysis only EMS events involving Acute Stroke Care Patients were used.

Data Elements which are required for this table and chart include:

- E05_04: Unit Notified by Dispatch Date/Time
- E02_08: Type of Scene Delay

(EMS System Name Here) EMS Scene Delays (Date Range Here)		
System Events	**Number Of Delays**	**Percentage Of Total EMS Responses**
Weather	XXXX	%
Traffic/Crowd	XXXX	%
Safety	XXXX	%
Vehicle Failure	XXXX	%
Vehicle Crash	XXXX	%
Language Barrier	XXXX	%
Distance	XXXX	%
Directions	XXXX	%
HazMat	XXXX	%
Total Events with Delays	**XXXX**	**%**



E10. EMS System Transport Delays

The following table describes the EMS System's Response Delays documented for the EMS Toolkit date range.

For this analysis only EMS events involving Acute Stroke Care Patients were used.

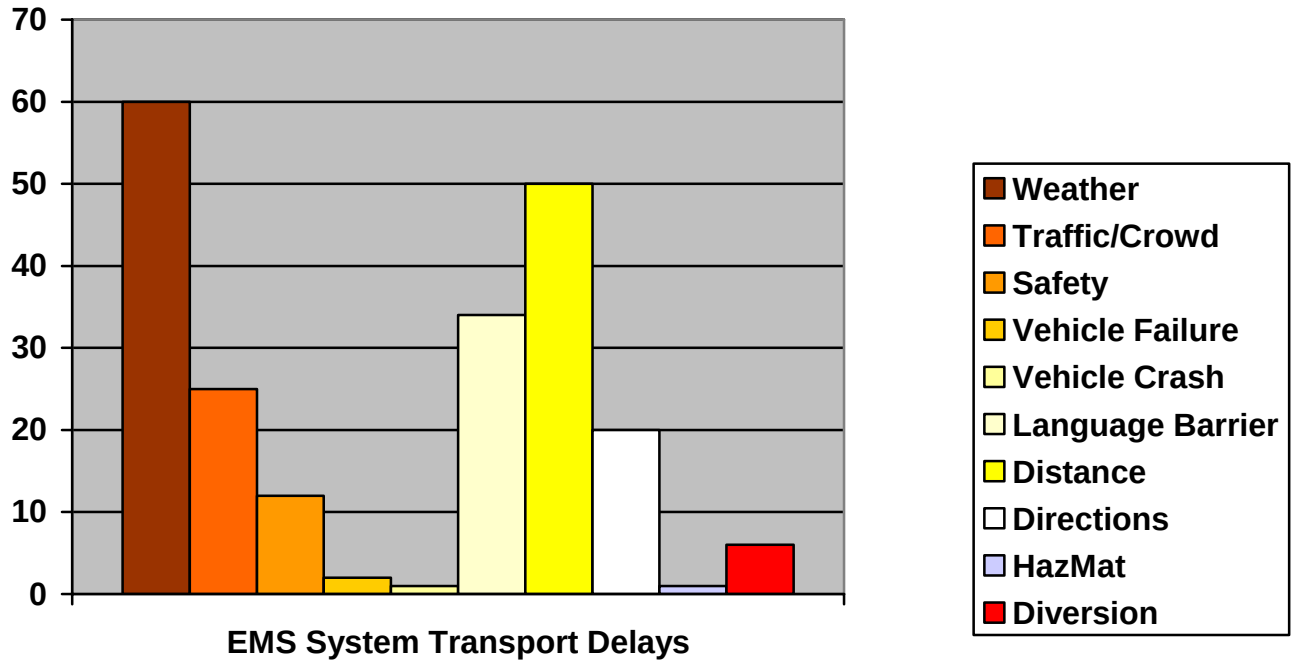
Data Elements which are required for this table and chart include:

- E05_04: Unit Notified by Dispatch Date/Time
- E02_07: Type of Response Delay

(EMS System Name Here) EMS Transport Delays (Date Range Here)		
System Events	**Number Of Delays**	**Percentage Of Total EMS Responses**
Weather	XXXX	%
Traffic/Crowd	XXXX	%
Safety	XXXX	%
Vehicle Failure	XXXX	%
Vehicle Crash	XXXX	%
Language Barrier	XXXX	%
Distance	XXXX	%
Directions	XXXX	%
HazMat	XXXX	%
Diversion	XXXX	%
Total Events with Delays	**XXXX**	**%**

EMS System Transport Delays

(Date Range Here)



Section F: EMS Personnel and System Performance

Purpose: This section will evaluate and analyze EMS personnel performance related to the key procedures and treatment associated with the care of an acute stroke patient. Each EMS System's performance on these same procedures is also analyzed and compared to the state.

Procedures and Treatment critical to quality acute stroke care include:

- Documentation of History, Onset of Symptoms, Vital Signs, and Exam
- Documentation of a Stroke Screen
- Glucose Measurement
- Documentation of the Cardiac Rhythm
- Documentation of the Thrombolytic Screen
- Scene Time of less than 10 minutes

EMS Personnel Documentation

The following table describes the EMS System's Personnel Documentation of service delivery and patient care. This information is based on the completeness of each EMS patient care report for each Acute Stroke Patient cared for during the EMS Toolkit data range. As each EMS record is processed into the database, it is given a score based on how complete the record has been documented. The lower the Documentation Score the better the documentation.

Data Elements which are required for this table and chart include:

- E05_04: Unit Notified by Dispatch Date/Time
- E06_14: Age
- E06_15: Age Units
- E14_24: Stroke Screen
- E17_01: Protocols Used
- E20_10: Incident/Patient Disposition
- E23_10: Who Generated this Report
- PreMIS Version 2 Data Score

(EMS System Name Here) EMS Personnel Acute Stroke Care Documentation Score (Date Range Here) * Shaded Gray if below the EMS System or State expected score		
Personnel ID	Number of Records	Average Score
EMS System Average	XXX,XXX	X.X
State Average	XXX,XXX	X.X
ID #	XXX	X.X
ID #	XXX	X.X
ID #	XXX	X.X
ID #	XXX	X.X

EMS Personnel and System Protocol Compliance

The following table describes the EMS System's Personnel Protocol Compliance based on an evaluation of all Acute Stroke Patients identified for the Toolkit date range. Although an EMS Toolkit cannot determine if a skill was required by the patient or performed correctly, the following describes the percentage of Acute Stroke Patients which received the recommended procedures and treatment.

Data Elements which are required for this table and chart include:

* E05_04: Unit Notified by Dispatch Date/Time
* E05_06: Unit Arrived on Scene Date/Time
* E05_09: Unit Left Scene Date/Time
* E06_14: Age
* E06_15: Age Units
* E09_06: Duration of Chief Complaint
* E14_03: Cardiac Rhythm
* E14_14: Blood Glucose Level
* E14_24: Stroke Screen
* E14_25: Thrombolytic Screen
* E17_01: Protocols Used
* E20_10: Incident/Patient Disposition
* E23_10: Who Generated this Report

(EMS System Name Here) EMS Personnel and System Acute Stroke Patient Protocol Compliance (Date Range Here)							
Personnel ID	Patients	Stroke Screen	Glucose Level	Thrombolytic Screen	Scene Time of <10 minutes	Documentation of Symptom Onset	Cardiac Rhythm
ID #	XX	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)
ID #	XX	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)
ID #	XX	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)
ID #	XX	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)
ID #	XX	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)
EMS System Average	XXX	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)
State Average	XX,XXX	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)	XX (XX%)

Section G: EMS Patient Outcomes

Purpose: This section will evaluate and analyze patient care and clinical outcomes associated with the care of the acute stroke patient. This section will describe the outcome of acute stroke patients using an evidence based quality improvement template. This section also provides a list of patient records within this EMS Toolkits date range that should be individually reviewed and discussed through the EMS Systems Peer Review Committee.

EMS Acute Stroke Patient Outcome Information

Large clinical trials and EMS peer reviewed literature reveals 5 key interventions within an EMS System which can improve the outcome of acute stroke patients:

- Documentation of Symptom Onset
- Prompt recognition of the Stroke through the use of a Stroke Screen
- Screening the patient for Hypoglycemia (Check a blood glucose)
- Maintaining EMS scene times to equal to or less than 10 minutes to improve time of symptom onset until definitive intervention (thrombolytics or angioplasty)
- Transport (with early notification) to a Stroke Center

The first 4 interventions listed above should be documented in PreMIS for each patient and are measurable within this Toolkit. The transport of each Stroke patient to a Stroke Center with early notification requires an operational plan to be developed within each EMS System. All EMS Systems are encouraged to develop this Plan.

If all 5 of these interventions are completed on each STEMI patient, for every 12 acute stroke patients, there will be 1 patient with an improved outcome. This is often referred to as the "Number Needed to Treat" and provides a realistic way for an EMS System to monitor its ability to impact patient outcomes when the EMS System may individually only see a small number of stroke patients in any given time period.

Data Elements which are required for this Section include:

The following data elements are required to complete the analysis in this section:

- E01_01: Patient Care Report Number
- E05_04: Unit Notified by Dispatch Date/Time
- E05_06: Unit Arrived on Scene Date/Time
- E05_09: Unit Left Scene Date/Time
- E06_14: Age
- E06_15: Age Units
- E14_24: Stroke Screen
- E17_01: Protocols Used
- E20_10: Incident/Patient Disposition
- E22_01: Emergency Department Disposition
- E22_01: Hospital Disposition

EMS Acute Stroke Care Plan

Based on information provided at the time this EMS Toolkit was generated, this EMS System describes their EMS Acute Stroke Care Plan as follows:

Presence of an EMS Acute Stroke Care Plan: Yes/No

The EMS System routinely provides early notification to the receiving hospital prior to arrival at that facility with an Acute Stroke Care Patient: Yes/No

Acute Stroke Care Patient Outcome Information

The following table lists all of the Acute Stroke Care Patients cared for by the EMS System during the EMS Toolkit date range. Since the EMS Toolkit is unable to determine if all of these patients were truly acute stroke patients, all are listed. This list also provides each EMS System with a patient list for EMS peer review functions. It is recommended that each of these patients be reviewed by the EMS Peer Review Committee along with hospital outcome information. Through this review, the EMS Acute Stroke Care Plan can be evaluated and adjusted to optimize patient care and outcomes.

(EMS System Name Here) Acute Stroke Care Patient Outcome Information (Date Range Here)							
Patient PCR Number	Date of Care	Symptom Onset Time Noted	Stroke Screen Obtained	Glucose Checked	Scene Time =/< 10 min.	Emergency Department Disposition	Hospital Disposition
XXXXXXXXX	MM/DD/YYYY	Yes	Yes	No	Yes	Not Known	Not Known
XXXXXXXXX	MM/DD/YYYY	No	Yes	Yes	No	Admitted ICU	Discharged
XXXXXXXXX	MM/DD/YYYY	No	No	Yes	Yes	Death	Not Applicable
XXXXXXXXX	MM/DD/YYYY	Yes	Yes	Yes	Yes	Admitted ICU	Discharged

Based on the information provided a total of XX Acute Stroke Patients were treated by the EMS System during this Toolkit Date Range.

A total of XX (XX%) of these patients received all four interventions (Symptom Onset, Stroke Screen, Glucose, and Scene Time).

Section H: Community Education and Prevention

Purpose: This section will evaluate and analyze the EMS System's involvement and participation in community education and prevention initiatives related to heart disease. Information provided for this section was collected when the EMS Acute Stroke Care Toolkit was generated.

EMS System Participation in the North Carolina Stroke Initiative

North Carolina is implementing a statewide Stroke Initiative. This initiative engages EMS Systems and Hospitals to optimize care for stroke patients focusing on critical time intervals and interventions.

Based on information provided at the time this EMS Toolkit was generated, this EMS System describes their participation in the NC Stroke Initiative as follows:

Participation in the NC Stroke Initiative: Yes/No

EMS System Workforce Health Education

It is important for each EMS System to participate in community programs which promote health and wellbeing. Often the best place to start is an area often neglected: the EMS workforce.

Based on information provided at the time this EMS Toolkit was generated, this EMS System has developed and implemented an EMS Workforce Health and Safety which addresses cardiovascular fitness, risk factors, and health as follows:

EMS Workforce Health and Safety Plan is in place: Yes/No

EMS System Disposition Instructions

EMS cares for patients with a multitude of medical illnesses and traumatic injuries. Patients cared for by EMS Systems often do obtain regular healthcare services or maintain a relationship with a personal physician. One way EMS can impact the health of the community in a very targeted way is to provide healthcare information based on stroke risk factors identified during an EMS patient care event.

Based on information provided at the time this EMS Toolkit was generated, this EMS System has developed and implemented EMS Patient Disposition Instructions which provide feedback and information to EMS patients based on healthcare risk factors identified during the EMS patient care event, as follows:

EMS Patient Disposition Instructions in use: Yes/No