



EMS Acute Cardiac Care Toolkit

EMS System: **SAMPLE**

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EMS System Level of Service:	EMT-Intermediate
EMS Similar System by Population Group:	Wilderness EMS System = 25,000 people or less
EMS Similar System by Area Group:	Wilderness EMS System = Less than 300 square miles

The EMS Acute Cardiac Care Toolkit is a comprehensive analysis of an EMS System's Acute Cardiac and ST Elevation Myocardial Infarction (STEMI) patient 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 Acute Cardiac 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 cardiac arrest) has been collected within PreMIS, the EMS System should generate the EMS Acute Cardiac Care 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 Cardiac Care Toolkit or any other Toolkit product should be directed to the EMS Performance Improvement Center(www.EMSPIC.org).



Contents

Glossary of Terms	4
Section A: EMS Acute Cardiac Care Overview	6
Section B: Data Quality	11
Required Data Elements	11
Acute Cardiac Care Data Element Completion Rates	12
Additional EMS Acute Cardiac Care Data Elements	16
Section C: County Acute Cardiac Patient Statistics	17
CDC Cardiovascular Disease Death Rates	17
CDC Cardiovascular Disease Death Rates	20
Age and Race Characteristics	21
Acute Cardiac Patients Age Characteristics	23
Acute Cardiac Patients Based on 12 Lead ECG Findings	24
Acute Cardiac Patients by EMS Protocol Used	25
Acute Cardiac Patients based on the Reason For Encounter and Gender	26
STEMI Patients Symptom Duration Documented at EMS Arrival	27
Section D: EMS System Capability	28
Section E: EMS System Performance	31
E1. EMS Dispatch Center Time	32
E2. EMS "Chute" Time or "Wheels Rolling Time"	34
E3. EMS System Response Time	36
E4. EMS System Total Response Time	38
E5. EMS Scene Time	40
E6. EMS System Transport Time	42
E7. EMS Total Patient Contact Time	44
E8. EMS System Response Delays	46
E9. EMS System Scene Delays	48
E10. EMS System Scene Delays	50
Section F: EMS Personnel and System Performance	52
Section G: EMS Patient Outcomes	56
EMS Acute Cardiac Patient Outcome Information	56



EMS Acute Cardiac Care (STEMI) Plan	57
Acute Cardiac Care Patient Outcome Information	58
Section H: Community Education and Prevention	59
EMS System Participation in the North Carolina RACE Program	59
EMS System Workforce Health Education	59
EMS System Disposition Instructions	59



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% Fractile 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% Fractile 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.

Hot Response: A lights and sirens, emergent response to or from an EMS event.

Cold Response: A normal traffic speed response (no lights and sirens) to or from an EMS event.

Unit Hour: A fully equipped and staffed ambulance on a response or waiting for a response for one hour. This is used to calculate the Unit Hour Utilization Ratio.



Unit Hour Utilization Ratio: The measurement that results by dividing the utilization (number of EMS events x the average total call time) by the total Unit Hours for an EMS System. The ratio describes the percentage of time an EMS System is utilized (actively involved with an EMS event).



Section A: EMS Acute Cardiac Care Overview

Purpose:

This section will provide descriptive information related to the acute cardiac arrest patients who have been cared for by the EMS System during the date range selected for this EMS Toolkit.

Definition of Acute Cardiac Patient

For the EMS Acute Cardiac Care Toolkit, an Acute Cardiac Patient is defined as any patient presenting with chest pain which on evaluation could represent an ST Elevation Myocardial Infarction (STEMI) or Acute Cardiac Syndrome (ACS). When possible, STEMI patients will be described separately from the remaining ACS patients.

Record Selection Information:

- * An Acute Cardiac Patient is also considered an Acute Cardiac Syndrome Patient (ACS). All records (E01_01 Patient Care Report Number) identified with the following criteria are considered ACS patients:
 - * 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 Cardiac Patient**" is any patient whose age is greater than 35 years of age
 - * An "**Acute Cardiac Patient**" is defined by the use of the following protocol(E17_01):
 - * Cardiac Chest Pain
 - * An "**Acute Cardiac Patient**" is defined by the documentation of one of the following for E14_03:
 - * 12 Lead ECG-Inferior Ischemia
 - * 12 Lead ECG-Anterior Ischemia
 - * 12 Lead ECG-Lateral Ischemia
 - * Left Bundle Branch Block
 - * If a record does not have any Protocols (E17_01) documented then any records with the following procedure (E19_03) or Prior Aid (E09_01) documented is considered an "**Acute Cardiac Patient**" :
 - * 12 Lead ECG
 - * If a record does not have any Protocols (E17_01) documented then any records with the following Medication Given (E18_03) or Prior Aid (E09_01) documented is considered an "**Acute Cardiac Patient**" :
 - * Aspirin
 - * Nitroglycerin
- * A STEMI Patient is specifically defined by the documentation of one of the following for E14_03:
 - * 12 Lead ECG-Inferior Ischemia
 - * 12 Lead ECG-Anterior Ischemia



- * 12 Lead ECG-Lateral Ischemia
- * Left Bundle Branch Block

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_01: Date/Time Vital Signs Taken
- * E14_03: Cardiac Rhythm
- * E17_01: Protocols Used
- * E18_03: Medication Given
- * E09_01: Prior Aid
- * E19_03: Procedure
- * E20_01: Destination Name
- * E20_10: Incident/Patient Disposition
- * E20_14: Transport Mode from Scene



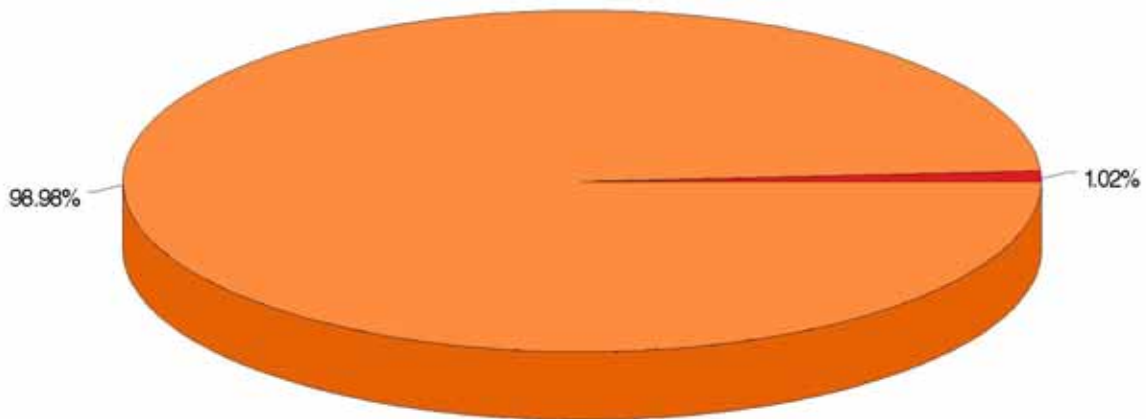
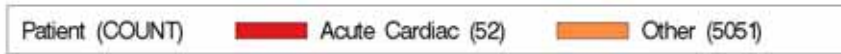
Acute Cardiac Care Toolkit Summary

1/1/2007 - 12/31/2007

	SAMPLE	State
Total Records Found for Date Range	5,519	898,296
Total Patient Records Usable for Toolkit	5,103 (92%)	798,883 (89%)
* Suspected STEMI Patients	0 (<1%)	190 (<1%)
* All Acute Cardiac Patients (including STEMI)	52 (1%)	45,732 (6%)
* All Other Patients	5,051 (99%)	753,151 (94%)
Total Patients	5,103	798,883
Key EMS Time Intervals for Acute Cardiac Patients		
* Dispatch Center Time (90% Fractal)	0:01:00	0:03:00
* EMS Wheels Rolling Time (90% Fractal)	0:03:00	0:03:00
* EMS Response Time (90% Fractal)	0:16:00	0:12:00
* EMS Scene Time (90% Fractal)	0:25:00	0:26:00
* EMS Arrival on Scene to 12 Lead ECG Procedure Time (90% Fractal)	0:17:00	0:23:00
EMS Acute Cardiac Patient Transport Time (90% Fractal)		
* To SAMPLE Hospital 1	0:15:00 (25)	N/A
* To SAMPLE Hospital 2	0:16:00 (25)	N/A
* To Unknown Destination	0:16:00 (2)	N/A

Acute Cardiac Patients

1/1/2007 - 12/31/2007





Section B: Data Quality

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 Cardiac Care Toolkit for the selected date range.

Required Data Elements

Although many data elements are used in the EMS Acute Cardiac 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_01: Date/Time Vital Signs Taken
- * E14_03: Cardiac Rhythm
- * E17_01: Protocols Used
- * E18_03: Medication Given
- * E09_01: Prior Aid
- * E19_03: Procedure
- * E20_01: Destination Name
- * E20_10: Incident/Patient Disposition
- * E20_14: Transport Mode from Scene



Acute Cardiac Care Data Element Completion Rates

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

- * 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.

Acute Cardiac Care Data Element Completion Rates

1/1/2007 - 12/31/2007

Data Element	EMS System Completion Rate	State Completion Rate
PSAP Call Date	100%	52%
PSAP Call Time	100%	52%
Unit Notified by Dispatch Date	100%	100%
Unit Notified by Dispatch Time	100%	100%
Unit En Route Date/Time	100%	92%
Unit Arrived on Scene Date/Time	100%	97%
Arrived at Patient Date/Time	93%	68%
Unit Left Scene Date/Time	100%	81%
Patient Arrived at Destination Date/Time	100%	78%
Type of Response Delay	96%	34%
Type of Scene Delay	96%	33%
Type of Transport Delay	93%	27%
Beginning Odometer Reading of Respondi	100%	42%
On-Scene Odometer Reading of Respondin	100%	76%
Patient Destination Odometer Reading o	100%	74%
Response Mode to Scene	100%	100%
Type of Service Requested	100%	100%
Incident County	85%	72%
Incident State	100%	100%
Incident ZIP Code	93%	88%



EMS Acute Cardiac Care Toolkit

Data Element	EMS System Completion Rate	State Completion Rate
Chief Complaint Organ System	0%	15%
Other Associated Symptoms	89%	40%
Chief Complaint Anatomic Location	0%	15%
Primary Role of the Unit	100%	100%
Incident Location Type	100%	70%
Complaint Reported by Dispatch	93%	65%
EMD Card Number	0%	50%
Chief Complaint	100%	88%
Destination/Transferred To, Name	93%	80%
Incident/Patient Disposition	100%	100%
Transport Mode from Scene	100%	65%
Reason for Choosing Destination	100%	65%
Type of Destination	93%	63%
Patient Care Report Number	100%	84%
EMS Agency Number	100%	100%
Crew Member ID	70%	56%
Crew Member Role	78%	57%
Patient's Home Zip Code	100%	86%
Gender	85%	88%
Race	93%	73%
Ethnicity	0%	2%
Age	100%	91%
Age Units	100%	91%
Primary Symptom	100%	100%
Provider's Primary Impression	0%	17%
Barriers to Patient Care	44%	41%
SBP (Systolic Blood Pressure)	100%	77%
Pulse Oximetry	100%	61%
Respiratory Rate	100%	78%
Level of Responsiveness	93%	43%
Protocols Used	100%	45%
Date/Time Medication Administered	100%	25%
Medication Given	100%	21%



EMS Acute Cardiac Care Toolkit

Data Element	EMS System Completion Rate	State Completion Rate
Medication Crew Member ID	100%	74%
Date/Time Procedure Performed Successful	78%	37%
Procedure	78%	33%
Number of Procedure Attempts	78%	30%
Procedure Success	22%	27%
Procedure Crew Members ID	78%	76%
Emergency Department Disposition	0%	3%
Hospital Disposition	0%	1%
Who Generated This Report	0%	53%
Primary Method of Payment	0%	32%
Providers Secondary Impression	0%	3%
Cardiac Arrest	0%	31%
Destination Zip Code	93%	58%
Advanced Directives	52%	22%
Date/Time Vital Signs Taken	100%	82%
Cardiac Rhythm	4%	17%
Level of Service	100%	100%
EMD Performed	0%	11%
Duration of Chief Complaint	100%	39%
Time Units of Duration of Chief Complain	0%	24%
Secondary Complaint Narrative	37%	34%
Obtained Prior to this Units EMS Care	0%	59%
DBP (Diastolic Blood Pressure)	100%	74%
Pulse Rate	100%	78%
Pain Scale	0%	21%
Thrombolytic Screen	0%	0%
Chest/Lungs Assessment	89%	25%
Heart Assessment	67%	14%
Mental Status Assessment	93%	19%
Medication Administered Prior to this Un	0%	0%
Procedure Performed Prior to this Units	0%	30%
Destination State	100%	100%
Destination County	93%	44%



EMS Acute Cardiac Care Toolkit

Data Element	EMS System Completion Rate	State Completion Rate
Condition of Patient at Destination	96%	42%



Additional EMS Acute Cardiac Care Data Elements

There are a total of 6 data elements which are used in the EMS Cardiac Arrest 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

1/1/2007 - 12/31/2007

Element Description
Distance to Nearest Non-County Invasive STEMI Hospital



Section C: County Acute Cardiac Patient Statistics

Purpose:

This section will evaluate, analyze, and provide insight into the frequency and types of Acute Cardiovascular Disease and Acute Cardiac 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 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 Wilderness EMS System = Less than 300 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 Cardiac Syndromes or ST Elevation Myocardial Infarctions. The higher the incidence of cardiovascular disease death rates, the higher incidence of ACS and STEMI within any community. Death Rates are defined as the number of deaths per 100,000 population.

Record Selection Information:

- * An Acute Cardiac Patient is also considered an Acute Cardiac Syndrome Patient (ACS). All records (E01_01 Patient Care Report Number) identified with the following criteria are considered ACS patients:
 - * 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 Cardiac Patient**" is any patient whose age is greater than 35 years of age
 - * An "**Acute Cardiac Patient**" is defined by the use of the following protocol(E17_01):
 - * Cardiac Chest Pain
 - * An "**Acute Cardiac Patient**" is defined by the documentation of one of the following for E14_03:
 - * 12 Lead ECG-Inferior Ischemia
 - * 12 Lead ECG-Anterior Ischemia
 - * 12 Lead ECG-Lateral Ischemia
 - * Left Bundle Branch Block
- * If a record does not have any Protocols (E17_01) documented then any records with the following procedure (E19_03) or Prior Aid (E09_01) documented is considered an "**Acute Cardiac Patient**" :



- * 12 Lead ECG
- * If a record does not have any Protocols (E17_01) documented then any records with the following Medication Given (E18_03) or Prior Aid (E09_01) documented is considered an "**Acute Cardiac Patient**" :
 - * Aspirin
 - * Nitroglycerin
- * A STEMI Patient is specifically defined by the documentation of one of the following for E14_03:
 - * 12 Lead ECG-Inferior Ischemia
 - * 12 Lead ECG-Anterior Ischemia
 - * 12 Lead ECG-Lateral Ischemia
 - * Left Bundle Branch Block

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_01: Cardiac Arrest
- * 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: Cardiac Rhythm



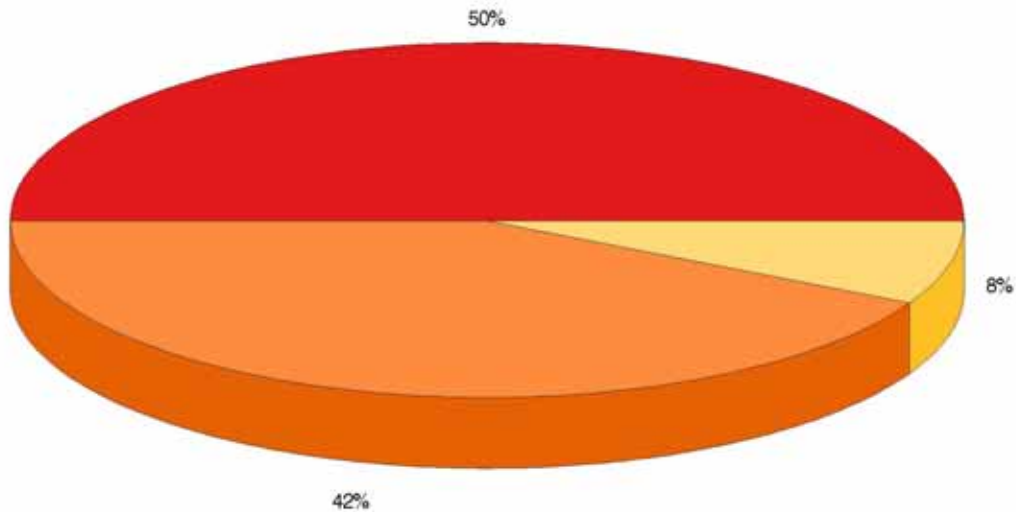
- * E17_01: Protocols Used
- * E18_03: Medication Given
- * E19_03: Procedures
- * E20_10: Incident/Patient Disposition

Age and Race Characteristics

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

Acute Cardiac Patient's Gender

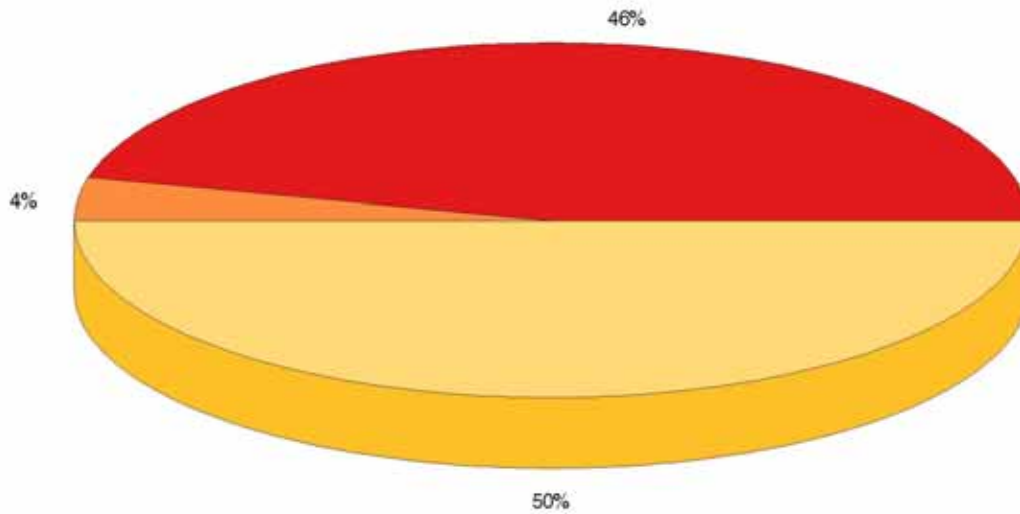
1/1/2007 - 12/31/2007



Acute Cardiac Patient's Race

1/1/2007 - 12/31/2007

RACE (COUNT)	Black (24)	Unknown (2)	White (26)
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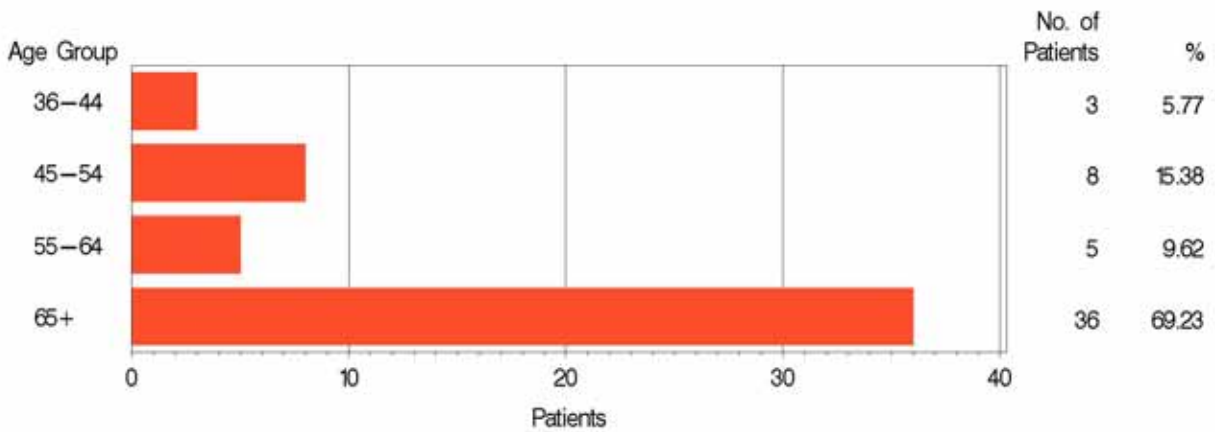




Acute Cardiac Patients Age Characteristics

Acute Cardiac Patient's Incidence by Age

1/1/2007 - 12/31/2007





Acute Cardiac Patients Based on 12 Lead ECG Findings

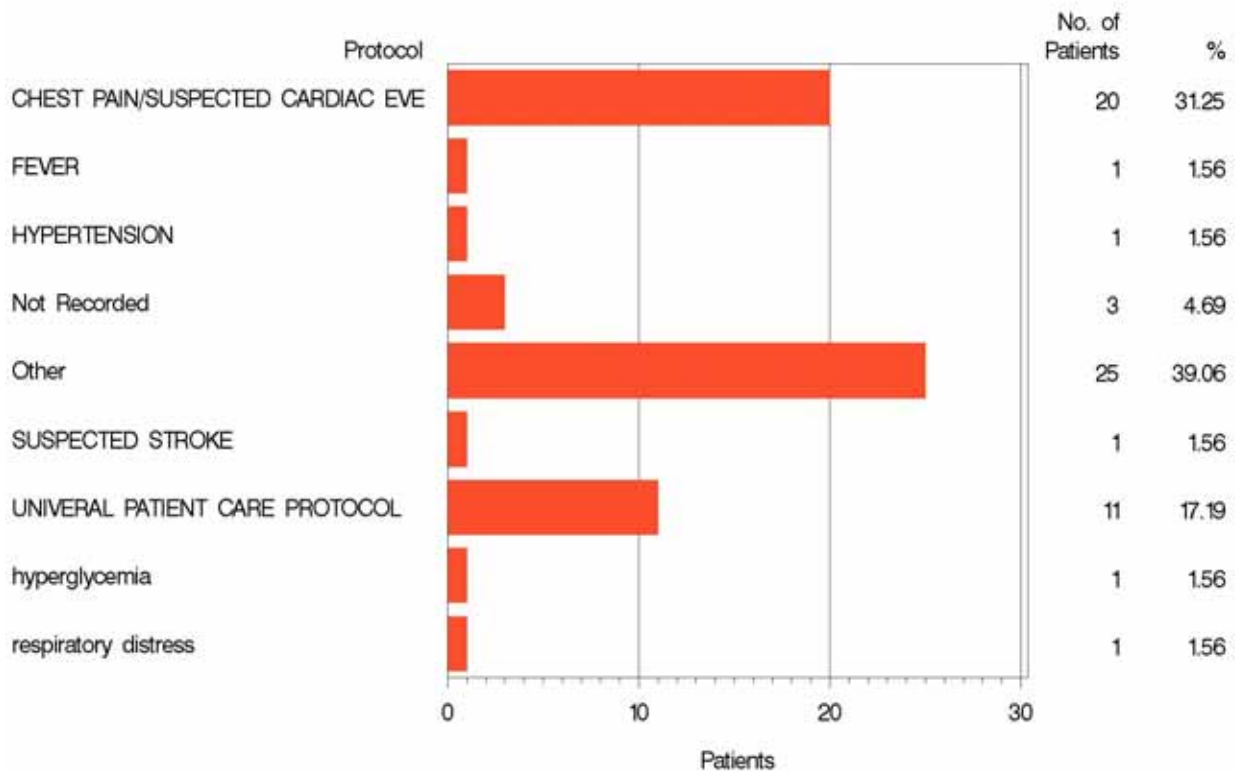
There was no data found for this section



Acute Cardiac Patients by EMS Protocol Used

Acute Cardiac Patients by EMS Protocol

1/1/2007 - 12/31/2007

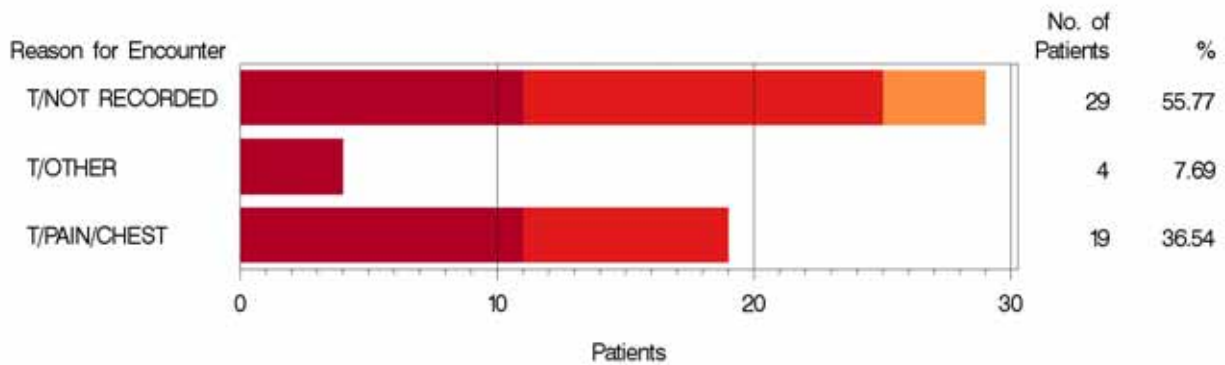




Acute Cardiac Patients based on the Reason For Encounter and Gender

Acute Cardiac Patients Reason for Encounter and Gender

1/1/2007 - 12/31/2007





STEMI Patients Symptom Duration Documented at EMS Arrival

There was no data found for STEMI Patients Symptom Duration



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
- * EMS System Structural Components
- * Invasive Cardiac (STEMI) Capable Hospital Information

Based on year 2000 national census population data, the SAMPLE 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 Wilderness EMS System = Less than 300 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 Acute Cardiac Care Toolkit

SAMPLE Statistics

1/1/2007 - 12/31/2007

	EMS System	Population Group Average	Area Group Average	State Average
Statiscal Data				
* Population	14,526	15,192	36,900	80,501
* Square Miles	233	459	243	543
Census Data				
* % of the population in Poverty	16%	17%	14%	15%
* % of the Population: White	60%	71%	82%	72%
* % of the Population: Black	37%	23%	13%	21%
* % of the Population: Hispanic	2%	2%	4%	4%
* % of the Population with a High School Degree or better	73%	71%	74%	74%
* % Median Age	40	40	40	38
EMS Capabilities				
* Highest Level of Service	EMT-P	62% EMT-P	91% EMT-P	86% EMT-P
* % of Population covered by First Responders	0%	70%	77%	73%
* % of EMT-Paramedic Staff trained in 12 LEAD ECG interpretation	88%	73%	88%	57%
* Is there written STEMI Plan addressing patient destinations?	Yes	3 (11%) Yes	2 (18%) Yes	13 (13%) Yes
* Is the EMS System involved with the NC RACE Project?	Yes	3 (11%) Yes	2 (18%) Yes	13 (13%) Yes
* Does the EMS System's required an early notif. on STEMI patients	Yes	3 (11%) Yes	3 (27%) Yes	17 (17%) Yes
Dispatch Center				
* Basic 911	No	3 (11%) Yes	0 (0%) Yes	7 (7%) Yes
* Enhanced 911	Yes	13 (48%) Yes	8 (73%) Yes	56 (55%) Yes
* EMD	Yes	6 (22%) Yes	8 (73%) Yes	45 (45%) Yes



EMS Acute Cardiac Care Toolkit

	EMS System	Population Group Average	Area Group Average	State Average
* Phase 2 Compliance	Yes	4 (15%) Yes	1 (9%) Yes	27 (27%) Yes
Hospital Capabilities				
* Hospital in County	Yes	4 (15%) Yes	3 (27%) Yes	44 (44%) Yes
* Invasive STEMI Capable Hospital in County	Yes	3 (11%) Yes	2 (18%) Yes	10 (10%) Yes
* Distance to Nearest Invasive STEMI Capable Hospital	N/A	Not Recorded	Not Recorded	52
* Ability to go directly to a STEMI Capable Hospital	Yes	2 (7%) Yes	1 (9%) Yes	11 (11%) 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 as 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 Cardiac 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



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 Cardiac 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



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 Cardiac 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



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 Cardiac 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: PSAP Call Date/Time
- * E05_06: Unit Arrived on Scene Date/Time



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



E6. EMS System Transport Time

The following table describes the EMS System's Transport Time. The 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 Cardiac 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



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 Cardiac 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_09: Unit Left Scene Date/Time
- * E05_10: Patient Arrived at Destination Date/Time
- * E20_14: Transport Mode from Scene



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 Cardiac 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



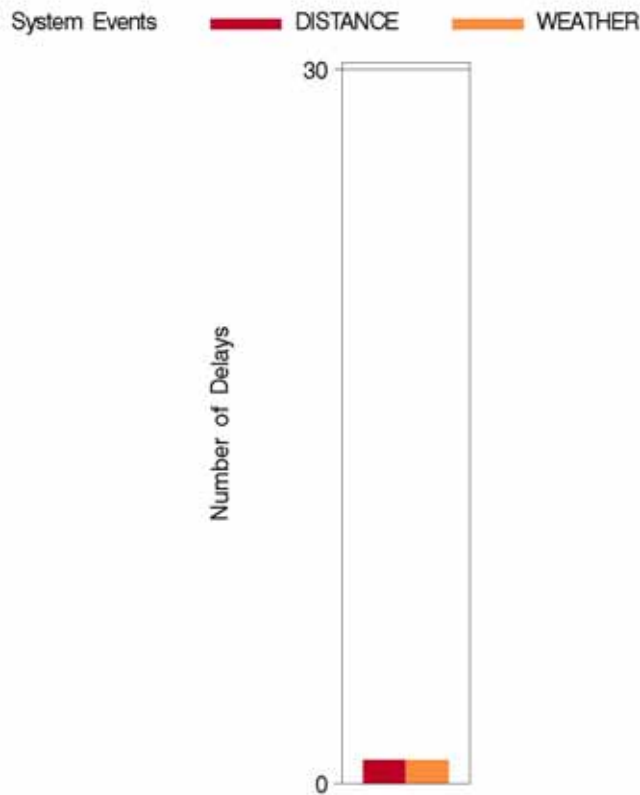
SAMPLE EMS Response Delays

1/1/2007 - 12/31/2007

System Events	Number Of Delays	Percentage Of Total EMS Responses
DISTANCE	1	1.9%
WEATHER	1	1.9%
Total Events With Delays	2	3.8%

SAMPLE EMS Response Delays

1/1/2007 - 12/31/2007





E9. EMS System Scene Delays

The following table describes the EMS System's Scene Delays documented for the EMS Toolkit date range. For this analysis only EMS events involving Acute Cardiac 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 Scene Delay



SAMPLE EMS Scene Delays

1/1/2007 - 12/31/2007

System Events	Number Of Delays	Percentage Of Total EMS Responses
EXTRICATION >20 MIN.	1	1.9%
EXTRICATION GREATER THAN 20 MI	1	1.9%
NOT RECORDED	3	5.8%
Total Events With Delays	5	9.6%

SAMPLE EMS Scene Delays

1/1/2007 - 12/31/2007

System Events █ EXTRICATION > 20 MIN. █ EXTRICATION GREATER THAN 20 MI
█ NOT RECORDED





E10. EMS System Scene Delays

The following table describes the EMS System's Transport Delays documented for the EMS Toolkit date range. For this analysis only EMS events involving Acute Cardiac 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 Transport Delay



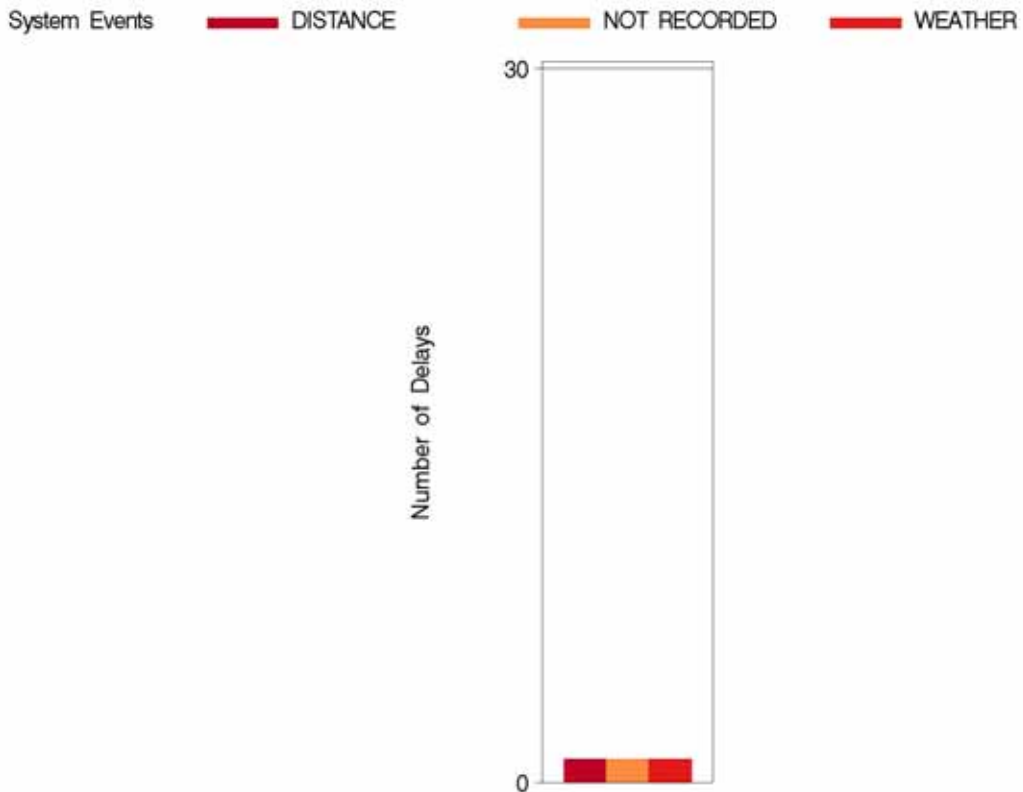
SAMPLE EMS Transport Delays

1/1/2007 - 12/31/2007

System Events	Number Of Delays	Percentage Of Total EMS Responses
DISTANCE	1	1.9%
WEATHER	1	1.9%
NOT RECORDED	1	1.9%
Total Events With Delays	3	5.8%

SAMPLE EMS Transport Delays

1/1/2007 - 12/31/2007





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 cardiac 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 cardiac care include:

- * Documentation of History, Onset of Symptoms, Vital Signs, and Exam
- * Obtaining a 12 lead ECG
- * Administration of Aspirin
- * Documentation of the Thrombolytic Screen
- * Scene Time of less than 15 minutes
- * Documentation of Pain using the Pain Scale

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 Cardiac 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_03: Cardiac Rhythm
- * E17_01: Protocols Used
- * E18_03: Medication Given
- * E09_01: Prior Aid
- * E19_03: Procedure
- * E20_10: Incident/Patient Disposition
- * E23_10: Who Generated this Report
- * PreMIS Version 2 Data Score



EMS Personnel Acute Cardiac Care Documentation Score

1/1/2007 - 12/31/2007

Personnel ID	Number of Records	Average Score
EMS System Average	52	.00
State Average	45743	28
Not Recorded	52	.00

* Shaded Gray if below the EMS System of State expected score



EMS Personnel and System Protocol Compliance

The following table describes the EMS System's Personnel Protocol Compliance based on an evaluation of all Acute Cardiac 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 Cardiac 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_23: Pain Scale
- * E14_25: Thrombolytic Screen
- * E17_01: Protocols Used
- * E18_03: Medication Given
- * E18_09: Medication Crew Member ID
- * E09_01: Prior Aid
- * E19_03: Procedure
- * E19_05: Number of Procedure Attempts
- * E19_06: Procedure Successful
- * E19_09: Procedure Crew Member ID
- * E20_10: Incident/Patient Disposition
- * E23_10: Who Generated this Report



EMS Personnel and System Acute Cardiac Care Protocol Compliance

1/1/2007 - 12/31/2007

Personnel ID	Patients	12LeadECG	Aspirin Administration	Thrombolytic Screen	Scene Time of <15 minutes	Documentation of Symptom Onset	Documentation of Pain Scale
Not Recorded	52	0	52	0	44	10	23
		(0%)	(100%)	(0%)	(85%)	(19%)	(44%)
EMS System Average	52	0	52	0	44	10	23
		(0%)	(100%)	(0%)	(85%)	(19%)	(44%)
State Average	45743	39976	12839	212	28781	23732	13749
		(87%)	(28%)	(0%)	(63%)	(52%)	(30%)



Section G: EMS Patient Outcomes

Purpose:

This section will evaluate and analyze patient care and clinical outcomes associated with the care of the acute cardiac patient. This section will describe the outcome of acute cardiac 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 Cardiac Patient Outcome Information

Large clinical trials and EMS peer reviewed literature reveals 4 key interventions within an EMS System which can improve the outcome of acute ST Elevation Myocardial Infarction (STEMI) patients:

- * Obtaining a timely 12 lead ECG to promptly identify a STEMI
- * Administering Aspirin
- * Maintaining EMS scene times to equal to or less than 15 minutes to improve time of symptom onset until definitive intervention (thrombolytics or angioplasty)
- * Transport (with early notification of impending STEMI patient arrival) to a PCI (percutaneous coronary intervention) capable hospital

The first 3 interventions listed above should be documented in PreMIS for each patient and are measurable within this Toolkit. The transport of each STEMI patient to a PCI 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 4 of these interventions are completed on each STEMI patient, for every 15 STEMI 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 STEMI 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_03: Cardiac Rhythm
- * E17_01: Protocols Used
- * E18_03: Medication Given
- * E09_01: Prior Aid
- * E19_03: Procedure
- * E20_10: Incident/Patient Disposition
- * E22_01: Emergency Department Disposition
- * E22_01: Hospital Disposition

EMS Acute Cardiac Care (STEMI) Plan

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

Presence of an EMS Acute Cardiac Care (STEMI) Plan: Yes

The EMS System routinely provides early notification to the receiving hospital prior to arrival at that facility with an Acute Cardiac Care (STEMI) Patient: Yes



Acute Cardiac Care Patient Outcome Information

The following table lists all of the Acute Cardiac 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 STEMI 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 Cardiac Care (STEMI) Plan can be evaluated and adjusted to optimize patient care and outcomes.

Acute Cardiac Care Patient Outcome Information

1/1/2007 - 12/31/2007

Patient PCR Number	Date of Care	12 Lead ECG Obtained	Aspirin Given	Scene Time of =<15 minutes	Emergency Dept. Disposition	Hospital Disposition
W000000	10/09/07	No	Yes	No	TRANSFERRED	TRANSFER TO HOSPITAL

Based on the information provided a total of **52** Acute Cardiac Patients were treated by the EMS System during this Toolkit Date Range.

Please note that included in the above mentioned patients, **49** of these have no Disposition data during this Toolkit Date Range.

A total of **0 (0%)** of these patients received all three interventions (12 Lead ECG, Aspirin, and a Scene Time of <15 minutes).



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 Cardiac Care Toolkit was generated.

EMS System Participation in the North Carolina RACE Program

North Carolina has implemented a regional system of care targeting Acute Cardiac Care (STEMI) Patients know as RACE. This project engages EMS Systems and Hospitals to optimize care for STEMI 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 RACE project as follows:

Participation in the NC RACE program: Yes

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: 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 cardiac 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