California EMS System Core Quality Measures

Emergency Medical Services Authority
California Health and Human Services Agency

EMSA #166 - Appendix E (7th Edition)
EMS System Quality Improvement Program Guidelines

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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 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.

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. By using the data we can begin to understand how care provided by EMS personnel translates to improved outcomes and system effectiveness.

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. Focused on achieving reliable measures that are high value and feasible within a short-term time frame.

4. Refined and published core measure sets that describe the coordination and effectiveness of EMS utilizing regional and local information for California. This project focuses on 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 EMS 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 years 2012 - 2018) while maintaining similar direction and goals to the objectives stated above.

WHAT ARE CORE MEASURES?

Core measures 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 is 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 is taken from the pre-hospital care reports.

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 and the National Association of State EMS Officials (NASEMSO) EMS Compass Project. 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 13 clinical measures and those selected by the Core Measures Task Force provide the best mechanism for EMSA to do this. The data will become even more useful when all LEMSAs in California participate fully in the project. EMSA looks forward to more robust project participation.

EMSA has made data quality and analysis a priority and has recently formed a data advisory group consisting of representatives from local EMS agency administrators and

medical directors to help determine a cooperative strategy for improving EMS data and enhancing data quality efforts.

ESSENTIAL ELEMENTS

The table below lists all 27 essential elements found in this instruction manual. Each element plays a vital role in the ability to collect and report the California Core Measures. EMS providers and LEMSAs should ensure that these elements are appropriately captured and populated in every patient care record.

Element Description	Element Name
Incident/Patient Disposition	eDisposition.12
Additional Transport Mode Descriptors	eDisposition.18
Hospital Capability	eDisposition.23
Destination Team Pre-Arrival Alert or Activation	eDisposition.24
Date/Time of Destination Prearrival Alert or Activation	eDisposition.25
Mechanism of Injury	eInjury.02
Trauma Center Criteria	eInjury.03
Vehicular, Pedestrian, or Other Injury Risk Factor	eInjury.04
Medication Given	eMedications.03
Patient Age	ePatient.15
Date/Time Procedure Performed	eProcedure.01
Procedure	eProcedure.03
Patient Care Report Number	eRecord.01
Type of Service Requested	eResponse.05
Additional Response Mode Descriptors	eResponse.24
Possible Injury	eSituation.02
Provider Primary Impression	eSituation.11
Provider Secondary Impression	eSituation.12
Arrived at Patient Date/Time	eTimes.07
Unit Left Scene Date/Time	eTimes.09
Cardiac Rhythm / Electrocardiography (ECG)	eVitals.03
Pulse Oximetry	eVitals.12
Respiratory Rate	eVitals.14
Blood Glucose Level	eVitals.18
Pain Scale Score	eVitals.27
Stroke Scale Score	eVitals.29
Stroke Scale Type	eVitals.30

QUALIFYING DATA FOR 2018 CALENDAR YEAR REPORTING

The data for all measures will come from the calendar year 2018 for which period the NEMSIS 3 standard was utilized as measurement specifications are designed for NEMSIS 3. For consistency, only data from this version of NEMSIS should be reported to EMSA.

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.

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 NEMSIS. Please refer to the following documents regarding the codes found in each measure:

NEMSIS 3.4.0 Data Dictionary – Updated 7/13/2016
(http://nemsis.org/media/nemsis_v3/release-3.4.0/datadictionary/PDFHTML/DEMEMS/index.html)

National Association of State EMS Officials – EMS Compass Project
(https://nasemso.org/projects/ems-compass/)

NHTSA: Emergency Medical Services Performance Measures – Updated 12/2009
(www.ems.gov/pdf/811211.pdf)

INSTRUCTIONS FOR RUNNING MEASURE REPORTS

Run each core measure exactly as specified on each core measure specification sheet. This consistency is key to comparing the reported results throughout the State. EMSA intends to eventually run the Core Measure reports for all LEMSAs and will be utilizing this same approach (a single specification/query for the entire state). EMSA requests that only elements and codes found in this document be used to calculate each indicator and not use any custom elements or fields specific to a local jurisdiction or an EMS provider.

Core Measures Specification Sheets

SCENE TIME FOR TRAUMA PATIENTS TRANSPORTED TO A TRAUMA CENTER

MEASURE SET	Trauma	
SET MEASURE ID #	TRA - 1	
PERFORMANCE MEASURE NAME	Time for trauma patients transported to a Trauma Center	
Description	What is the 90th percentile scene time, beginning at the time of patient contact until the patient arrived at a trauma center, for trauma patients, originating from a 911 response?	
Type of Measure	Process	
Reporting Value and Units	Time (Minutes and Seconds)	
Continuous Variable Statement (Population)	Time (in minutes) from time EMS personnel arrival at the patient side until the patient arrives at a trauma center, originating from a 911 Response	
Inclusion Criteria	**Criteria**	**Data Elements**
	• eResponse.05 = 2205001 "911 Response (Scene)" • eTimes.09 = Logical and Present • eTimes.07 = Logical and Present • AND Any one of the following: • (eInjury.02 = Logical and Present OR • eInjury.03 = 2903001, 2903003, 2903005, 2903007, 2903009, 2903011, 2903013, 2903015, 2903017, 2903019, 2903021 OR • eInjury.04 = 2904001, 2904003, 2904005, 2904007, 2904009, 2904011, 2904013, 2904015)	• Type of Service Requested (eResponse.05) • Mechanism of Injury (eInjury.02) • Trauma Center Criteria (eInjury.03) • Vehicular, Pedestrian, or Other Injury Risk Factor (eInjury.04) • Arrived at Patient Date/Time (eTimes.07) • Unit Left Scene Date/Time (eTimes.09)
Exclusion Criteria	**Criteria**	**Data Elements**
	eInjury.02 = Not Null, 7701001, 7701003, 7701005	

Indicator Formula Numeric Expression	The formula is the 90th Percentile of the given numbers or distribution in their ascending order.
Example of Final Reporting Value (number and units)	19 minutes, 34 seconds (19:34)
Sampling	Yes
Aggregation	Yes
Blinded	Yes
Minimum Data Values	30
Data Collection Approach	☐ Retrospective data sources for required data elements include administrative data and pre-hospital care records. ☐ 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	90th Percentile Measurement. Aggregate measure of central tendency and quantile (fractile) measurement to determine the span of frequency distributions.
Trending Analysis	Yes
Benchmark Analysis	(TBD)

TRANSPORT OF SUSPECTED TRAUMA PATIENTS TO A TRAUMA CENTER

MEASURE SET	Trauma	
SET MEASURE ID #	TRA - 2	
PERFORMANCE MEASURE NAME	Measurement of suspected trauma patients transported to a trauma center	
Description	What percent of suspected trauma patients meeting CDC Step 1 or 2 or 3 criteria were transported to a trauma center?	
Type of Measure	Process	
Reporting Value and Units	(%) Percentage	
Denominator Statement (population)	Number of suspected trauma patients identified from a 911 response	
Denominator Inclusion Criteria	**Criteria**	**Data Elements**
	• eResponse.05 = 2205001 "911 Response (Scene)" AND Any one of the following: • (eInjury.02 = Logical and Present OR • eInjury.04 = 2904001, 2904003, 2904005, 2904007, 2904009, 2904011, 2904013, 2904015)	• Type of Service Requested (eResponse.05) • Mechanism of Injury (eInjury.02) • Vehicular, Pedestrian, or Other Injury Risk Factor (eInjury.04)
Exclusion Criteria	**Criteria**	**Data Elements**
	• eInjury.02 = Not Null, 7701001, 7701003, 7701005	• Mechanism of Injury (eInjury.02)
Numerator Statement (sub-population)	Number of suspected trauma patients meeting CDC Step 1 or 2 or 3 criteria who were transported to a trauma center from a 911 response	
Numerator Inclusion Criteria	**Criteria**	**Data Elements**

	• eResponse.05 = 2205001 "911 Response (Scene)" AND • eInjury.03 = 2903001, 2903003, 2903005, 2903007, 2903009, 2903011, 2903013, 2903015, 2903017, 2903019, 2903021 AND Any one of the following: • (eInjury.02 = Logical and Present OR • eInjury.04 = 2904001, 2904003, 2904005, 2904007, 2904009, 2904011, 2904013, 2904015)	• Hospital Capability (eDisposition.23) • Type of Service Requested (eResponse.05) • Mechanism of Injury (eInjury.02) • Trauma Center Criteria (eInjury.03) • Vehicular, Pedestrian, or Other Injury Risk Factor (eInjury.04)
Exclusion Criteria	**Criteria**	**Data Elements**
	eInjury.02 = Not Null, 7701001, 7701003, 7701005	
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)	15%	
Sampling	No	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	
Data Collection Approach	• Retrospective data sources for required data elements include administrative data and pre-hospital care records. • Variation may exist in the assignment of coding;	

	therefore, coding practices may require evaluation to ensure consistency.	

ASPIRIN ADMINISTRATION FOR CHEST PAIN/DISCOMFORT

MEASURE SET	Acute Coronary Syndrome	
SET MEASURE ID #	ACS - 1	
PERFORMANCE MEASURE NAME	Aspirin Administration for Chest Pain/Discomfort	
Description	What percent of patients with chest pain/discomfort were administered aspirin from EMS personnel originating from a 911 response?	
Type of Measure	Process	
Reporting Value and Units	(%) Percentage	
Denominator Statement (population)	Number of patients who had a primary or secondary impression of chest pain/discomfort originating from a 911 response.	
Denominator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 "911 Response (Scene)" • (eSituation.11 = I20.9 "Chest Pain - Suspected Cardiac" OR • eSituation.12 = I20.9 "Chest Pain - Suspected Cardiac")	• Type of Service Requested (eResponse.05) • Provider Primary Impression (eSituation.11) • Provider Secondary Impression (eSituation.12)
Exclusion Criteria	**Criteria**	**Data Elements**
	None	
Numerator Statement (sub-population)	Number of patients who had a primary or secondary impression of chest pain/discomfort originating from a 911 response who also received aspirin from EMS personnel	
Numerator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 "911 Response (Scene)" • (eSituation.11 = I20.9 "Chest Pain - Suspected Cardiac" OR • eSituation.12 = I20.9 "Chest	• Type of Service Requested (eResponse.05) • Provider Primary Impression (eSituation.11) • Provider Secondary Impression (eSituation.12)

	Pain - Suspected Cardiac") AND • eMedications.03 = 1191 "Aspirin"	• Medication Given (eMedications.03)
Exclusion Criteria	**Criteria**	**Data Elements**
	eMedications.03 = 8801001, 8801003, 8801007, 8801009, 8801019, 8801023 "Pertinent Negatives"	• Medication Given (eMedications.03)
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)	15%	
Sampling	No	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	
Data Collection Approach	• Retrospective data sources for required data elements include administrative data and pre-hospital care records. • Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	

SCENE TIME FOR STEMI PATIENTS

MEASURE SET	Acute Coronary Syndrome	
SET MEASURE ID #	ACS - 3	
PERFORMANCE MEASURE NAME	Transport Time for STEMI Patients	
Description	For STEMI patients, what is the 90th Percentile time from EMS personnel arrival at patient side until the patient arrives at a STEMI center originating from a 911 Response?	
Type of Measure	Process	
Reporting Value and Units	Time (Minutes)	
Continuous Variable Statement (Population)	Time (in minutes) from time EMS personnel arrival at the patient side until the patient arrives at a STEMI center, originating from a 911 response	
Inclusion Criteria	**Criteria**	**Data Elements**
	• eResponse.05 = 2205001 "911 Response (Scene)" • eProcedures.01 = Not Null • eProcedures.03 = 268400002 "12 Lead ECG Obtained" • eVitals.03 = 9901051, 9901053, 9901055, 9901057 "STEMI Anterior Ischemia, STEMI Inferior Ischemia, STEMI Lateral Ischemia, STEMI Posterior Ischemia" • eTimes.07 = Logical and Present • eTimes.09 = Logical and Present *Transport Time is calculated as the difference between eTimes.09 and eTimes.07*	• Type of Service Requested (eResponse.05) • Date/Time Procedure Performed (eProcedures.01) • Procedure (eProcedures.03) • Cardiac Rhythm / Electrocardiography (ECG) (eVitals.03) • Arrived at Patient Date/Time (eTimes.07) • Unit Left Scene Date/Time (eTimes.09)
Exclusion Criteria	**Criteria**	**Data Elements**
	None	
Indicator Formula Numeric Expression	The formula is the 90th Percentile of the given numbers or distribution in their ascending order.	

Example of Final Reporting Value (number and units)	19 minutes, 34 seconds (19:34)
Sampling	Yes
Aggregation	Yes
Blinded	Yes
Minimum Data Values	30
Data Collection Approach	☐ Retrospective data sources for required data elements include administrative data and pre-hospital care records. ☐ 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	90th Percentile Measurement. Aggregate measure of central tendency and quantile (fractile) measurement to determine the span of frequency distributions.
Trending Analysis	Yes
Benchmark Analysis	(TBD)

ADVANCED HOSPITAL NOTIFICATION FOR STEMI PATIENTS

MEASURE SET	Acute Coronary Syndrome	
SET MEASURE ID #	ACS - 4	
PERFORMANCE MEASURE NAME	Advance Hospital Notification for STEMI Patients	
Description	What percent of STEMI patients transported by ground ambulance included an advance hospital notification or pre-arrival alert?	
Type of Measure	Process	
Reporting Value and Units	(%) Percentage	
Denominator Statement (population)	Number of patients who received a 12 Lead ECG and yielded a positive STEMI measurement.	
Denominator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 “911 Response (Scene)” • eProcedures.01 = Not Null • eProcedures.03 = 268400002 “12 Lead ECG Obtained” • eVitals.03 = 9901051, 9901053, 9901055, 9901057 “STEMI Anterior Ischemia, STEMI Inferior Ischemia, STEMI Lateral Ischemia, STEMI Posterior Ischemia”	• Type of Service Requested (eResponse.05) • Date/Time Procedure Performed (eProcedures.01) • Procedure (eProcedures.03) • Cardiac Rhythm / Electrocardiography (ECG) (eVitals.03)
Exclusion Criteria	**Criteria**	**Data Elements**
	None	
Numerator Statement (sub-population)	Number of patients who received a 12 Lead ECG and yielded a positive STEMI measurement which resulted in a documented advance hospital notification or pre-arrival alert	
Numerator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 “911 Response (Scene)” • (eSituation.11 = I20.9 “Chest Pain	• Type of Service Requested (eResponse.05) • Date/Time Procedure

	- Suspected Cardiac", I21.3 "Chest Pain – STEMI" **OR** • eSituation.12 = I20.9 "Chest Pain - Suspected Cardiac", I21.3 "Chest Pain – STEMI") **AND EITHER** • (eDisposition.24 = 4224013 "Yes-STEMI" **OR** • eDisposition.25 = NOT NULL)	Performed (eProcedure.01) • Procedure (eProcedure.03) • Cardiac Rhythm / Electrocardiography (ECG) (eVitals.03) • Destination Team Pre-Arrival Alert or Activation (eDisposition.24) • Date/Time of Destination Prearrival Alert or Activation (eDisposition.25)
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)	15%	
Sampling	No	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	

TIME TO EKG

MEASURE SET	Acute Coronary Syndrome	
SET MEASURE ID #	ACS - 6	
PERFORMANCE MEASURE NAME	Time to EKG	
Description	For suspected STEMI patients who received aspirin by EMS personnel, what amount of time, reported at the 90th percentile, transpired from EMS personnel arrival on scene until an EKG measurement with a positive STEMI was recorded?	
Type of Measure	Process	
Reporting Value and Units	Time (Minutes and Seconds)	
Continuous Variable Statement (Population)	Time (in minutes and seconds) from time EMS personnel arrived at the patient side until an EKG was applied for suspected STEMI patients who received aspirin by EMS personnel, originating from a 911 Response	
Inclusion Criteria	**Criteria**	**Data Elements**
	• (eSituation.11 = I20.9 "Chest Pain - Suspected Cardiac", I21.3 "Chest Pain – STEMI" OR • eSituation.12 = I20.9 "Chest Pain - Suspected Cardiac", I21.3 "Chest Pain – STEMI") • eMedications.03 = 1191 "Aspirin" • (eProcedures.03 = 268400002 "12 Lead ECG Obtained" AND • eVitals.03 = 9901051, 9901053, 9901055, 9901057 "STEMI Anterior Ischemia, STEMI Inferior Ischemia, STEMI Lateral Ischemia, STEMI Posterior Ischemia") • eResponse.05 = 2205001 "911 Response (Scene)" WHERE eProcedure.01 = logical and present	• Type of Service Requested (eResponse.05) • Provider Primary Impression (eSituation.11) • Provider Secondary Impression (eSituation.12) • Medication Given (eMedication.03) • Date/Time Procedure Performed (eProcedure.01) • Procedure (eProcedure.03) • Arrived at Patient Date/Time (eTimes.07) • Cardiac Rhythm / Electrocardiography (ECG) (eVitals.03)

	eTimes.07 = logical and present	
Exclusion Criteria	**Criteria**	**Data Elements**
	eMedications.03 = 8801001, 8801003, 8801007, 8801009, 8801019, 8801023 "Pertinent Negatives"	
Indicator Formula Numeric Expression	The formula is the 90th Percentile of the given numbers or distribution in their ascending order.	
Example of Final Reporting Value (number and units)	19 minutes, 34 seconds (19:34)	
Sampling	Yes	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	
Data Collection Approach	☐ Retrospective data sources for required data elements include administrative data and pre-hospital care records. ☐ 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	90th Percentile Measurement. Aggregate measure of central tendency and quantile (fractile) measurement to determine the span of frequency distributions.	
Trending Analysis	Yes	
Benchmark Analysis	(TBD)	

TREATMENT ADMINISTERED FOR HYPOGLYCEMIA

MEASURE SET	Hypoglycemia	
SET MEASURE ID #	HYP - 1	
PERFORMANCE MEASURE NAME	Treatment administered for hypoglycemia	
Description	What percent of patients received treatment to correct their hypoglycemia originating from a 911 response?	
Type of Measure	Process	
Reporting Value and Units	(%) Percentage	
Denominator Statement (population)	Number of patients with a blood glucose level indicating hypoglycemia	
Denominator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 "911 Response (Scene)" • eVitals.18 = score/value < 60	• Type of Service Requested (eResponse.05) • Blood Glucose Level (eVitals.18)
Exclusion Criteria	**Criteria**	**Data Elements**
	None	
Numerator Statement (sub-population)	Number of patients who received treatment to correct their hypoglycemia originating from a 911 response	
Numerator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 "911 Response (Scene)" • eVitals.18 = score/value < 60 AND • eMedications.03 = 1795480, 1795477, 260258, 309778, 237653, 4832, 4850, 377980	• Type of Service Requested (eResponse.05) • Blood Glucose Level (eVitals.18) • Medication Given (eMedications.03)

Exclusion Criteria	Criteria	Data Elements
	• eMedications.03 = 8801001, 8801003, 8801007, 8801009, 8801019, 8801023 "Pertinent Negatives"	• Medication Given (eMedications.03)
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)	15%	
Sampling	No	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	
Data Collection Approach	• Retrospective data sources for required data elements include administrative data and pre-hospital care records. • Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	

PREHOSPITAL SCREENING FOR SUSPECTED STROKE PATIENTS

MEASURE SET	Stroke	
SET MEASURE ID #	STR - 1	
PERFORMANCE MEASURE NAME	Prehospital Screening for Suspected Stroke Patients	
Description	What percent of suspected stroke patients received a prehospital stroke screening originating from a 911 response?	
Type of Measure	Process	
Reporting Value and Units	(%) Percentage	
Denominator Statement (population)	Number of patients with a provider primary or secondary impression of stroke	
Denominator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 "911 Response (Scene)" • (eSituation.11 = I63.9 OR • eSituation.12 = I63.9)	• Type of Service Requested (eResponse.05) • Provider Primary Impression (eSituation.11) • Provider Secondary Impression (eSituation.12)
Exclusion Criteria	**Criteria**	**Data Elements**
	None	
Numerator Statement (sub-population)	Number of patients with a provider primary or secondary impression of stroke and yielding a documented stroke assessment	
Numerator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 "911 Response (Scene)" • (eSituation.11 = I63.9 OR • eSituation.12 = I63.9)	• Type of Service Requested (eResponse.05) • Provider Primary Impression (eSituation.11) • Provider Secondary Impression (eSituation.12)

	AND EITHER OF THE FOLLOWING • (eVitals.29 = 3329001 “Negative”, 3329003 “Non-Conclusive”, 3329005 “Positive” OR • eVitals.30 = 3330001 “Cincinnati”, 3330003 “Los Angeles”, 3330005 “Massachusetts, 3330007 “Miami Emergency Neurologic Deficit”, 3330009 “NIH”, 3330013 “F.A.S.T. Exam”)	• Stroke Scale Score (eVitals.29) • Stroke Scale Type (eVitals.30)
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)	15%	
Sampling	No	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	
Data Collection Approach	• Retrospective data sources for required data elements include administrative data and pre-hospital care records. • Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	

GLUCOSE TESTING FOR SUSPECTED STROKE PATIENTS

MEASURE SET	Stroke	
SET MEASURE ID #	STR-2	
PERFORMANCE MEASURE NAME	Glucose Testing for Suspected Stroke patients	
Description	Patients with suspected stroke have assessment of blood glucose level originating from a 911 response	
Type of Measure	Process	
Reporting Value and Units	(%) Percentage	
Denominator Statement (population)	All Suspected Stroke patients	
Denominator Inclusion Criteria	**Criteria**	**Data Elements**
	• eResponse.05 = 2205001 “911 Response (Scene)” AND EITHER • eSituation.11 = I63.9 “Stroke / CVA / TIA” OR • eSituation.12 = I63.9 “Stroke / CVA / TIA”	• Type of Service Requested (eResponse.05) • Provider Primary Impression (eSituation.11) • Provider Secondary Impression (eSituation.12)
Exclusion Criteria	**Criteria**	**Data Elements**
	None	
Numerator Statement (sub-population)	Glucose level checked on all suspected stroke patients	
Numerator Inclusion Criteria	**Criteria**	**Data Elements**
	• eResponse.05 = 2205001 “911 Response (Scene)” AND EITHER • eSituation.11 = I63.9 “Stroke / CVA / TIA” OR • eSituation.12 = I63.9 “Stroke / CVA / TIA” WHICH INCLUDES • eVitals.18 = Logical and Present	• Provider Primary Impression (eSituation.11) • Type of Service Requested (eResponse.05) • Provider Secondary Impression (eSituation.12) • Blood Glucose Level (eVitals.18)
Exclusion Criteria	**Criteria**	**Data Elements**

	eVitals.18 = 7701001, 7701003 “Not Values” eVtials.18 = 8801019, 8801023 “Pertinent Negatives”	• Blood Glucose Level (eVitals.18)
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	☐ Retrospective data sources for required data elements include administrative data and pre-hospital care records. ☐ 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	☐ ☐	

ADVANCE HOSPITAL NOTIFICATION FOR STROKE PATIENTS

MEASURE SET	Stroke	
SET MEASURE ID #	STR - 4	
PERFORMANCE MEASURE NAME	Advance Hospital Notification for Stroke Patients	
Description	What percent of stroke patients transported by ground ambulance included an advance hospital notification or pre-arrival alert?	
Type of Measure	Process	
Reporting Value and Units	(%) Percentage	
Denominator Statement (population)	Number of patients who received a stroke scale and yielded a positive stroke measurement.	
Denominator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 “911 Response (Scene)” • eVitals.29 = 3329005 “Positive”	• Type of Service Requested (eResponse.05) • Stroke Scale Score (eVitals.29)
Exclusion Criteria	**Criteria**	**Data Elements**
	None	
Numerator Statement (sub-population)	Number of patients who received a stroke scale and yielded a positive stroke measurement which resulted in a documented advance hospital notification or pre-arrival alert	
Numerator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 “911 Response (Scene)” • eVitals.29 = 3329005 “Positive” AND • (eDisposition.24 = 4224015 “Yes-Stroke” OR	• Type of Service Requested (eResponse.05) • Stroke Scale Score (eVitals.29) • Destination Team Pre-Arrival Alert or Activation (eDisposition.24) • Date/Time of Destination Pre-Arrival Alert or Activation (eDisposition.25)

	• eDisposition.25 = NOT NULL)	
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)	15%	
Sampling	No	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	
Data Collection Approach	• Retrospective data sources for required data elements include administrative data and pre-hospital care records. • Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	

RESPIRATORY ASSESSMENT FOR PEDIATRIC PATIENTS

MEASURE SET	Pediatric	
SET MEASURE ID #	PED - 3	
PERFORMANCE MEASURE NAME	Respiratory Assessment for Pediatric Patients	
Description	What percent of pediatric patients with a provider primary or secondary impression of patients received a documented respiratory assessment originating from a 911 response?	
Type of Measure	Process	
Reporting Value and Units	(%) Percentage	
Denominator Statement (population)	Number of pediatric patients with a provider primary or secondary impression of respiratory distress	
Denominator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 “911 Response (Scene)” • ePatient.15 = <15 “Patient Age” • (eSituation.11 = J98.01 OR • eSituation.12 = J98.01)	• Type of Service Requested (eResponse.05) • Patient Age (ePatient.15) • Provider Primary Impression (eSituation.11) • Provider Secondary Impression (eSituation.12)
Exclusion Criteria	**Criteria**	**Data Elements**
	None	
Numerator Statement (sub-population)	Number of pediatric patients with a provider primary or secondary impression of respiratory distress and yielding a documented respiratory assessment	
Numerator Inclusion Criteria	**Criteria**	**Data Elements**
	All events where: • eResponse.05 = 2205001 “911 Response (Scene)” • ePatient.15 = <15 “Patient Age” • (eSituation.11 = J98.01 OR • eSituation.12 = J98.01)	• Type of Service Requested (eResponse.05) • Patient Age (ePatient.15) • Provider Primary Impression (eSituation.11) • Provider Secondary Impression

	AND • (eVtials.12 = Logical and Present OR • eVitals.14 = Logical and Present)	(eSituation.12) • Pulse Oximetry (eVitals.12) • Respiratory Rate (eVitals.14)
Exclusion Criteria	**Criteria**	**Data Elements**
	eVitals.12 = 7701001, 7701003, 8801005, 8801019, 8801023 eVitals.14= 7701001, 7701003, 8801005, 8801019, 8801023	• Pulse Oximetry (eVitals.12) • Respiratory Rate (eVitals.14)
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)	15%	
Sampling	No	
Aggregation	Yes	
Minimum Data Values	30	
Data Collection Approach	• Retrospective data sources for required data elements include administrative data and pre-hospital care records. • Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	

911 REQUESTS FOR SERVICES THAT INCLUDE A LIGHT AND/OR SIREN RESPONSE

MEASURE SET	Response and Transport	
SET MEASURE ID #	RST - 4	
PERFORMANCE MEASURE NAME	911 requests for services that include a lights and/or siren response	
Description	What percent of 911 requests for services that include a lights and/or siren response?	
Type of Measure	Process	
Reporting Value and Units	(%) Percentage	
Denominator Statement (population)	Number of 911 requests for services	
Denominator Inclusion Criteria	**Criteria**	**Data Elements**
	• eResponse.05 = 2205001 “911 Response (Scene)”	• Type of Service Requested (eResponse.05)
Exclusion Criteria	**Criteria**	**Data Elements**
	None	
Numerator Statement (sub-population)	Number of 911 requests for services that include a lights and/or siren response	
Numerator Inclusion Criteria	**Criteria**	**Data Elements**
	• eResponse.24 = 2224015, 2224017, 2224021, 2224023 • eResponse.05 = 2205001 “911 Response (Scene)”	• Additional Response Mode Descriptors (eResponse.24) • Type of Service Requested (eResponse.05)
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)	15%	
Sampling	No	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	
Data Collection Approach	• Retrospective data sources for required data elements include administrative data and pre-hospital care records. • Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	

LIGHT AND/OR SIREN TRANSPORT RATE

MEASURE SET	Response and Transport	
SET MEASURE ID #	RST - 5	
PERFORMANCE MEASURE NAME	Lights and/or Siren Transport Rate	
Description	What percent of 911 requests for services that include a lights and/or siren transport?	
Type of Measure	Process	
Reporting Value and Units	(%) Percentage	
Denominator Statement (population)	Number of 911 requests for services which included a patient transport	
Denominator Inclusion Criteria	**Criteria**	**Data Elements**
	• eResponse.05 = 2205001 "911 Response (Scene)" • eDisposition.12 = 4212033 "Patient Treated, Transported by this EMS Unit"	• Type of Service Requested (eResponse.05) • Incident/Patient Disposition (eDisposition.12)
Exclusion Criteria	**Criteria**	**Data Elements**
	None	
Numerator Statement (sub-population)	Number of 911 Requests for services that include a lights and/or siren patient transport	
Numerator Inclusion Criteria	**Criteria**	**Data Elements**
	• eResponse.05 = 2205001 "911 Response (Scene)" • eDisposition.12 = 4212033 "Patient Treated, Transported by this EMS Unit" • eDisposition.18 = 4218011, 4218013, 4218017, 4218019	• Type of Service Requested (eResponse.05) • Incident/Patient Disposition (eDisposition.12) • Additional Transport Mode Descriptors (eDisposition.18)
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)	15%	
Sampling	No	
Aggregation	Yes	
Blinded	Yes	
Minimum Data Values	30	
Data Collection Approach	• Retrospective data sources for required data elements include administrative data and pre-hospital care records. • Variation may exist in the assignment of coding; therefore, coding practices may require evaluation to ensure consistency.	

California EMS System Core Quality Measures

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