



# California EMS System Core Quality Measures Data Year 2016

**Emergency Medical Services Authority  
California Health and Human Services Agency**

EMSA #166 - Appendix E (5<sup>th</sup> Edition)  
EMS System Quality Improvement Program Guidelines





**HOWARD BACKER, MD, MPH, FACEP  
DIRECTOR**

**DANIEL R. SMILEY  
CHIEF DEPUTY DIRECTOR**

**TOM M<sup>C</sup>GINNIS  
CHIEF, EMS SYSTEMS DIVISION**

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## Acknowledgements

### California Emergency Medical Services Authority Staff

Howard Backer, MD, MPH, FACEP, Director  
Daniel Smiley, Chief Deputy Director  
Tom McGinnis, Division Chief, EMS  
Kathleen Bissell, Data Program Manager, EMS  
Adam Davis, Staff Analyst, EMS  
Maria Alisangco, Staff Analyst, EMS  
Bonnie Sinz, Trauma Coordinator, EMS

### Task Force Members

Joe Barger MD, Medical Director, Contra Costa County EMS  
BJ Bartleson RN, Vice President, California Hospital Association  
Bill Bogenreif, Director of Information Technology, Northern California EMS Agency  
Dennis Carter, Clinical Education Services Manager, American Medical Response  
David Chang PhD, MBA, Director of Outcomes Research, Department of Surgery, UC  
San Diego School of Medicine  
Cathy Chidester RN, Director, Los Angeles County EMS  
Kara Davis RN, EMS Systems Director, Northern California EMS Agency  
Ric Maloney RN, CQI Manager, Sacramento Metro Fire  
Susan Mori RN, Quality Improvement Coordinator, Los Angeles County EMS  
Troy Peterson, EMS Specialist, Marin County EMS  
Karl Sporer MD, Medical Director, Alameda County EMS  
Craig Stroup, Quality Improvement Coordinator, Contra Costa County EMS  
Veronica Kennedy, EMS Specialist, Sacramento EMS Agency  
Kate Remick MD, Pediatric Specialist  
Eric Rudnick MD, Medical Director, Northern California EMS Agency

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## 1 • California EMS System Core Quality Measures

### STATUTORY AUTHORITY

The California EMS Authority (EMSA or authority) is charged with creating a “statewide system for emergency medical services” and the responsibility for the “coordination and integration of all state activities concerning emergency medical services” (HS 1797.1). Moreover, the authority is required to assess each EMS area or the system’s service area, utilizing regional and local information, for “the purpose of determining the need for additional emergency medical services, coordination of emergency medical services and the effectiveness of emergency medical services” (HS1797.102). Local EMS agencies are required to plan, implement, and evaluate an EMS system (HS 1797.204).

Health and Safety Code 1797.103 identifies one of the required elements of an EMS system as data collection and evaluation. Additionally, the development of quality improvement guidelines must be established (HS 1797.174). As a result of this statutory mandate, EMSA has developed regulations requiring the system data collection and evaluation, collection of prehospital care reports (CCR, Title 22, Division 9, Chapter 4, Section 100147, 100169, 100170).

Additionally, EMS system quality improvement regulations have been established (CCR, Title 22, Division 9, Chapter 12) that define the requirements for local EMS agencies, EMS service providers, and base hospitals in their role as part of the EMS system. These requirements include, but are not limited to, the implementation of an EMS Quality Improvement program (EMS QI) and the use of defined indicators to assess the local EMS system as found in EMSA #166, Appendix E. EMSA’s aim with the Core Measures Project is to develop appropriate indicators to reflect on-going LEMSA efforts at quality improvement aimed at clinical and transport activities that are reflective of Quality Improvement activities at the local level.

In order to evaluate system impact on patients, the continuum of care from dispatch to pre-hospital to hospital disposition must be connected. In addition, we need to report on performance measures such as those included in Core Measures. Using these data we can begin to understand how care provided by EMS personnel translates to improved outcomes and system effectiveness.

## 2 • California EMS System Core Quality Measures

### PROJECT HISTORY

The purpose of the EMS system core measures is to increase the accessibility and accuracy of pre-hospital data for public, policy, academic and research purposes to facilitate EMS system evaluation and improvement. This program was originally developed in 2012 through a grant from the California Health Care Foundation (CHCF). Ultimately, the project highlights opportunities to improve the quality of patient care delivered within an EMS system.

During the 1 year period, from July 31, 2013 to June 30, 2014, The California EMS Authority (EMSA) performed the following activities to deliver a set of publicly available data reports:

1. Created a formal data system profile and written analysis to identify areas for data quality improvement and inform an action plan to address the issues.
2. Worked to reveal opportunities for both short-term and long-term data improvement plans.
3. Focus on achieving reliable measures that are high value and feasible within a short-term time frame.
4. Refined and publish core measure sets that describe the coordination and effectiveness of EMS utilizing regional and local information for California. This project focuses upon the following core measure sets:
  - Trauma
  - Acute Coronary Syndrome/Heart Attack
  - Cardiac Arrest
  - Stroke
  - Respiratory
  - Pain Intervention
  - Pediatric
  - Skill Performance by EMS Providers
  - EMS Response and Transport
  - Public Education Bystander CPR
5. Conducted data workshops for local EMS agencies across the state to implement improved data collection and reporting practices with those Local Emergency Medical Services Agencies who participate in California Emergency Medical Services Information System.

EMSA has continued to utilize the EMS system core measures project to collect information on an annual basis (calendar year 2012, 2013, 2014, 2015, and 2016) while maintaining similar direction and goals to the objectives stated above.

### **3 • California EMS System Core Quality Measures**

## **WHAT ARE CORE MEASURES?**

They are a set of standardized performance measures that are intended to examine an EMS system or treatment of an identified patient condition.

## **CORE MEASURES DEFINITION**

The California Core Measures are about processes and interventions that have some evidence of patient benefit for a condition or illness. These measures help emergency medical services systems improve the quality of patient care. Measure benchmarks include the following: the performance of EMS systems, performance of recommended treatments determined to get the best results for patients with certain medical conditions and transport of patients to the most appropriate hospital. The data most closely focused on system performance are contained in the following data pieces:

- Arrival at the scene in a timely manner;
- Timely, focused patient assessment;
- Delivery of time-sensitive pre-hospital therapy; and
- Transport to a hospital capable of providing necessary care

Information about these treatments are taken from the pre-hospital care reports and converted into a percentage.

## **DEMONSTRATING PERFORMANCE**

The preliminary California EMS Core Measures were derived largely from a set of quality indicators developed through a project by the National Quality Forum. Emergency medical services systems across the state are measured on their performance in these Core Measures and can compare their results to other similar LEMSAs. There is a delay between when data are reported from EMS systems and when they are available for review because EMSA allows time for data to be compiled before it posts quality data for a given period. EMS providers can utilize these core measures to assist in quality assurance and continuous quality improvement activities.

## **CORE MEASURES PURPOSE**

The primary purpose of the Core Measures Project is to develop a mechanism to reflect as accurately as possible the local EMS activity so that EMSA can better fulfill its obligation to assess the effectiveness of emergency medical services and provide quality Improvement information. The collection of the 17 clinical measures and the three response and transport measures selected by the Core Measures Task Force provide the best mechanism for EMSA to do this. The data will become even more



## 4 • California EMS System Core Quality Measures

useful when all of California's 33 LEMSAs participate fully in the project. EMSA looks forward to more robust project participation.

EMSA has made data quality and analysis a priority over the past 3 years and has recently formed a data advisory group consisting of three local EMS agency administrators and an equal number of medical directors to help determine a cooperative strategy for improving EMS data and its application and enhancing data and quality efforts.

### FUTURE CORE MEASURES

It is anticipated that the EMS system cores measures may be modified and reflect future core measure modifications in the future, especially with the anticipated data changes related to the NEMSIS version 3 application, which will become mandatory January 1, 2017. During the 2017 Calendar Year, EMSA, along with the Core Measures Task Force will be identifying the role of the following for future core measures reporting:

- Incorporation National EMS Compass Project;
- NEMSIS 3 Implementation;
- Reporting in 2017 to be in NEMSIS 3 Only; and
- Ambulance Patient Off-load Time (APOT) Measures

### QUALIFYING DATA FOR 2016 CALENDAR YEAR REPORTING

The data derived for all measures will come from the calendar year 2016 for which period the NEMSIS 2.2.1 standard was utilized as measurement specifications are designed for NEMSIS 2.2.1. For consistency, only data from this version of NEMSIS should be reported to EMSA. A matrix can found on page 53 of this document to provide LEMSAs an opportunity to test NEMSIS 3 data. **Testing of NEMSIS 3 data is not required by EMSA, but is highly encouraged.**

### CORE MEASURES TASK FORCE

A task force makes recommendations and reviews the core measures. The task force consists of key data and quality leaders from local EMS agencies, medical directors, hospitals, and pre-hospital EMS providers that continue to provide clarity and insight into the data elements.

### STANDARD ELEMENTS FOR EVERY MEASURE

The following standard elements are necessary to sort by time and location:

- Date/Time E05\_01
- County E08\_13

## 5 • California EMS System Core Quality Measures

### REFERENCE INFORMATION

The California EMS System Core Quality Measures contains various references and coding from other documents. All data elements and values referenced in the Core Measures are coded using NEMESIS. Please refer to the following documents regarding the codes found in each measure:

NEMESIS 2.2.1 Data Dictionary – Updated 4/9/2012

([http://www.nemesis.org/v2/downloads/documents/NEMESIS\\_Data\\_Dictionary\\_v2.2.1\\_04092012.pdf](http://www.nemesis.org/v2/downloads/documents/NEMESIS_Data_Dictionary_v2.2.1_04092012.pdf))

NHTSA: Emergency Medical Services Performance Measures – Updated 12/2009

([www.ems.gov/pdf/811211.pdf](http://www.ems.gov/pdf/811211.pdf))

Utstein Definitions (<http://circ.ahajournals.org/content/110/21/3385.full>)

Pediatric patients are defined throughout this document as being younger than age 14.

Trauma patients are defined as meeting the physiological criteria for “Measure vital signs and level of consciousness” by the “[2011 Guidelines for Field Triage of Injured Patients](#)”.

### INSTRUCTIONS FOR RUNNING MEASURE REPORTS

Run each core measure exactly as specified on each core measure specification sheet.

If the core measure cannot be run as specified, run the measure based on the intent of the core measure according to the question provided in the description box on the specification sheet.

If a core measure is run based on intent (as described above), the LEMSA must indicate in the “Measure Run Exactly As Written” column on the reporting spread sheet and provide the data elements that were used, including all relevant values, as well as inclusion and exclusion criteria, to achieve a value for the core measure. This must be provided when submitting the report to EMSA.

### LEMSA DATA DESCRIPTION

Please provide a detailed description of the flow of information from the point of documentation/collection to the submission of the LEMSA annual core measures report to EMSA. The intent is to provide a mechanism to better understand the data being submitted. In the event your data flow includes the local providers sending data to EMSA instead of the LEMSA, please note that.

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Please include in your data flow description:

- Paper Patient Care Records (PCRs)
  - How many providers are using paper PCRs;
  - What percent of records are collected on PCRs;
- Electronic Patient Care Records (ePCRs)
  - How many providers are using electronic PCRs;
  - How the data from the ePCRs are being entered into the system;
- A general description of your data system to include:
  - A general idea of the data flow from the EMS providers to EMSA;
  - Who compiles the data for the Core Measures Reports (LEMSA staff, contractor, provider, etc.);
  - Who submits the Core Measures Reports to EMSA;
  - Who compiles the data for the Core Measures Reports (LEMSA staff, contractor, etc.);
  - Total Number of 911 call requests for service for the calendar year;

In addition to the data flow description mentioned above, EMSA is also requesting the following information on page 1 of the reporting spreadsheet:

- Count of 911 Call Requests for Service in CY 2016;
- Count of ALS Providers in operation for the CY 2016;
- Count of ALS Providers Represented In Your Core Measures Reported Value;
- Count of BLS Providers in operation for the CY 2016;
- Count of BLS Providers Represented In Your Core Measure Reported Values;
- Count of other providers in operation for the CY 2016;
- Count of other providers Represented In Your Core Measure Reported Values;
- Software application and vendor used by LEMSA; and
- Count of providers within the LEMSA that use paper PCR forms

## RECENT LEGISLATION

Recent state legislation is driving changes in EMS data systems related to data quality and data accuracy. Specifically, four bills were enacted in 2015 and became effective January 2016. These include:

- AB 1129 requires each EMS provider to utilize electronic health record systems that are compliant with the "current version of NEMESIS" to collect EMS data;
- AB 503 authorizes a health facility to share patient-identifiable information with EMSA or other appropriate EMS entities for the purposes of addressing quality improvement;

## **7 • California EMS System Core Quality Measures**

- AB 1223 requires EMSA to adopt standards related to data collection for ambulance patient off-load time; and
- SB 19 requires EMSA to establish a pilot project to be known as the California POLST eRegistry for the purpose of collecting information received from a physician or their designee.

Each of these new laws may have some impact on the Core Measures effort, particularly AB 1129 and AB 1223.

## 8 • California EMS System Core Quality Measures

CCR Title 22, Div 9, Chap 12 100404	SET NAME	SET ID	PERFORMANCE MEASURE NAME
<b>D Clinical Care and Patient Outcome</b>	<b>Trauma (n=2)</b>	TRA-1	Scene time for trauma patients
		TRA-2	Direct transport to trauma center for trauma patients meeting criteria
	<b>Acute Coronary Syndrome (n=4)</b>	ACS-1	Aspirin administration for chest pain/discomfort
		ACS-2	12 lead ECG performance
		ACS-3	Scene time for suspected heart attack patients
		ACS-5	Direct transport to designated STEMI receiving center for suspected patients meeting criteria
	<b>Cardiac Arrest (n=3)</b>	CAR-2	Out-of-hospital cardiac arrests return of spontaneous circulation
		CAR-3	Out-of-hospital cardiac arrests survival to emergency department discharge
		CAR-4	Out-of-hospital cardiac arrests survival to hospital discharge
	<b>Stroke (n=3)</b>	STR-2	Glucose testing for suspected stroke patients
		STR-3	Scene time for suspected stroke patients
		STR-5	Direct transport to stroke center for suspected stroke patients meeting criteria
	<b>Respiratory (n=1)</b>	RES-2	Beta2 agonist administration for adult patients
	<b>Pediatric (n=1)</b>	PED-1	Pediatric patients with wheezing who received bronchodilators
	<b>Pain Intervention (n=1)</b>	PAI-1	Pain intervention

## 9 • California EMS System Core Quality Measures

CCR Title 22, Div 9, Chap 12 100404	SET NAME	SET ID	PERFORMANCE MEASURE NAME
E Skills Maintenance and Competency	Performance of Skills (n=2)	SKL-1	Endotracheal intubation success rate
		SKL-2	Capnography measurement performed on any successful endotracheal intubation
F Transportation and Facilities	Response and Transport (n=3)	RST-1	Ambulance response time by ambulance zone (Emergency)
		RST-2	Ambulance response time by ambulance zone (Non-Emergency)
		RST-3	Transport of patients to hospital

## Core Measures Specification Sheets

## 11 • California EMS System Core Quality Measures

### SCENE TIME FOR TRAUMA PATIENTS

<b>MEASURE SET</b>	Trauma	
<b>SET MEASURE ID #</b>	TRA-1	
<b>PERFORMANCE MEASURE NAME</b>	Scene time for trauma patients	
<b>Description</b>	What is the 90 <sup>th</sup> percentile for on scene time value for trauma patients (as defined by the physiological criteria found in the <a href="#">2011 Guidelines for Field Triage of Injured Patients</a> ) who were transported from the scene by ground ambulance?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	Time (Minutes and Seconds)	
<b>Continuous Variable Statement (Population)</b>	<p>Time (in minutes) from time ground ambulance arrives at the scene until the time ambulance departs from the scene for Trauma patients, meeting criteria for transport to a trauma center, who received transport by ground ambulance to a hospital by EMS personnel (EMT, AEMT, and Paramedic).</p> <p><b>***This population (n-value) should match the denominator population in TRA-2 (prior to determining where the 90<sup>th</sup> percentile lies)***</b></p>	
<b>Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>• All events for which E02_04 “type of service requested” has value 30 “911 response (scene),”;</li> <li>• D06_03 “vehicle type” corresponds to ground ambulance;</li> <li>• E02_20 “response mode to scene” has a value of 390 “lights and sirens”;</li> <li>• Values for “arrived at scene” E05_06 and “unit left scene” E05_09 are present and logical;</li> <li>• Patients with E09_15 “provider primary impression” value 1740 “Traumatic Injury” <u>or</u> E09_16 “provider secondary impression” value 1875 “Traumatic Injury”</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>• E14_19 “Total Glasgow Coma Score” value &lt; 14; <b>or</b></li> </ul>	<ul style="list-style-type: none"> <li>• Type of Service Requested (E02_04)</li> <li>• Response mode to scene (E02_20)</li> <li>• Vehicle Type (D06_03)</li> <li>• Arrived at Scene (E05_06)</li> <li>• Unit Left Scene (E05_09)</li> <li>• Provider Primary Impression (E09_15)</li> <li>• Provider Secondary Impression (E09_16)</li> <li>• Systolic Blood Pressure (E14_04)</li> <li>• Total GCS Value (E14_19)</li> <li>• Respiratory Rate (E14_11)</li> <li>• Date of Birth (E06_16)</li> <li>• Age Units (E06_15)</li> </ul>



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	<ul style="list-style-type: none"> <li>E14_04 "systolic blood pressure" value &lt; 90; <b>or</b></li> <li>E14_11 "respiratory rate" value &lt; 10 or &gt; 29 for patients aged 1 year or older or E14_11 "respiratory rate" value &lt; 20 for patients less than 1 year of age</li> </ul>	<ul style="list-style-type: none"> <li>Age (E06_14)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
<b>Indicator Formula Numeric Expression</b>	The formula is the 90 <sup>th</sup> Percentile of the given numbers or distribution in their ascending order.	
<b>Example of Final Reporting Value (number and units)</b>	14 minutes, 34 seconds (14:34)	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	90 <sup>th</sup> Percentile Measurement. Aggregate measure of central tendency and quantile (fractile) measurement to determine the span of frequency distributions.	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	

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## DIRECT TRANSPORT TO TRAUMA CENTER FOR TRAUMA PATIENTS MEETING CRITERIA

<b>MEASURE SET</b>	Trauma	
<b>SET MEASURE ID #</b>	TRA-2	
<b>PERFORMANCE MEASURE NAME</b>	Direct transport to trauma center for trauma patients meeting criteria	
<b>Description</b>	What is the percentage of trauma patients (as defined by the physiological criteria found in the <a href="#">2011 Guidelines for Field Triage of Injured Patients</a> ) who were directly transported to a trauma center from the scene by ground ambulance.	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	All trauma patients, meeting trauma criteria (as defined by the physiological criteria found in the <a href="#">2011 Guidelines for Field Triage of Injured Patients</a> ) for transport from scene to a trauma center. <b>***This population (n-value) should match the denominator population in TRA-1 (prior to determining where the 90<sup>th</sup> percentile lies)***</b>	
<b>Denominator Inclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>• All events for which E02_04 “type of service requested” has value 30 “911 response (scene);</li> <li>• D06_03 “vehicle type” corresponds to ground ambulance; E02_20 “response mode to scene” has a value of 390 “lights and sirens”;</li> <li>• Values for “arrived at scene” E05_06 and “unit left scene” E05_09 are present and logical;</li> <li>• Patients with E09_15 “provider primary impression” value 1740 “Traumatic Injury” <u>or</u> E09_16 “provider secondary impression” value 1875 “Traumatic Injury”</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• E14_19 “Total Glasgow Coma Score” value &lt; 14; <b>or</b></li> <li>• E14_04 “systolic blood pressure” value &lt; 90; <b>or</b></li> <li>• E14_11 “respiratory rate” value &lt; 10 or &gt; 29 for patients aged 1 year or older</li> </ul>	<ul style="list-style-type: none"> <li>• Provider Primary Impression (E09_15)</li> <li>• Provider Secondary Impression (E09_16)</li> <li>• Type of Service Requested (E02_04)</li> <li>• Vehicle Type (D06_03)</li> <li>• Systolic Blood Pressure (E14_04)</li> <li>• Total GCS Value (E14_19)</li> <li>• Respiratory Rate (E14_11)</li> <li>• Date of Birth (E06_16)</li> <li>• Age Units (E06_15)</li> <li>• Age (E06_14)</li> </ul>

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	or E14_11 "respiratory rate" value < 20 for patients less than 1 year of age	
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	•	
<b>Numerator Statement (sub-population)</b>	Trauma patients, meeting criteria for transport to a trauma center, who received transport by ambulance directly to a trauma center by ground Ambulance	
<b>Numerator Inclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>• All events for which E02_04 "type of service requested" has value 30 "911 response (scene);</li> <li>• D06_03 "vehicle type" corresponds to ground ambulance;</li> <li>• E02_20 "response mode to scene" has a value of 390 "lights and sirens";</li> <li>• Values for "arrived at scene" E05_06 and "unit left scene" E05_09 are present and logical;</li> <li>• Patients with E09_15 "provider primary impression" value 1740 "Traumatic Injury" <u>or</u> E09_16 "provider secondary impression" value 1875 "Traumatic Injury"</li> </ul> <p><b><u>And</u></b></p> <ul style="list-style-type: none"> <li>• E14_19 "Total Glasgow Coma Score" value &lt; 14; <b>or</b></li> <li>• E14_04 "systolic blood pressure" value &lt; 90; <b>or</b></li> <li>• E14_11 "respiratory rate" value &lt; 10 or &gt; 29 for patients aged 1 year or older or E14_11 "respiratory rate" value &lt; 20 for patients less than 1 year of age</li> </ul> <p><b><u>And</u></b></p> <ul style="list-style-type: none"> <li>• Patients who have "destination/transferred to" code (E20_02) of a trauma center</li> </ul>	<ul style="list-style-type: none"> <li>• Hospital Destination (E20_02)</li> </ul>

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<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value (number and units)</b>	90%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	

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**ASPIRIN ADMINISTRATION FOR CHEST PAIN/DISCOMFORT RATE**

<b>MEASURE SET</b>	Acute Coronary Syndrome (ACS)	
<b>SET MEASURE ID #</b>	ACS-1	
<b>PERFORMANCE MEASURE NAME</b>	Aspirin administration for chest pain/discomfort rate	
<b>Description</b>	What is the percent of patients age 35 and older with suspected cardiac chest pain who received aspirin prior to hospital by pre-hospital personnel?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Improvement Noted As</b>	An increase in the rate in terms of the percentage	
<b>Denominator Statement (population)</b>	Number of patients over age 35 with a provider impression (primary or secondary) of chest pain/discomfort.  <b>***This population (n-value) should match the denominator population in ACS-2***</b>	
<b>Denominator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients with E09_15 value 1650 "Chest pain/discomfort" or E09_16 value 1785 "Chest pain/discomfort";</li> <li>Patients aged 35 years and older;</li> <li>All events for which E02_04 "type of service requested" has value 30 "911 response (scene),"</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Age (E06_14)</li> <li>Age Units E06_15)</li> <li>Date of Birth ( E06_16)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Numerator Statement (sub-population)</b>	Number of patients creating a provider impression of chest pain/discomfort who receive aspirin administration	
<b>Numerator</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>

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Inclusion Criteria		
	<ul style="list-style-type: none"> <li>Patients with E09_15 value 1650 “Chest pain/discomfort” or E09_16 value 1785 “Chest pain/discomfort”;</li> <li>Patients aged 35 years and older;</li> <li>E18_03 “medications given” equal to 8625 “aspirin”</li> </ul>	<ul style="list-style-type: none"> <li>Medications given (E18_03)</li> </ul>
Exclusion Criteria	<u>Criteria</u>	<u>Data Elements</u>
	None	
Indicator Formula Numeric Expression	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
Example of Final Reporting Value (number and units)	90%	
Sampling	Yes	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	
Data Collection Approach	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
Suggested Display Format & Frequency	Process control or run chart by month	
Suggested Statistical Measures	Mean (x); Mode (m)	
Trending Analysis	Yes	
Benchmark Analysis	(TBD)	

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### 12 LEAD ECG PERFORMANCE

<b>MEASURE SET</b>	Acute Coronary Syndrome (ACS)	
<b>SET MEASURE ID #</b>	ACS-2	
<b>PERFORMANCE MEASURE NAME</b>	12 Lead ECG Performance	
<b>Description</b>	What is the percent of patients age 35 and older with who received 12 lead ECG by paramedics?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	Number of patients age 35 and older creating a provider impression of chest pain/discomfort  <b>***This population (n-value) should match the denominator population in ACS-1 (prior to determining where the 90<sup>th</sup> percentile lies in ACS-1)***</b>	
<b>Denominator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients with E09_15 value 1650 "Chest pain/discomfort" or E09_16 value 1785 "Chest pain/discomfort";</li> <li>Patients aged 35 years and older;</li> <li>All events for which E02_04 "type of service requested" has value 30 "911 response (scene),"</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Numerator Statement (sub-population)</b>	Number of patients age 35 and older creating a provider impression of chest pain/discomfort who have 12-lead ECG performed	
<b>Numerator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients with E09_15 value 1650 "Chest pain/discomfort" "or E09_16 value 1785 "Chest pain/discomfort";</li> <li>Patients aged 35 years and older;</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> </ul>

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	<ul style="list-style-type: none"> <li>Have a E19_03 “procedure” value 89.820 “12 lead -(Obtain)” or 89.821 “12 Lead (Transmitted)</li> </ul>	<ul style="list-style-type: none"> <li>Date of Birth (E06_16)</li> <li>Procedures Performed (E19_03)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value (number and units)</b>	90%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	



## SCENE TIME FOR SUSPECTED HEART ATTACK PATIENTS

<b>MEASURE SET</b>	Acute Coronary Syndrome	
<b>SET MEASURE ID #</b>	ACS-3	
<b>PERFORMANCE MEASURE NAME</b>	Scene time for suspected heart attack patients age 35 and older	
<b>Description</b>	What is the 90 <sup>th</sup> percentile for ground ambulance scene time of STEMI patients?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	Time (Minutes and Seconds)	
<b>Continuous Variable Statement (Population)</b>	<p>The 90<sup>th</sup> percentile time interval in an emergency from the time ground ambulance “arrived at scene” to “unit left scene”, for a given period of time, of patients having a recorded “STEMI” value for an indicator like E14_03 “cardiac rhythm”</p> <p><b>***This population (n-value) should match the denominator population in ACS-5 (prior to determining where the 90<sup>th</sup> percentile lies for ACS-5)***</b></p>	
<b>Denominator Inclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>• All events for which E02_04 “type of service requested” has value 30 “911 response (scene),”;</li> <li>• D06_03 “vehicle type” corresponds to ground ambulance;</li> <li>• E02_20 “response mode to scene” has a value of 390 “lights and sirens” ;</li> <li>• Values for “arrived at scene” E05_06 and “unit left scene” E05_09 are present and logical;</li> <li>• Patients aged 35 years and older;</li> <li>• Patient has a “STEMI” value recorded for an indicator like E14_03 “cardiac rhythm”, such as 3005, 3010, 3015</li> </ul>	<ul style="list-style-type: none"> <li>• Type of Service Requested (E02_04)</li> <li>• Arrived at Scene (E05_06)</li> <li>• Unit Left Scene (E05_09)</li> <li>• Cardiac Rhythm (E14_03)</li> <li>• Age (E06_14)</li> <li>• Age Units (E06_15)</li> <li>• Date of Birth (E06_16)</li> <li>• Vehicle Type (D06_03)</li> </ul>
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	

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<b>Indicator Formula Numeric Expression</b>	The formula is the 90 <sup>th</sup> Percentile of the given numbers or distribution in their ascending order.
<b>Example of Final Reporting Value (number and units)</b>	14 minutes, 20 seconds (14:20)
<b>Sampling</b>	Yes
<b>Aggregation</b>	Yes
<b>Blinded</b>	Yes
<b>Minimum Data Values</b>	30
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month
<b>Suggested Statistical Measures</b>	90 <sup>th</sup> Percentile Measurement. Aggregate measure of central tendency and quantile (fractile) measurement to determine the span of frequency distributions.
<b>Trending Analysis</b>	Yes
<b>Benchmark Analysis</b>	(TBD)

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**DIRECT TRANSPORT TO DESIGNATED STEMI RECEIVING CENTER FOR SUSPECTED PATIENTS MEETING CRITERIA**

<b>MEASURE SET</b>	Acute Coronary Syndrome	
<b>SET MEASURE ID #</b>	ACS-5	
<b>PERFORMANCE MEASURE NAME</b>	Direct transport to designated STEMI receiving center for suspected patients meeting criteria	
<b>Description</b>	What percentage of suspected STEMI patients are transported by ground ambulance directly to a designated STEMI receiving center?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	Number of patients having a recorded “STEMI” value for an indicator like E14_03 “cardiac rhythm”  <b>***This population (n-value) should match the denominator population in ACS-3 (prior to determining where the 90<sup>th</sup> percentile lies)***</b>	
<b>Denominator Inclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>• Patients aged 35 years and older;</li> <li>• Patients having E14_03 “cardiac rhythm” recorded with a “STEMI” value, such as 3005, 3010, 3015;</li> <li>• All events for which E02_04 “type of service requested” has value 30 “911 response (scene),”;</li> <li>• D06_03 “vehicle type” corresponds to ground ambulance</li> </ul>	<ul style="list-style-type: none"> <li>• Age (E06_14)</li> <li>• Age Units (E06_15)</li> <li>• Date of Birth (E06_16)</li> <li>• Cardiac Rhythm (E14_03)</li> <li>• Vehicle Type (D06_03)</li> </ul>
<b>Exclusion Criteria</b>		
	None	
<b>Numerator Statement (sub-population)</b>	Number of patients having a recorded “STEMI” value for an indicator like E14_03 “cardiac rhythm” that have an E20_02 “destination/ transferred to code” of an interventional cardiac cath center (STEMI Center)	
<b>Numerator Inclusion</b>	<b>Criteria</b>	<b>Data Elements</b>

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Criteria		
	<ul style="list-style-type: none"> <li>Patients aged 35 years and older;</li> <li>Patients having E14_03 “cardiac rhythm” recorded with a “STEMI” value, such as 3005, 3010, 3015 ;</li> <li>Patients that have an E20_02 “destination/transferred to code” of an interventional cardiac cath center (STEMI Center)</li> </ul>	<ul style="list-style-type: none"> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> <li>Cardiac Rhythm (E14_03)</li> <li>Destination/Transferred to Code (E20_02)</li> </ul>
Exclusion Criteria	Criteria	Data Elements
	None	
Indicator Formula Numeric Expression	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
Example of Final Reporting Value (number and units)	90%	
Sampling	Yes	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	
Data Collection Approach	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
Suggested Display Format & Frequency	Process control or run chart by month	
Suggested Statistical Measures	Mean (x); Mode (m)	
Trending Analysis	Yes	
Benchmark Analysis	(TBD)	
Rationale for Data	Need to find sources supporting this measure	

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**OUT-OF-HOSPITAL CARDIAC ARRESTS RETURN OF SPONTANEOUS CIRCULATION**

<b>MEASURE SET</b>	Cardiac Arrest	
<b>SET MEASURE ID #</b>	CAR-2	
<b>PERFORMANCE MEASURE NAME</b>	Out-of-hospital cardiac arrests return of spontaneous circulation	
<b>Description</b>	Per Utstein definition of ROSC (see references section): What is the percentage of patients experiencing cardiac origin cardiac arrest who have ROSC?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	Total number of patients in a given period experiencing cardiac origin cardiac arrest	
<b>Denominator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients having a recorded E11_01 “cardiac arrest” value of 2240 “yes, Prior to EMS arrival” or value of 2245 “yes, after EMS arrival”;</li> <li>E11_02 “cardiac arrest etiology” value of 2250 “presumed cardiac”;</li> <li>E11_03 “resuscitation attempted” values 2280 “attempted defibrillation” or 2285 “attempted ventilation” or 2290 “initiated chest compressions”</li> </ul>	<ul style="list-style-type: none"> <li>Cardiac Arrest (E11_01)</li> <li>Cardiac Arrest Etiology (E11_02)</li> <li>Resuscitation Attempted (E11_03)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Traumatic Cardiac Arrest</li> </ul>	
<b>Numerator Statement (sub-population)</b>	Number of patients experiencing cardiac origin cardiac arrest who have a return of spontaneous circulation (ROSC)	
<b>Numerator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients having a recorded E11_01 “cardiac arrest” value of 2240 “yes, Prior to EMS arrival” or value of 2245 “yes, after EMS</li> </ul>	<ul style="list-style-type: none"> <li>Cardiac Arrest (E11_01)</li> <li>Cardiac Arrest Etiology (E11_02)</li> <li>Resuscitation Attempted</li> </ul>

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	<p>arrival”;</p> <ul style="list-style-type: none"> <li>• E11_02 “cardiac arrest etiology” value of 2250 “presumed cardiac”;</li> <li>• E11_03 “resuscitation attempted” values 2280 “attempted defibrillation” or 2285 “attempted ventilation” or 2290 “initiated chest compressions”;</li> <li>• E11_06 “any return of spontaneous circulation” values 2370 “yes, prior to ED Arrival Only” or 2375 “yes, prior to ED arrival and at the ED”</li> </ul>	<p>(E11_03)</p> <ul style="list-style-type: none"> <li>• Any Return to Spontaneous Circulation (E11_06)</li> </ul>
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value (number and units)</b>	25%	
<b>Sampling</b>	No	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	

## OUT-OF-HOSPITAL CARDIAC ARRESTS SURVIVAL TO ED DISCHARGE

<b>MEASURE SET</b>	Cardiac Arrest	
<b>SET MEASURE ID #</b>	CAR-3	
<b>PERFORMANCE MEASURE NAME</b>	Out-of-hospital Cardiac Arrests Survival to ED discharge	
<b>Description</b>	Per Utstein definition of ROSC (see references section): What is the percentage of patients experiencing cardiac origin cardiac arrest, where resuscitation was attempted, who survived to ED discharge?	
<b>Type of Measure</b>	Outcome	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	Total number of patients experiencing cardiac origin cardiac arrest with resuscitation attempted in a given period	
<b>Denominator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients having a recorded E11_01 “cardiac arrest” value of 2240 “yes, Prior to EMS arrival” or value of 2245 “yes, after EMS arrival”;</li> <li>E11_02 “cardiac arrest etiology” value of 2250 “presumed cardiac”;</li> <li>E11_03 “resuscitation attempted” values 2280 “attempted defibrillation” or 2285 “attempted ventilation” or 2290 “initiated chest compressions”</li> </ul>	<ul style="list-style-type: none"> <li>Cardiac Arrest (E11_01)</li> <li>Cardiac Arrest Etiology (E11_02)</li> <li>Resuscitation Attempted (E11_03)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Numerator Statement (sub-population)</b>	Number of patients experiencing cardiac origin cardiac arrest who survive to ED discharge	
<b>Numerator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients having a recorded E11_01 “cardiac arrest” value of 2240 “yes, Prior to EMS arrival” or value of 2245 “yes, after EMS arrival”;</li> <li>E11_02 “cardiac arrest etiology” value of 2250 “presumed</li> </ul>	<ul style="list-style-type: none"> <li>Cardiac Arrest (E11_01)</li> <li>Cardiac Arrest Etiology (E11_02)</li> <li>Resuscitation Attempted (E11_03)</li> <li>Emergency Department</li> </ul>

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	<p>cardiac”;</p> <ul style="list-style-type: none"> <li>E11_03 “resuscitation attempted” values 2280 “attempted defibrillation” or 2285 “attempted ventilation” or 2290 “initiated chest compressions”;</li> <li>E22_01 “emergency department disposition” values 5335 “admitted to hospital floor” or 5340 “admitted to hospital ICU” or 5355 “released” or 5360 “transferred”</li> </ul>	Disposition (E22_01)
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value (number and units)</b>	25%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	



## OUT-OF-HOSPITAL CARDIAC ARRESTS SURVIVAL TO HOSPITAL DISCHARGE

<b>MEASURE SET</b>	Cardiac Arrest	
<b>SET MEASURE ID #</b>	CAR-4	
<b>PERFORMANCE MEASURE NAME</b>	Out-of-hospital Cardiac Arrests Survival to hospital discharge	
<b>Description</b>	Per Utstein definition of ROSC (see references section): What is the percentage of patients experiencing cardiac origin cardiac arrest, where resuscitation was attempted, who survived to hospital discharge?	
<b>Type of Measure</b>	Outcome	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	Total number of patients experiencing cardiac origin cardiac arrest in a given period	
<b>Denominator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients having a recorded E11_01 “cardiac arrest” value of 2240 “yes, Prior to EMS arrival” or value of 2245 “yes, after EMS arrival”;</li> <li>E11_02 “cardiac arrest etiology” value of 2250 “presumed cardiac”;</li> <li>E11_03 “resuscitation attempted” values 2280 “attempted defibrillation” or 2285 “attempted ventilation” or 2290 “initiated chest compressions”</li> </ul>	<ul style="list-style-type: none"> <li>Cardiac Arrest (E11_01)</li> <li>Cardiac Arrest Etiology (E11_02)</li> <li>Resuscitation Attempted (E11_03)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Numerator Statement (sub-population)</b>	Number of patients experiencing cardiac origin cardiac arrest who survive to discharge from the hospital	
<b>Numerator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients having a recorded E11_01 “cardiac arrest” value of 2240 “yes, Prior to EMS arrival” or value of 2245 “yes, after EMS arrival”;</li> </ul>	<ul style="list-style-type: none"> <li>Cardiac Arrest (E11_01)</li> <li>Cardiac Arrest Etiology (E11_02)</li> <li>Resuscitation</li> </ul>

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	<ul style="list-style-type: none"> <li>E11_02 “cardiac arrest etiology” value of 2250 “presumed cardiac”;</li> <li>E11_03 “resuscitation attempted” values 2280 “attempted defibrillation” or 2285 “attempted ventilation” or 2290 “initiated chest compressions”;</li> <li>E22_02 “hospital disposition” values 5370 “discharged” or 5375 “transfer to hospital” or 5380 “transfer to nursing home” or 5385 “transfer to other” or 5390 “transfer to rehabilitation facility”</li> </ul>	<ul style="list-style-type: none"> <li>Attempted (E11_03)</li> <li>Hospital Disposition (E22_02)</li> </ul>
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value (number and units)</b>	25%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	

## GLUCOSE TESTING FOR SUSPECTED ACUTE STROKE PATIENTS

<b>MEASURE SET</b>	Stroke	
<b>SET MEASURE ID #</b>	STR-2	
<b>PERFORMANCE MEASURE NAME</b>	Glucose Testing for Suspected Acute Stroke Patients	
<b>Description</b>	What is the percentage of suspected acute stroke patients meeting local criteria who received a glucose test in a pre-hospital setting?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	All Suspected Acute Stroke patients	
<b>Denominator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients with E09_15 value 1730 value "Stroke / CVA" or E09_16 value 1865 "Stroke / CVA";</li> <li>Patients aged 18 years of age or older;</li> <li>All events for which E02_04 "type of service requested" has value 30 "911 response (scene),"</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Numerator Statement (sub-population)</b>	Glucose level checked on all suspected acute stroke patients	
<b>Numerator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients with E09_15 value 1730 value "Stroke / CVA" or E09_16 value 1865 "Stroke / CVA" ;</li> <li>Patients aged 18 years of age or older;</li> <li>Patient received glucose testing E19_03 "procedure" with a value of 38.995 "blood glucose analysis" <b>OR</b> Patient has a</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Procedure (E19_03)</li> <li>Blood Glucose Level (E14_14)</li> </ul>

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	recorded numeric value (not null or zero) for E14_14 "Blood Glucose Level"	
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value (number and units)</b>	90%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	

### SCENE TIME FOR SUSPECTED ACUTE STROKE PATIENTS

<b>MEASURE SET</b>	Stroke	
<b>SET MEASURE ID #</b>	STR-3	
<b>PERFORMANCE MEASURE NAME</b>	Scene time for suspected acute stroke patients	
<b>Description</b>	<p>What is the 90<sup>th</sup> percentile for on scene time value for suspected acute stroke patients meeting local criteria who were transported from the scene by ground ambulance?</p> <p><b>***This population (n-value) should match the denominator population in STR-5 (prior to determining where the 90<sup>th</sup> percentile lies)***</b></p>	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	Time (Minutes and Seconds)	
<b>Continuous Variable Statement (population)</b>	All suspected stroke patients	
<b>Denominator Inclusion Criteria</b>	<u><b>Criteria</b></u>	<u><b>Data Elements</b></u>
	<ul style="list-style-type: none"> <li>All events for which E02_04 “type of service requested” has value 30 “911 response (scene)” ;</li> <li>D06_03 “vehicle type” corresponds to ground ambulance;</li> <li>Values for “arrived at scene” E05_06 and “unit left scene” E05_09 are present and pass logic test;</li> <li>Patients with E09_15 value 1730 value “Stroke / CVA” or E09_16 value 1865 “Stroke / CVA”;</li> <li>Patients aged 18 years of age or older</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Type of Service Requested (E02_04)</li> <li>Unit Arrived at Scene (E05_06)</li> <li>Unit Left Scene (E05_09)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> <li>Vehicle Type (D06_03)</li> </ul>
<b>Exclusion Criteria</b>	<u><b>Criteria</b></u>	<u><b>Data Elements</b></u>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is the 90 <sup>th</sup> Percentile of the given numbers or distribution in their ascending order.	

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<b>Example of Final Reporting Value (number and units)</b>	14 minutes, 20 seconds (14:20)
<b>Sampling</b>	Yes
<b>Aggregation</b>	Yes
<b>Blinded</b>	Yes
<b>Minimum Data Values</b>	30
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month
<b>Suggested Statistical Measures</b>	90 <sup>th</sup> Percentile Measurement. Aggregate measure of central tendency and quantile (fractile) measurement to determine the span of frequency distributions.
<b>Trending Analysis</b>	Yes
<b>Benchmark Analysis</b>	(TBD)

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**DIRECT TRANSPORT TO STROKE CENTER FOR SUSPECTED ACUTE STROKE PATIENTS MEETING CRITERIA**

<b>MEASURE SET</b>	Stroke	
<b>SET MEASURE ID #</b>	STR-5	
<b>PERFORMANCE MEASURE NAME</b>	Direct transport to stroke center for suspected acute stroke patients meeting criteria	
<b>Description</b>	What percent of suspected acute stroke patients meeting local criteria who were transported from the scene by ground ambulance to a designated stroke center?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	All acute stroke patients, meeting local stroke criteria for transport to a designated stroke center  <b>***This population (n-value) should match the denominator population in STR-3 (prior to determining where the 90<sup>th</sup> percentile lies)***</b>	
<b>Denominator Inclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>Patients with E09_15 value 1730 value "Stroke / CVA" or E09_16 value 1865 "Stroke / CVA";</li> <li>Patients aged 18 years of age or older;</li> <li>All events for which E02_04 "type of service requested" has value 30 "911 response (scene)," vehicle type corresponds to ground ambulance</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> <li>Type of Service Requested (E02_04)</li> </ul>
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	
<b>Numerator Statement (sub-population)</b>	Suspected acute stroke patients, meeting local stroke criteria, who received transport by ground ambulance directly to a designated stroke center	
<b>Numerator Inclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>Patients with E09_15 value 1730 value</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> </ul>

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	<p>“Stroke / CVA” or E09_16 value 1865 “Stroke / CVA”;</p> <ul style="list-style-type: none"> <li>• Patients aged 18 years of age or older;</li> <li>• E20_01 “Destination Transferred To, Name” represents a stroke center</li> </ul>	<ul style="list-style-type: none"> <li>• Provider Secondary Impression (E09_16)</li> <li>• Destination/Transferred To (E20_01)</li> </ul>
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value</b>	90%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	



### BETA2 AGONIST ADMINISTRATION FOR ADULT PATIENTS

<b>Measure Set</b>	Respiratory	
<b>Set Measure ID #</b>	RES-2	
<b>Performance Measure Name</b>	Beta2 agonist administration for adult patients	
<b>Description</b>	What is the percentage of beta2 agonist (bronchodilator or Ipratropium) administration by EMS personnel for patients 14 years and older with signs and symptoms of suspected bronchospasm?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	Adult patients with suspected bronchospasm	
<b>Denominator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients for whom E09_15 “provider’s primary impression” has value 1700 “Respiratory distress” or for whom E09_16 “provider’s secondary impression” has value 1835 – “Respiratory distress”;</li> <li>Patients aged 14 years or older</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Numerator Statement (sub-population)</b>	Adult patients 14 years and older who received beta2 agonist by EMS personnel in the pre-hospital setting.	
<b>Numerator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients for whom E09_15 “provider’s primary impression” has value 1700 “Respiratory distress” or for whom E09_16 “provider’s secondary impression” has value 1835 – “Respiratory distress”;</li> <li>Patients aged 14 years or older;</li> <li><u>And</u></li> <li>Who have a E18_03 value</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> <li>Medication Given (E18_03)</li> <li>Medication Route (E18_04)</li> </ul>

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	<p>8620 “aerosolized or nebulized beta-2 specific bronchodilator”, 8635 “Beta agonist”, or 8700 “Ipratropium Bromide”; or</p> <ul style="list-style-type: none"> <li>• E18_03 element indicating any of the above</li> </ul>	
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value (number and units)</b>	90%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	

## PEDIATRIC PATIENTS WITH WHEEZING WHO RECEIVED BRONCHODILATORS

<b>MEASURE SET</b>	Pediatric	
<b>SET MEASURE ID #</b>	PED-1	
<b>PERFORMANCE MEASURE NAME</b>	Pediatric patients younger than 14 years old with wheezing who received bronchodilators	
<b>Description</b>	What is the percentage of beta2 agonist (bronchodilator or Ipratropium) administration by EMS personnel for pediatric patients younger than 14 years old with signs and symptoms of suspected bronchospasm?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	All pediatric patients with suspected bronchospasm	
<b>Denominator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients for whom E09_15 “provider’s primary impression” has value 1700 “Respiratory distress” or for whom E09_16 “provider’s secondary impression” has value 1835 – “Respiratory distress”;</li> <li>Patients less than 14 years of age</li> </ul>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Numerator Statement (sub-population)</b>	Pediatric patients with wheezing who received bronchodilators	
<b>Numerator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Patients for whom E09_15 “provider’s primary impression” has value 1700 “Respiratory distress” or for whom E09_16 “provider’s secondary impression” has value 1835 – “Respiratory distress”;</li> <li>Patients less than 14 years of age</li> </ul> <p><u>And</u></p>	<ul style="list-style-type: none"> <li>Provider Primary Impression (E09_15)</li> <li>Provider Secondary Impression (E09_16)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> <li>Medication Given (E18_03)</li> </ul>

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	<ul style="list-style-type: none"> <li>Who have a E18_03 value 8620 “aerosolized or nebulized beta-2 specific bronchodilator”, 8635 “Beta agonist”, or 8700 “Ipratropium Bromide”; or</li> <li>a E18_03 element indicating any of the above</li> </ul>	
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is N/D =%	
<b>Example of Final Reporting Value (number and units)</b>	90%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	

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### PAIN INTERVENTION

<b>MEASURE SET</b>	Pain Intervention	
<b>SET MEASURE ID #</b>	PAI-1	
<b>PERFORMANCE MEASURE NAME</b>	Pain intervention	
<b>Description</b>	What is the percentage of adult patients 14 years or older with pain (value of 7 or greater on a 10 point scale) that received a pain intervention by EMS personnel?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	Percentage	
<b>Denominator Statement (Population)</b>	The total number of events over a given period in which patients reported as having a pain value of 7 or greater in the pre-hospital setting.	
<b>Denominator Inclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>Events in which patients had recorded a pain value of 7 or greater for E14_23;</li> <li>Patient aged 14 years or older (E06_14)</li> </ul>	<ul style="list-style-type: none"> <li>Pain Scale (E14_23)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> </ul>
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>Patients with no value recorded for E14_01, who have no value for either E18_01 or E19_01, to indicate the intervention occurred after pain measurement;</li> </ul>	<ul style="list-style-type: none"> <li>Date Time Vitals Taken (E14_01)</li> <li>Date Time Medication Administered (E18_01)</li> <li>Date Time Procedure Performed Successfully (E19_01)</li> </ul>
<b>Numerator Statement (sub-population)</b>	The total number of patients over a given period in which patient reported as having a pain value of 7 or greater who received pain intervention in the pre-hospital setting	
<b>Numerator Inclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>Events in which patients had recorded a pain value of 7 or greater for E14_23;</li> <li>Patient aged 14 years or older (E06_14);</li> <li>Associated value for “ Date Time Vitals Taken” E14_01;</li> <li>Who have at least one value for E18_03 or E19_03 representing an accepted</li> </ul>	<ul style="list-style-type: none"> <li>Pain Scale (E14_23)</li> <li>Age (E06_14)</li> <li>Age Units (E06_15)</li> <li>Date of Birth (E06_16)</li> <li>Date Time Vitals Taken (E14_01)</li> <li>Date Time Medication Administered (E18_01)</li> <li>Medication Given (E18_03)</li> <li>Procedure (E19_03)</li> </ul>

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	<p>intervention recognized for pain relief,</p> <ul style="list-style-type: none"> <li>The related “Date Time Medication Administered” E18_01 or “Date Time Procedure Performed Successfully” E19_01 elements indicate the interventions occurred after the pain scale was assessed.</li> </ul>	<ul style="list-style-type: none"> <li>Date Time Procedure Performed Successfully (E19_01)</li> </ul>
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>Patients with no value recorded for “Date Time Vitals Taken” E14_01 associated with administration of the pain scale E14_23; or</li> <li>who have no logical values for “Date Time Medication Administered” E18_01; or</li> <li>“Date Time Procedure Performed Successfully” E19_01 to indicate the intervention occurred after assessment of pain scale <math>\geq 7</math></li> </ul>	<ul style="list-style-type: none"> <li>Date Time Vitals Taken (E14_01)</li> <li>Date Time Medication Administered (E18_01)</li> <li>Date Time Procedure Performed Successfully (E19_01)</li> </ul>
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value (number and units)</b>	90%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp;</b>	Process control or run chart by month	

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<b>Frequency</b>	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)
<b>Trending Analysis</b>	Yes
<b>Benchmark Analysis</b>	(TBD)

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**ENDOTRACHEAL INTUBATION SUCCESS RATE**

<b>MEASURE SET</b>	Performance of Skills	
<b>SET MEASURE ID #</b>	SKL-1	
<b>PERFORMANCE MEASURE NAME</b>	Endotracheal intubation success rate	
<b>Description</b>	What is the percentage of patients who received successful endotracheal intubation within two attempts in a pre-hospital setting?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	All endotracheal intubation attempts	
<b>Denominator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Events in which E19_03 “procedure” has values indicating intubation such as 96.040 “endotracheal intubation” or 96.041 “airway – intubation, other (stoma, nasal)” with related element E19_05 “number of procedure attempts”</li> </ul>	<ul style="list-style-type: none"> <li>Procedure (E19_03)</li> <li>Attempts (E19_05)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Numerator Statement (sub-population)</b>	All successful endotracheal intubations, defined as success within 2 attempts.	
<b>Numerator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>Events in which E19_03 “procedure” has values indicating intubation such as 96.040 “endotracheal intubation” or 96.041 “airway – intubation, other (stoma, nasal)” with related element E19_05 “number of procedure attempts”</li> <li>E19_05 “number of procedure attempts” value listed as one or two;</li> <li>E19_06 “Procedure successful” noted as value of 1 “yes”</li> </ul>	<ul style="list-style-type: none"> <li>Procedure (E19_03)</li> <li>Attempts (E19_05)</li> <li>Procedure Successful (E19_06)</li> </ul>
<b>Exclusion</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>



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<b>Criteria</b>		
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value (number and units)</b>	90%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	

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**CAPNOGRAPHY MEASUREMENT PERFORMED ON ANY ENDOTRACHEAL INTUBATION**

<b>MEASURE SET</b>	Performance of Skills	
<b>SET MEASURE ID #</b>	SKL-2	
<b>PERFORMANCE MEASURE NAME</b>	Capnography measurement performed on any successful endotracheal intubation	
<b>Description</b>	What is the percentage of intubated patients where capnography measurement is performed?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	All successful endotracheal intubations	
<b>Denominator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>• Events in which E19_03 “procedure” has values indicating intubation such as 96.040 “endotracheal intubation” or 96.041 “airway – intubation, other (stoma, nasal)” with related element E19_05 “number of procedure attempts”</li> <li>• E19_05 “number of procedure attempts” value listed as one or two;</li> <li>• E19_06 “Procedure successful” noted as value of 1 “yes”</li> </ul>	<ul style="list-style-type: none"> <li>• Procedure (E19_03)</li> <li>• Attempts (E19_05)</li> <li>• Procedure Successful (E19_06)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Numerator Statement (sub-population)</b>	All successful endotracheal intubations where capnography measurement was performed	
<b>Numerator Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>• Events in which E19_03 “procedure” has values indicating intubation such as 96.040 “endotracheal intubation” or 96.041 “airway – intubation, other (stoma, nasal)” with related element E19_05</li> </ul>	<ul style="list-style-type: none"> <li>• Procedure (E19_03)</li> <li>• Attempts (E19_05)</li> <li>• Procedure Successful (E19_06)</li> </ul>

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	<p>“number of procedure attempts”</p> <ul style="list-style-type: none"> <li>• E19_05 “number of procedure attempts” value listed as one or two; and</li> <li>• E19_06 “Procedure successful” noted as value of 1 “yes”</li> </ul> <p><u>And</u></p> <ul style="list-style-type: none"> <li>• E19_03 “procedure” has values of 96.992 “airway-end tidal CO<sub>2</sub> intubation” or 89.391 “capnography”</li> </ul>	
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is N/D =%	
<b>Example of Final Reporting Value (number and units)</b>	90%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	

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**AMBULANCE RESPONSE TIME BY AMBULANCE ZONE  
(EMERGENCY)**

<b>MEASURE SET</b>	Response and Transport	
<b>SET MEASURE ID #</b>	RST-1	
<b>PERFORMANCE MEASURE NAME</b>	Ambulance response time by ambulance zone (Emergency)	
<b>Description</b>	What is the 90 <sup>th</sup> percentile time value of the Ambulance Response time in Ground Ambulance Transport Zone as defined by the EMS Plan?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	Time (minutes and seconds)	
<b>Continuous Variable Statement (population)</b>	Time (in minutes and seconds) from time ambulance is en route to arrival at the scene for emergency responses ( <b>Code 3</b> ) to patients by BLS, LALS, or ALS ambulances. The 90 <sup>th</sup> percentile time interval from “unit en route date/time” (E05_05) in an emergency to EMS “unit arrived on scene date/time” (E05_06), for a given period of time	
<b>Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>All events in a particular ambulance zone</li> <li>E02_04 “type of service requested” has value 30 “911 response (scene)”;</li> <li>E02_05 “Primary role of the unit” value is 75 “transport”;</li> <li>E02_20 “response mode to scene” is 390 “lights and sirens”;</li> <li>Values for E05_05 “unit en route date/time” and E05_06 “unit arrived on scene date/time” are present and logical.</li> </ul>	<ul style="list-style-type: none"> <li>Ambulance Zone (Ground Ambulance Transport EOA area as defined by EMS plan)</li> <li>Primary role of unit (E02_05)</li> <li>Type of Service Requested (E02_04)</li> <li>Response Mode to Scene (E02_20)</li> <li>Unit En Route Date/Time (E05_05)</li> <li>Unit Arrived on Scene Date/Time (E05_06)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is the 90 <sup>th</sup> Percentile of the given numbers or distribution in their ascending order.	
<b>Example of Final Reporting Value (number and units)</b>	8 minutes 30 seconds	

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<b>Sampling</b>	Yes
<b>Aggregation</b>	Yes
<b>Blinded</b>	Yes
<b>Minimum Data Values</b>	30
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month
<b>Suggested Statistical Measures</b>	90 <sup>th</sup> Percentile Measurement. Aggregate measure of central tendency and quantile (fractile) measurement to determine the span of frequency distributions.
<b>Trending Analysis</b>	Yes
<b>Benchmark Analysis</b>	(TBD)

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**AMBULANCE RESPONSE TIME BY AMBULANCE ZONE (NON-EMERGENCY)**

<b>MEASURE SET</b>	Response and Transport	
<b>SET MEASURE ID #</b>	RST-2	
<b>PERFORMANCE MEASURE NAME</b>	Ambulance response time by ambulance zone (non-emergency)	
<b>Description</b>	What is the 90 <sup>th</sup> percentile value of the ambulance response time for the Ground Ambulance Transport Zone as defined by the EMS Plan?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	Time (minutes and seconds)	
<b>Continuous Variable Statement (population)</b>	Time (in minutes and seconds) from time ambulance is en route to arrival at the scene for non-emergency ( <b>Code 2</b> ) responses to patients by BLS, LALS, or ALS ambulances. The 90 <sup>th</sup> percentile time interval from “unit en route date/time” (E05_05) in an emergency to EMS “unit arrived on scene date/time” (E05_06), for a given period of time	
<b>Inclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	<ul style="list-style-type: none"> <li>• All events in a particular ambulance zone;</li> <li>• E02_04 “type of service requested” has value 30 “911 response (scene)”;</li> <li>• E02_05 “Primary role of the unit” value is 75 “transport”;</li> <li>• E02_20 “response mode to scene” is 395 “no lights and sirens”;</li> <li>• Values for E05_05 “unit en route date/time” and E05_06 “unit arrived on scene date/time” are present and logical.</li> </ul>	<ul style="list-style-type: none"> <li>• Ambulance Zone (Ground Ambulance Transport EOA area as defined by EMS plan)</li> <li>• Primary role of unit (E02_05)</li> <li>• Type of Service Requested (E02_04)</li> <li>• Response Mode to Scene (E02_20)</li> <li>• Unit En Route Date/Time (E05_05)</li> <li>• Unit Arrived on Scene Date/Time (E05_06)</li> </ul>
<b>Exclusion Criteria</b>	<b><u>Criteria</u></b>	<b><u>Data Elements</u></b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is the 90 <sup>th</sup> Percentile of the given numbers or distribution in their ascending order.	
<b>Example of Final Reporting Value (number and units)</b>	8 minutes 30 seconds	
<b>Sampling</b>	Yes	

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<b>Aggregation</b>	Yes
<b>Blinded</b>	Yes
<b>Minimum Data Values</b>	30
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month
<b>Suggested Statistical Measures</b>	90 <sup>th</sup> Percentile Measurement. Aggregate measure of central tendency and quantile (fractile) measurement to determine the span of frequency distributions.
<b>Trending Analysis</b>	Yes
<b>Benchmark Analysis</b>	(TBD)

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**TRANSPORT OF PATIENTS TO HOSPITAL**

<b>MEASURE SET</b>	Response and Transport	
<b>SET MEASURE ID #</b>	RST-3	
<b>PERFORMANCE MEASURE NAME</b>	Transport of patients to hospital	
<b>Description</b>	What is the percentage of EMS Patients transported by ground ambulance to a General Acute Care Hospital with a Basic Permit for emergency services?	
<b>Type of Measure</b>	Process	
<b>Reporting Value and Units</b>	(%) Percentage	
<b>Denominator Statement (population)</b>	All 911 incidents which requested or required a response by at least one EMS unit, and the unit arrived at scene	
<b>Denominator Inclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>• All unique EMS incidents in a particular ambulance zone;</li> <li>• E02_04 “type of service requested” has value 30 “911 response (scene)”;</li> <li>• E02_05 “Primary role of the unit” value is 75 “transport”;</li> <li>• E02_20 “response mode to scene” is 390 “lights and sirens”;</li> <li>• Values for E05_05 “unit en route date/time” and E05_06 “unit arrived on scene date/time” are present and logical.</li> </ul>	<ul style="list-style-type: none"> <li>• Ambulance Zone (Ground Ambulance Transport EOA area as defined by EMS plan)</li> <li>• Incident Number (E02_02)</li> <li>• Primary role of unit (E02_05)</li> <li>• Type of Service Requested (E02_04)</li> <li>• Response Mode to Scene (E02_20)</li> <li>• Unit En Route Date/Time (E05_05)</li> <li>• Unit Arrived on Scene Date/Time (E05_06)</li> </ul>
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	
<b>Numerator Statement (sub-population)</b>	All patients who received transport to a General Acute Care Hospital, with a Basic Permit, by BLS, LALS, or ALS Ambulances	
<b>Numerator Inclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	<ul style="list-style-type: none"> <li>• All unique EMS incidents in a particular ambulance zone;</li> <li>• E02_04 “type of service requested” has value 30 “911 response (scene)”;</li> <li>• E02_05 “Primary role of the unit” value is 75 “transport”;</li> </ul>	<ul style="list-style-type: none"> <li>• Ambulance Zone (Ground Ambulance Transport EOA area as defined by EMS plan)</li> <li>• Incident Number (E02_02)</li> <li>• Primary role of unit (E02_05)</li> <li>• Type of Service Requested (E02_04)</li> </ul>



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	<ul style="list-style-type: none"> <li>• E02_20 “response mode to scene” is 390 “lights and sirens”;</li> <li>• Values for E05_05 “unit en route date/time” and E05_06 “unit arrived on scene date/time” are present and logical;</li> <li>• E20_17 has a value of 5050 “hospital”</li> </ul>	<ul style="list-style-type: none"> <li>• Response Mode to Scene (E02_20)</li> <li>• Unit En Route Date/Time (E05_05)</li> <li>• Unit Arrived on Scene Date/Time (E05_06)</li> <li>• Patient Destination (E20_17)</li> </ul>
<b>Exclusion Criteria</b>	<b>Criteria</b>	<b>Data Elements</b>
	None	
<b>Indicator Formula Numeric Expression</b>	The formula is to divide (/) the numerator (N) by the denominator (D) and then multiply (x) by 100 to obtain the (%) value the indicator is to report. Therefore the indicator expressed numerically is $N/D = \%$	
<b>Example of Final Reporting Value (number and units)</b>	90%	
<b>Sampling</b>	Yes	
<b>Aggregation</b>	Yes	
<b>Blinded</b>	Yes	
<b>Minimum Data Values</b>	30	
<b>Data Collection Approach</b>	<input type="checkbox"/> Retrospective data sources for required data elements include administrative data and pre-hospital care records. <input type="checkbox"/> Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	
<b>Suggested Display Format &amp; Frequency</b>	Process control or run chart by month	
<b>Suggested Statistical Measures</b>	Mean (x); Mode (m)	
<b>Trending Analysis</b>	Yes	
<b>Benchmark Analysis</b>	(TBD)	

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## Matrix for Core Measures Testing (NEMSIS 3)\*

NEMSIS 2		NEMSIS 3	
Element Description	Code	Code	Element Description
Type of Service Requested	E02_04	eResponse.05	Type of Service Requested
Primary Role of Unit	E02_05	eResponse.07	Primary Role of the Unit
Response Mode to Scene	E02_20	eResponse.23	Response Mode to Scene
Date/Time	E05_01	eSituation.01	Date/Time of Symptom Onset/Last Normal
Unit En Route Date/Time	E05_05	eTimes.05	Unit En Route Date/Time
Unit Arrived at Scene	E05_06	eTimes.06	Unit Arrived on Scene Date/Time
Unit Left Scene	E05_09	eTimes.09	Unit Left Scene Date/Time
Age	E06_14	ePatient.15	Age
Age Units	E06_15	ePatient.16	Age Units
Date of Birth	E06_16	ePatient.17	Date of Birth
County	E08_13	eScene.21	Incident County
Prior Aid Performed By ( <b>Retired</b> )	E09_02		
Provider Primary Impression	E09_15	eSituation.11	Provider's Primary Impression
Provider Secondary Impression	E09_16	eSituation.12	Provider's Secondary Impressions
Cardiac Arrest	E11_01	eArrest.01	Cardiac Arrest
Cardiac Arrest Etiology	E11_02	eArrest.02	Cardiac Arrest Etiology
Resuscitation Attempted	E11_03	eArrest.03	Resuscitation Attempted By EMS
Any Return to Spontaneous Circulation	E11_06	eArrest.12	Any Return of Spontaneous Circulation
Date Time Vitals Taken	E14_01	eVitals.01	Date/Time Vital Signs Taken
Cardiac Rhythm	E14_03	eVitals.03	Cardiac Rhythm / Electrocardiography (ECG)
Systolic Blood Pressure	E14_04	eVitals.06	SBP (Systolic Blood Pressure)
Respiratory Rate	E14_11	eVitals.14	Respiratory Rate
Total GCS Value	E14_19	eVitals.23	Total Glasgow Coma Score
Pain scale	E14_23	eVitals.27	Pain Score
Revised Trauma Score	E14_27	eVitals.33	Revised Trauma Score
Neurological Assessment	E16_24	eExam.20	Neurological Assessment
Date Time Medication Administered	E18_01	eMedications.01	Date/Time Medication Administered
Medications Given	E18_03	eMedications.03	Medication Given
Date Time Procedure Performed Successfully	E19_01	eProcedures.01	Date/Time Procedure Performed
Procedure	E19_03	eProcedures.03	Procedure
Attempts	E19_05	eProcedures.05	Number of Procedure Attempts
Procedure Successful	E19_06	eProcedures.06	Procedure Successful
Destination/Transferred to Name	E20_01	eDisposition.01	Destination/Transferred To, Name
Destination/Transferred to Code	E20_02	eDisposition.02	Destination/Transferred To, Code
Incident/Patient Disposition	E20_10	eDisposition.12	Incident/Patient Disposition
Patient Destination	E20_17	eDisposition.21	Type of Destination
Emergency Department Disposition	E22_01	eOutcome.01	Emergency Department Disposition

\*This is not a cross-walk; it is for testing purposes only. Testing is not required and is not to be submitted to EMSA. Please see page 4 of this document for more information.

## **California EMS System Core Quality Measures**

**Edmund G. Brown Jr.**  
**Governor**  
**State of California**

**Diana S. Dooley**  
**Secretary**  
**Health and Human Services Agency**

**Howard Backer, MD, MPH, FACEP**  
**Director**  
**Emergency Medical Services Authority**

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