EMERGENCY MEDICAL SERVICES PERFORMANCE MEASURES

RECOMMENDED ATTRIBUTES AND INDICATORS FOR SYSTEM AND SERVICE PERFORMANCE

December 2009

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Summary of Measures

EMS Performance Measures: Recommended Measures for System and Service Performance

Executive Summary

The EMS Performance Measures Project, begun in 2002 and concluded in 2007, gives the Nation's EMS community an additional tool to gauge and report various aspects of an EMS system including the environment in which EMS responds, the performance of emergency medical service (EMS) agencies, and the overall performance of local systems. We recognize that many EMS performance measures existed at the beginning of this project and that others evolved in many geographic, sponsor-specific, and specialty areas during its course. So, for some, this tool may offer enhancement to their current measurement criteria by establishing common measures nationwide while, for others, it may offer a mechanism to begin measurement in their local jurisdictions.

The goals of the project, addressed in two distinct phases, were to determine whether the country's EMS leadership desired a common set of specifically defined measures and, if so, what those measures would be. The answer to the first was "yes." This project report offers 35 consensus-based measures that addresses the second.

Each measure is presented in a format comparable with formats used elsewhere in the healthcare system. It is anticipated that this will assist EMS providers and system leaders with future performance reporting, research, and reimbursement issues. The overall format, however, may be daunting to some readers, so they are encouraged to focus on the measures portrayed along with the formulas and data elements necessary to implement them.

The measures are presented as they evolved and are in no specific order or priority. The measures are however categorized by characteristic or operational area (e.g., "finance and funding" and "response") for general quick reference purposes.

Finally, 3 of the 35 measures are "parked" for future development.

Local EMS agencies and systems are encouraged to begin using some type of EMS performance measures to evaluate and benchmark their own systems. They may choose these or other performance measures customary to the industry. Once baseline measures are established in local systems, then comparative reports can be delivered according to a timeline determined by system leaders. These reports will be useful in making necessary system changes and assuring quality service to the public.

Introduction

By 2002, a number of performance measurement initiatives were being discussed or developed in the United States, but there existed little if any coordinated efforts among these. In 2002, the National Association of State EMS Directors (now the National Association of State EMS Officials, NASEMSO) and the National Association of EMS Physicians (NAEMSP) held a leadership forum sponsored by the National Highway Traffic Safety Administration and the Health Resources and Services Administration to discuss this. Specifically, they sought to determine if there was interest among the national EMS leadership groups in attendance to develop a nationwide set of common performance measures geared to the

evolving national prehospital dataset. The answer was unequivocally positive and the meeting created momentum to seek funding in 2003 for such an initiative.

In September 2004 the EMS Performance Measures Project Steering Committee (see Appendix) met and suggested over 100 performance questions to be considered for trimming and formatting to a "top 25" performance indicators or attributes to ultimately be recommended by the project. It also heard alternative means of presenting performance measures. A format for the presentation of EMS performance measures (indicators and attributes), as approved by an open voting process involving the EMS community at large via the Open Source EMS Initiative in 2003, was accepted by the steering committee for this purpose. It has the advantage of being based on the healthcare performance indicator format developed by the Joint Commission on the Accreditation of Healthcare Organizations.

In subsequent survey processes of the steering committee, the number of performance questions increased to 138 and was finally pared to 25 in July 2005. These were circulated to the steering committee for additional guidance later in 2005.

From October 2005 to August 2006, a working group of the steering committee helped to refine the originally selected questions and format them as performance indicators and attributes. Following steering committee review of a late draft, a public review of the document on-line was offered in summer, 2006. The steering committee then met at the end of August, 2006 to review the document and comments. It made final changes in the draft that was then reviewed by the committee and presented to NHTSA in December 2006. Minor revisions were incorporated in October 2007.

This document, which remains but a starting point and a working document, contains 18 question areas and 35 indicators or attributes. These should facilitate movement toward more common methods of performance measurement. Three question areas were "parked" by the steering committee. This simply means that they were deemed too important to exclude, but also required significant additional work.

Performance Indicator/Attribute Format

The following is the agreed-upon format for describing the measures being developed:

- **Indicator/Attribute Name** – Name or title of the performance indicator

- **Key Process Path** – Starting with one of the predefined key process names, this item shows which key process and sub-process that the indicator reflects

- **Patient or Customer/Need** – Indicators are designed to reflect how well or how efficiently a given patient or customer need is being met. This item shows what patient or customer need the indicator reflects

- **Type of Measure** – Structure, process, or outcome

- **Objective** – Describes why an indicator is useful in specifying and assessing the process or outcome of care measured by the indicator

- **Indicator/Attribute Formula** – The equation for calculation of the indicator. If applicable, separate sections will separately address the numerator and denominator of the indicator equation.

- **Indicator/Attribute Formula Description** – Explanation of the formula used for the indicator. Where applicable, separate descriptions detailing the numerator and denominator will be provided.

- **Denominator Description** – Description of the population being studied or other denominator characteristics, including any equation or other key aspects that characterize the denominator

  - **Denominator Inclusion Criteria** – Additional information not included in the denominator statement that details the parameters of the denominator population

  - **Denominator Exclusion Criteria** – Information describing criteria for removing cases from the denominator

  - **Denominator Data Sources** – Sources for data used in generating the denominator. **These are either NEMSIS-dataset-derived or based on recommended surveys to be done by directors (administrative/operations/medical) of local, regional, or State EMS systems or provider agencies.**

- **Numerator Description** – Description of the subset of the population being studied or other numerator characteristics, including any equation or other key aspects that characterize the numerator

  - **Numerator Inclusion Criteria** – Additional information not included in the numerator statement that details the parameters of the numerator population

  - **Numerator Exclusion Criteria** – Information describing criteria for removing cases from the numerator

  - **Numerator Data Sources** – Sources for data used in generating the numerator. **These are either NEMSIS-dataset-derived or based on recommended surveys to be done by directors (administrative/operations/medical) of local, regional, or State EMS systems or provider agencies.**

- **Sampling Allowed** – Indicates if sampling the study population is or is not allowed in calculation of this indicator.

- **Sampling Description** – If sampling is allowed, this will describe the sampling process to be used for this indicator.

- **Minimum Number of Data Points** – Tells how many data points are needed, at a minimum, for calculation of this indicator.

- **Suggest Reporting Format: Numerical** – The suggested way in which the numerical results should be expressed (i.e., decimal minutes, percentages, ratios)

- **Suggest Reporting Format: Graphical** – The suggested way in which reports should be presented in graphical format (i.e., pie charts, statistical process control charts, etc.)

- **Suggest Reporting Frequency** – Time frame, number of successive cases or other grouping strategies by which cases should be aggregated for calculating and reporting results

- **Testing** – Indicates if a formal structured evaluation has been performed on the various scientific properties of the indicator such as its reliability, validity, and degree of difficulty of data collection

- **Stratification** – Indicates if stratification has been applied to the indicator

- **Stratification Options** – Suggested stratification criteria for use with this indicator

- **Current Development Status** – Describes the amount of work completed to date relative to the final implementation of the indicator

- **Additional Information** – Further information regarding an indicator not addressed in other sections

- **References** – Citations of works used for development of the indicator

- **Contributors** – Listing of persons or organizations used in development and refinements to this indicator.

Performance Measure Categories

The following table explains the identifier (ID) labels for the measures in the tables below.

Table 1	Key To Category Abbreviations
S	System Design and Structure
HR	Human Resources (culture, training, safety, credentialing, etc.)
CC	Clinical Care and Outcome
R	Response
F	Finance/Funding
Q	Quality Management
CD	Community Demographics

Recommended Measures

The following are the recommended measures in performance indicator and attribute format. They represent the questions/question areas that steering committee members felt were most important to be represented by indicators.

In the format below, any recommended service/ or system indicator has clear column headings and is labeled "Indicator." Any recommended service or system attribute has shaded column headings and is labeled "Attribute."

In this context, an indicator is a metric that reflects on the performance of a system or process. As the indicator value rises or falls, it suggests that the system or process is operating better or worse – like a performance thermometer. In contrast, an attribute does not necessarily reflect on how well a system or process is working – it reports on the presence or absence of an attribute within an EMS organization. It would typically be used to filter participating organizations so that comparisons between organizations with similar attributes may be made. For example, EMS organizations using Indicator 16.1(Q) on "Delay-Causing Crash Rate per 1,000 EMS Responses" could use the results from Attribute 1.2(S) for "Emergency Medical Dispatch Impact on Response Mode" to limit comparisons of their data to other systems that have similar policies in place for determining which calls have a lights and siren response.

Looking at attribute data aggregated from multiple systems would facilitate a regional, State, or national measurement on how many systems have a particular attribute. If more or less of that attribute is determined to be more or less desirable, it could constitute an indicator from

that perspective. For example, if it is considered desirable to use some type of emergency medical dispatch protocol reference system, the aggregated data from entire State could be used as an indicator at the State level for the percentage of respondents who indicate use of such reference systems.

The Indicator/Attribute Formula, Denominator, and Numerator explanations refer to data elements in the NHTSA EMS Prehospital Dataset (e.g., NHTSA E09-13). The Word or PDF file forms of the version 2.2.1 NHTSA Data Dictionary may be found at http://www.nemsis. org/softwareDevelopers/downloads/datasetDictionaries.html. The dictionary explains all of these elements.

1. Attribute ID	1.1(S)
2. Question	**Which Emergency Medical Dispatch Protocol Reference System (EMDPRS) does the EMS dispatch center use?** **1. APCO** **2. Medical Priority Dispatch System** **3. Power Phone** **4. Other** **5. None**
3. Attribute Name	Emergency Medical Dispatch Type
4. Key Process Path	n/a
5. Patient/Customer Need	n/a
6. Type of Attribute	Structure
7. Objective	Increase occurrence of values 1 through 4
8. Attribute Formula	Number of respondents who answer each variable value (1 through 5) divided by the total number of respondents
9. Attribute Formula Description	Percentage of services/systems using a particular EMDPRS
10. Denominator Description	Total number of respondents
10.a Denominator Inclusion Criteria	All who answered the question
10.b Denominator Exclusion Criteria	Those not answering the question
10.c Denominator Data Sources	Survey
11. Numerator Description	Number of respondents who choose values 1 through 5
11.a Numerator Inclusion Criteria	Those who choose values 1 through 5
11.b Numerator Exclusion Criteria	Those who didn't answer the question
11.c Numerator Data Sources	Survey
12. Sampling Allowed	Yes
13. Sampling Description	
14. Minimum Number of Data Points	One plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
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1. Attribute ID	1.2(S)
2. Question	Does your agency base its lights-and-siren use response mode on the EMDPRS it uses?
3. Attribute Name	Emergency Medical Dispatch Impact on Response Mode
4. Key Process Path	n/a
5. Patient/Customer Need	n/a
6. Type of Attribute	Structure
7. Objective	Increase
8. Attribute Formula	Number of respondents who answer "yes" or "no" divided by the total number of respondents
9. Attribute Formula Description	Percentage of services or systems relying on an EMDPRS to determine lights and siren use in response to a call
10. Denominator Description	Total number of respondents
10.a Denominator Inclusion Criteria	All who answered the question
10.b Denominator Exclusion Criteria	Those not answering the question
10.c Denominator Data Sources	Survey
11. Numerator Description	Number of respondents who answer "yes" or "no"
11.a Numerator Inclusion Criteria	Those who answered "yes" or "no"
11.b Numerator Exclusion Criteria	Those who didn't answer the question with "yes" or "no"
11.c Numerator Data Sources	Survey
12. Sampling Allowed	Yes
13. Sampling Description	
14. Minimum Number of Data Points	One plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Attribute ID	1.3(S)
2. Question	Does your agency base its responder level (ALS/BLS) dispatch on the EMDPRS it uses?
3. Attribute Name	Emergency Medical Dispatch Impact on Response Level
4. Key Process Path	n/a
5. Patient/Customer Need	n/a
6. Type of Attribute	Structure
7. Objective	Increase
8. Attribute Formula	Number of respondents who answer "yes" or "no" divided by the total number of respondents
9. Attribute Formula Description	Percentage of services/systems relying on an EMDPRS to determine the level of care capability of the responders dispatched
10. Denominator Description	Total number of respondents

10.a Denominator Inclusion Criteria	All who answered the question
10.b Denominator Exclusion Criteria	Those not answering the question
10.c Denominator Data Sources	Survey
11. Numerator Description	Number of respondents who answer "yes" or "no"
11.a Numerator Inclusion Criteria	Those who answered "yes" or "no"
11.b Numerator Exclusion Criteria	Those who didn't answer the question with "yes" or "no"
11.c Numerator Data Sources	Survey
12. Sampling Allowed	Yes
13. Sampling Description	
14. Minimum Number of Data Points	One plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	2.0(HR) INTERIM (see section 21 below)
2. Question	What is the turnover rate for EMS providers?
3. Indicator Name	Annual Turnover Rate
4. Key Process Path	Human Resources: Personnel > Patient > Reliability > Annual Turnover Rate
5. Patient/Customer Need	Personnel experienced in the service area served
6. Type of Measure	Rate
7. Objective	Decrease
8. Indicator Formula	For each license/certification level (e.g., EMT): count of IDs present in year 1 that are missing in year 2 divided by the total count of IDs in year 1.
9. Indicator Formula Description	By comparing the personnel Agency IDs (NHTSA D07-01) or State License/ Certification IDs (NHTSA D07-02) present from year 1 to year 2 a count may be made of those licensed/certified at a certain level missing in year 2 that were present in Year 1. This count is divided by the total of IDs present in year 1 to create the turnover rate. The IDs can be associated with license/ certification levels through NHTSA D07-04 and the rates calculated for each level.
10. Denominator Description	For each license/certification level, total count of IDs present in Year 1.
10.a Denominator Inclusion Criteria	All those in a given licensure/certification level present in year 1
10.b Denominator Exclusion Criteria	All those in a given licensure/certification level present in year 1 that are present in year 2 but with a different value of D07-04 (licensure/certification level).
10.c Denominator Data Sources	NEMSIS agency level
11. Numerator Description	For each license/certification level, the count of IDs present in year 1 that are absent in year 2
11.a Numerator Inclusion Criteria	IDs present in year 1 that are missing in year 2
11.b Numerator Exclusion Criteria	All IDs present in year 1 that are present in year 2 but with a different value of D07-04.

11.c Numerator Data Sources	NEMSIS agency level
12. Sampling Allowed	No
13. Sampling Description	NA
14. Minimum Number of Data Points	Six plus agency/locale ID elements
15. Suggest Reporting Format: Numerical	Percentage rate
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	License/certification levels
21. Current Development Status	This is an interim measure until there is universal standardization of licensure/ certification levels. However, since this is not anticipated in the near-term, it may be adopted with careful consideration of how license levels are configured and personnel accounted for in States and locales. When employed, controls for mobility among licensure/certification levels should assure that those moving from one level to another are accounted for. Since States and locales have differing license or certificate numbering procedures in these instances, no standard method can be suggested here.
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	3.1(CC) and 3.2(CC)
2. Question	**In cardiac arrest occurring prior to EMS arrival where defibrillation is attempted, what is the mean time (3.1) and 90th percentile time (3.2) from PSAP contact to the initial defibrillation?**
3. Indicator Name	**3.1**- Average Defibrillation Time **3.2**- 90th Percentile Defibrillation Time
4. Key Process Path	Clinical Care: ACS > Defibrillation Time
5. Patient/Customer Need	Speed of access to defibrillation when needed
6. Type of Measure	Process
7. Objective	Reduce time
8. Indicator Formula	**3.1**- Time intervals from PSAP notification to defibrillation summed for a given period, divided by the number of time intervals reported during the period; 3.2- 90th percentile greatest value in a set of time interval samples ordered from least to greatest
9. Indicator Formula Description	**3.1**- The mean time interval from cardiac arrest reported to PSAP (E05-02) in which a patient is defibrillated to the first defibrillation (E19-01 for the defibrillation procedure recorded in E19-03), for a given period of time; 3.2- The 90th percentile time interval from cardiac arrest reported to PSAP (E05-02) in which a patient is defibrillated to the first defibrillation (E19-01 for the defibrillation procedure recorded in E19-03), for a given period of time
10. Denominator Description	**3.1**- The number of cardiac arrest events in a given period in which defibrillation is attempted; 3.2- None
10.a Denominator Inclusion Criteria	**3.1**- NHTSA E19-03 has values for "defibrillation" (manual or AED); 3.2- None
10.b Denominator Exclusion Criteria	
10.c Denominator Data Sources	NEMSIS State level
11. Numerator/Percentile Data Point Description	The time from call to PSAP to first defibrillation

11.a Numerator/ Percentile Data Point Inclusion Criteria	NHTSA E05-02 and E19-01 present for E19-03 "defibrillation" procedure; and NHTSA E11-01 "cardiac arrest" has a value of 2240 "yes, prior to EMS arrival"
11.b Numerator/Percentile Data Point Exclusion Criteria	Values for E05-02 or E19-01 missing or fail sequence logic test; or NHTSA E11-01 has a value other than of 2240
11.c Numerator/Percentile Data Point Data Sources	NEMSIS State level
12. Sampling Allowed	Yes
13. Sampling Description	NA
14. Minimum Number of Data Points	Four plus agency/locale ID elements
15. Suggest Reporting Format: Numerical	Minutes and seconds
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	
18. Testing	No
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	4.1(CC) and 4.2(CC)
2. Question	**In cardiac arrest occurring prior to EMS arrival where an EKG is obtained, what is the mean time (4.1) and 90th percentile time (4.2) from PSAP contact to the initial analysis of rhythm?**
3. Indicator Name	**4.1**- Average Initial Rhythm Analysis Time **4.2**- 90th Percentile Initial Rhythm Analysis Time
4. Key Process Path	Clinical Care: ACS > Initial Rhythm Analysis Time
5. Patient/Customer Need	Speed of access to rhythm analysis when needed
6. Type of Measure	Process
7. Objective	Reduce time
8. Indicator Formula	**4.1**- Time intervals from PSAP notification to initial analysis of rhythm summed for a given period, divided by the number of time intervals reported during the period; **4.2**- 90th percentile greatest value in a set of time interval samples ordered from least to greatest
9. Indicator Formula Description	**4.1**- The mean time interval from cardiac arrest reported to PSAP (E05-02) in which a rhythm is analyzed to the initial analysis of rhythm (E14-01 for the cardiac rhythm analysis recorded in E14-03), for a given period of time; **4.2**- The 90th percentile time interval from cardiac arrest reported to PSAP (E05-02) in which a rhythm is analyzed to the initial analysis of rhythm (E14-01 for the cardiac rhythm procedure recorded in E14-03), for a given period of time
10. Denominator Description	**4.1**- The number of cardiac arrest events in a given period in which cardiac rhythm is analyzed; **4.2**- None
10.a Denominator Inclusion Criteria	**4.1**- NHTSA E14-03 has values in the range 3020 to 3145 (a rhythm is named); **4.2**- None
10.b Denominator Exclusion Criteria	
10.c Denominator Data Sources	NEMSIS State level
11. Numerator/Percentile Data Point Description	The time from call to PSAP to initial analysis of rhythm

11.a Numerator/ Percentile Data Point Inclusion Criteria	NHTSA E05-02 and E14-01 present for E14-03 "cardiac rhythm"; and NHTSA E11-01 "cardiac arrest" has a value of 2240 "yes, prior to EMS arrival"
11.b Numerator/Percentile Data Point Exclusion Criteria	Values for E05-02 or E14-01 missing or fail sequence logic test; or NHTSA E11-01 has a value other than of 2240
11.c Numerator/Percentile Data Point Data Sources	NEMSIS State level
12. Sampling Allowed	Yes
13. Sampling Description	NA
14. Minimum Number of Data Points	Five plus agency/locale ID elements
15. Suggest Reporting Format: Numerical	Minutes and seconds
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	
18. Testing	No
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	5(CC) INTERIM (see section 21 below)
2. Question	**What percentage of patients who meet 2006 CDC/ACS field triage criteria for transfer to trauma center are transported to a trauma center?**
3. Indicator Name	Major Trauma Triage to Trauma Center Rate
4. Key Process Path	Clinical Care: Trauma > Trauma Triage to Trauma Center Rate
5. Patient/Customer Need	Definitive care for major trauma
6. Type of Measure	Process
7. Objective	Increase rate in appropriate patients
8. Indicator Formula	Number of trauma patients transferred from scene to trauma center divided by total trauma patients (meeting 2006 CDC/ACS field triage criteria for transfer to trauma center) for a given period of time
9. Indicator Formula Description	Percentage of patients (meeting 2006 CDC/ACS field triage criteria for transfer to trauma center) that are transferred from scene to a trauma center for a given period of time
10. Denominator Description	Number of trauma patients encountered who meet 2006 CDC/ACS field triage criteria for transfer to trauma center
10.a Denominator Inclusion Criteria	Patients with NHTSA E09-15 "provider primary impression" value 1740 "959.90-traumatic injury" or E09-16 "provider secondary impression" value 1875 "959.90-traumatic injury" <u>and:</u> • E14-19 "total GCS" value < 14; or • E14-04 "systolic blood pressure" value < 90; or • E14-11 "respiratory rate" value < 10 or > 29 for NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient more than 1 year of age; or

	• E14-11 "respiratory rate" value < 20 for NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient less than 1 year of age; or
	• Values of 3350 "gunshot" or 3365 "puncture/stab" for:
	    • E15-02 "NHTSA injury matrix head," or
	    • E15-03 "NHTSA injury matrix face," or
	    • E15-04 "NHTSA injury matrix neck," or
	    • E15-05 "NHTSA injury matrix thorax," or
	    • E15-06 "NHTSA injury matrix abdomen," or
	    • E15-07 "NHTSA injury matrix spine," or
	    • E15-08 "NHTSA injury matrix upper extremities" **(proximal to elbow)**, or
	    • E15-09 "NHTSA injury matrix pelvis," or
	    • E15-10 "NHTSA injury matrix lower extremities" **(proximal to knee)**, or
	• E15-05 "NHTSA injury matrix thorax" values 3345 "dislocation/fracture" or 3340 "crush" **(for flail chest)**; or
	• E15-08 "NHTSA injury matrix upper extremities" value 3345 "dislocation/fracture" **(proximal to elbow)** and E15-10 "NHTSA injury matrix lower extremities" value 3345 "dislocation/fracture **(proximal to knee)**; or
	• E15-08 "NHTSA injury matrix upper extremities" value 3345 "dislocation/fracture" **(proximal to elbow) x 2**; or
	• E15-10 "NHTSA injury matrix lower extremities" value 3345 "dislocation/fracture **(proximal to knee) x 2**; or
	• E15-08 "NHTSA injury matrix upper extremities" value **(proximal to wrist)**; or
	• E15-10 "NHTSA injury matrix lower extremities" value 3340 "crush" or value 3320 "amputation" **(proximal to ankle)**; or
	• E15-09 "NHTSA injury matrix pelvis" value 3340 "crush" or value 3345 (dislocation/fracture); or
	• E15-02 "NHTSA injury matrix head" value 3340 "crush" or value 3345 (dislocation/fracture); or
	• E16-24 "neurological assessment" value 4165 "weakness-left sided" or value 4170 "weakness-right sided" ; or
	• E10-01 "cause of injury" value 9550 "falls (E88X.0)" and E10-10 with value > 20 for patients with NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient more than 13 years of age; or
	• E10-01 "cause of injury" value 9550 "falls (E88X.0)" and E10-10 with value > 10 for patients with NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient less than 13 years of age; or
	• E10-04 "vehicular injury indicators" value **2085 "space intrusion > 1 foot,"** or value 2065 "ejection," or value 2060 "DOA same vehicle"; or
	• E10-01 "cause of injury" value 9600 **"motorcycle accident" or value 9610 "pedestrian traffic accident" (no 20 mph speed delimiter)**

10.b Denominator Exclusion Criteria	Patients with NHTSA E09-15 "provider primary impression" value 1640 "427.50-cardiac arrest" or E09-16 "provider secondary impression" value 1775 "427.50-cardiac arrest"
10.c Denominator Data Sources	NEMSIS State level
11. Numerator Description	Number of trauma patients encountered who meet 2006 CDC/ACS field triage criteria for transfer to trauma center and who are transferred to a trauma center

11.a Numerator Inclusion Criteria	Patients with NHTSA E09-15 "provider primary impression" value 1740 "959.90-traumatic injury" or E09-16 "provider secondary impression" value 1875 "959.90-traumatic injury" and:

Patients with NHTSA E09-15 "provider primary impression" value 1740 "959.90-traumatic injury" or E09-16 "provider secondary impression" value 1875 "959.90-traumatic injury" and:

- E14-19 "total GCS" value < 14; or
- E14-04 "systolic blood pressure" value < 90; or
- E14-11 "respiratory rate" value < 10 or > 29 for NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient more than 1 year of age; or
- E14-11 "respiratory rate" value < 20 for NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient less than 1 year of age; or
- Values of 3350 "gunshot" or 3365 "puncture/stab" for:
  - E15-02 "NHTSA injury matrix head," or
  - E15-03 "NHTSA injury matrix face," or
  - E15-04 "NHTSA injury matrix neck," or
  - E15-05 "NHTSA injury matrix thorax," or
  - E15-06 "NHTSA injury matrix abdomen," or
  - E15-07 "NHTSA injury matrix spine," or
  - E15-08 "NHTSA injury matrix upper extremities" **(proximal to elbow)**, or
  - E15-09 "NHTSA injury matrix pelvis," or
  - E15-10 "NHTSA injury matrix lower extremities" **(proximal to knee)**, or
- E15-05 "NHTSA injury matrix thorax" values 3345 "dislocation/fracture" or 3340 "crush" **(for flail chest)**; or
- E15-08 "NHTSA injury matrix upper extremities" value 3345 "dislocation/fracture" **(proximal to elbow)** and E15-10 "NHTSA injury matrix lower extremities" value 3345 "dislocation/fracture **(proximal to knee)**; or
- E15-08 "NHTSA injury matrix upper extremities" value 3345 "dislocation/fracture" **(proximal to elbow) x 2**; or
- E15-10 "NHTSA injury matrix lower extremities" value 3345 "dislocation/fracture **(proximal to knee) x 2**; or
- E15-08 "NHTSA injury matrix upper extremities" value **(proximal to wrist)**; or
- E15-10 "NHTSA injury matrix lower extremities" value 3340 "crush" or value 3320 "amputation" **(proximal to ankle)**; or
- E15-09 "NHTSA injury matrix pelvis" value 3340 "crush" or value 3345 (dislocation/fracture); or
- E15-02 "NHTSA injury matrix head" value 3340 "crush" or value 3345 (dislocation/fracture); or
- E16-24 "neurological assessment" value 4165 "weakness-left sided" or value 4170 "weakness-right sided" ; or
- E10-01 "cause of injury" value 9550 "falls (E88X.0)" and E10-10 with value > 20 for patients with NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient more than 13 years of age; or
- E10-01 "cause of injury" value 9550 "falls (E88X.0)" and E10-10 with value > 10 for patients with NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient less than 13 years of age; or
- E10-04 "vehicular injury indicators" value **2085 "space intrusion > 1 foot,"** or value 2065 "ejection," or value 2060 "DOA same vehicle"; or E10-01 "cause of injury" value 9600 **"motorcycle accident" or value 9610 "pedestrian traffic accident" (no 20 mph speed delimiter)**

and have "destination/transferred to" code (E20-02) of a trauma center

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11.b Numerator Exclusion Criteria	Patients with NHTSA E09-15 "provider primary impression" value 1640 "427.50-cardiac arrest" or E09-16 "provider secondary impression" value 1775 "427.50-cardiac arrest"
11.c Numerator Data Sources	NEMSIS State level
12. Sampling Allowed	Yes
13. Sampling Description	NA
14. Minimum Number of Data Points	Twenty-two plus agency/locale and time/date identifiers, and defined hospital identifiers by State
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	States need to define E20-02 hospital identifier codes for trauma centers to be able to implement this indicator (i.e., must define levels of trauma center that are acceptable/unacceptable ultimate destinations for "Major Trauma"). The items **highlighted** above indicate differences in definitions between NHTSA version 2 data elements and ACS/CDC Field Triage Criteria. Approved as interim measure until resolved.
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	6.1(CC), 6.2(CC), and 6.3(CC)
2. Question	**Comparing first and last pain scale values, what percentage of patients older than 13 years of age reported decreased pain (6.1), increased pain (6.2), or no change in pain (6.3)?**
3. Indicator Name	**6.1**- Pain Relief Rate **6.2**- Pain Worsened Rate **6.3**- Pain Unchanged Rate
4. Key Process Path	Clinical Care: Pain Relief > Patient > Pain Relief/Worsened/Unchanged Rates
5. Patient/Customer Need	Definitive care for pain
6. Type of Measure	Outcome
7. Objective	**6.1**- Increase; **6.2**- Decrease; **6.3**- Unchanged
8. Indicator Formula	**6.1**- Number of events in which patients report as having a lower (0-10 scale) pain value for the last recorded pain "measurement" than for the first recorded pain measurement during the EMS call divided by the total number of events in which at least two pain values were recorded for a patient during a given period; **6.2**- Number of events in which patients report as having a higher (0-10 scale) pain value for the last recorded pain "measurement" than for the first recorded pain measurement during the EMS call divided by the total number of events in which at least two pain values were recorded for a patient during a given period; **6.3**- Number of events in which patients report as having the same (0-10 scale) pain value for the last recorded pain "measurement" as for the first recorded pain measurement during the EMS call divided by the total number of events in which at least two pain values were recorded for a patient during a given period

9. Indicator Formula Description	**6.1**- Percentage of events in which a patient has a higher value for NHTSA E14-23 "pain scale" for the earliest associated value of E14-01 "date/time" than the value for E14-23 for the latest associated value of 14-01 during the continuum of the EMS call; **6.2**- Percentage of events in which a patient has a lower value for NHTSA E14-23 for the earliest associated value of E14-01 "date/time" than the value for E14-23 for the latest associated value of 14-01 during the continuum of the EMS call; **6.3**- Percentage of events in which a patient has the same value for NHTSA E14-23 for the earliest associated value of E14-01 "date/time" as the value for E14-23 for the latest associated value of 14-01 during the continuum of the EMS call
10. Denominator Description	The total number of events over a given period in which patients had at least two "measurements" of pain during the continuum of the EMS call
10.a Denominator Inclusion Criteria	Events in which patients had recorded at least two values for E14-23, each with a different associated value for E14-01
10.b Denominator Exclusion Criteria	Patients with one or no value recorded for E14-01, or who have at least two values for E14-23 but those values have no clear associated values for E14-01 or fail a logic test; or patients with NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient less than 13 years old
10.c Denominator Data Sources	NEMSIS State or agency level
11. Numerator Description	**6.1**- Number of events for a given period in which patients' pain scale values decreased over the continuum of the EMS call; **6.2**- Number of events for a given period in which patients' pain scale values increased over the continuum of the EMS call; **6.3**- Number of events for a given period in which patients' pain scale values stayed the same over the continuum of the EMS call
11.a Numerator Inclusion Criteria	Events in which patients had recorded at least two values for E14-23, each with a different associated value for E14-01
11.b Numerator Exclusion Criteria	Patients with one or no value recorded for E14-01, or who have at least two values for E14-23 but those values have no clear associated values for E14-01 or fail a logic test
11.c Numerator Data Sources	NEMSIS State or agency level
12. Sampling Allowed	No
13. Sampling Description	NA
14. Minimum Number of Data Points	Four plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	A pediatric version indicator using age-appropriate pain scale should be developed
23. References	
24. Contributors	

1. Indicator ID	6.4 (CC) PARKED (see section 21 below)
2. Question	**What percentage of patients older than 13 reporting a pain value of 7 or greater on a 0-10 scale received subsequent interventions associated with pain relief?**
3. Indicator Name	Pain Intervention Rate
4. Key Process Path	Clinical Care: Pain Relief > Patient > Pain> Intervention
5. Patient/Customer Need	Intervention for pain relief attempted
6. Type of Measure	Process
7. Objective	Increase
8. Indicator Formula	Number of events in which patients reporting as having a pain value of 7 or greater subsequently received medication or procedure intervention recognized as an accepted intervention for pain relief divided by the total number of events in which a pain value of 7 or greater was recorded for a patient during a given period
9. Indicator Formula Description	Percentage of events in which a patient has a value recorded for NHTSA E14-23 "pain scale" of 7 or greater at an associated value of E14-01 "date/time" earlier than an E18-01 "medication date/time" value or E19-01 "date/time procedure…" for associated, respectively, E18-03 or E19-03 values for procedures recognized as an accepted intervention for pain relief
10. Denominator Description	The total number of events over a given period in which patients reported as having a pain value of 7 or greater during the continuum of the EMS call
10.a Denominator Inclusion Criteria	Events in which patients had recorded a pain value of 7 or greater for E14-23
10.b Denominator Exclusion Criteria	Patients with no value recorded for E14-01, or who have no value for either E18-01 or E19-01, or no value for either which is later than the value for E14-01 or which otherwise fail a logic test; or patients with NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient less than 13 years old
10.c Denominator Data Sources	NEMSIS State or agency level
11. Numerator Description	Number of events in which patients reporting as having a pain value of 7 or greater subsequently received medication or procedure intervention recognized as an accepted intervention for pain relief
11.a Numerator Inclusion Criteria	Events in which patients had recorded at least one value of 7 or greater for E14-23 with an associated value for E14-01 who have at least one value for E18-03 or E19-03 included in a list of medications/procedures recognized as accepted interventions for pain relief and that have associated values, respectively, for E18-01 or E19-03 that are later than the E14-01 value associated with the E14-23 value of 7 or greater
11.b Numerator Exclusion Criteria	Patients with no value recorded for E14-01, or who have no value for either E18-01 or E19-01, or no value for either that is later than the value for E14-01 or that otherwise fail a logic test;
11.c Numerator Data Sources	NEMSIS State or agency level
12. Sampling Allowed	No
13. Sampling Description	NA
14. Minimum Number of Data Points	Ten plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	

21. Current Development Status	This is "parked" for future development. It was felt to be too important to exclude at this time. However, there is no current list of medications with which to work. Once that is available, a list of "accepted interventions for pain," will have to be developed. Also, it is not clear whether a pain scale value of 7 or greater is appropriate. Further, a pediatric version of this measure should be developed with an age appropriate pain scale and list of accepted pain interventions.
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	7(CC)
2. Question	**What percentage of patients over age 35 with suspected cardiac chest pain received a 12-lead ECG?**
3. Indicator Name	12-Lead Performance Rate
4. Key Process Path	Clinical Care: ACS > 12-Lead Performance Rate
5. Patient/Customer Need	Early performance of diagnostic EKG can accelerate definitive care
6. Type of Measure	Process
7. Objective	Increase rate in appropriate patients
8. Indicator Formula	Number of cardiac chest pain patients having 12-lead ECG in a given period divided by total chest pain patients in that period
9. Indicator Formula Description	Percentage of patients having a recorded NHTSA E09-15 "provider primary impression" or E09-16 "provider secondary impression" value of 1785 "786.50- chest pain/discomfort" and have an E19-03 "procedures performed…" value 89.820 "12 lead ECG"
10. Denominator Description	Number of patients creating a provider impression of chest pain/discomfort
10.a Denominator Inclusion Criteria	Patients with NHTSA E09-15 or E09-16 value 1785 "786.50- chest pain/ discomfort"
10.b Denominator Exclusion Criteria	Patients with NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient less than age 35
10.c Denominator Data Sources	NEMSIS State level
11. Numerator Description	Number of patients creating a provider impression of chest pain/discomfort who have 12-lead EKG performed
11.a Numerator Inclusion Criteria	Patients having a recorded NHTSA E09-15 "provider primary impression" or E09-16 "provider secondary impression" value of 1785 "786.50- chest pain/ discomfort" and have an E19-03 "procedures performed…" value 89.820 "12 lead ECG"
11.b Numerator Exclusion Criteria	
11.c Numerator Data Sources	NEMSIS State level
12. Sampling Allowed	No
13. Sampling Description	NA
14. Minimum Number of Data Points	Seven plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	
18. Testing	
19. Stratification	

20. Stratification Options	
21. Current Development Status	
22. Additional Information	Proxy for Chicago meeting "ALS performed" indicator
23. References	
24. Contributors	

1. Indicator ID	8(CC)
2. Question	**What percentage of patients over age 35 with suspected cardiac chest pain received an aspirin?**
3. Indicator Name	Aspirin Administration for Chest Pain/Discomfort Rate
4. Key Process Path	Clinical Care: ACS > Aspirin Administration Rate
5. Patient/Customer Need	Definitive care for ACS
6. Type of Measure	Process
7. Objective	Increase rate in appropriate patients
8. Indicator Formula	Number of cardiac chest pain patients administered aspirin in a given period divided by total cardiac chest pain patients eligible to receive aspirin in that period
9. Indicator Formula Description	Percentage of patients having a recorded NHTSA E09-15 "provider primary impression" or E09-16 "provider secondary impression" value of 1785 "786.50- chest pain/discomfort" and have an E18-03 "medication given" value for aspirin
10. Denominator Description	Number of patients creating a provider impression of chest pain/discomfort who are eligible for aspirin administration
10.a Denominator Inclusion Criteria	Patients with NHTSA E09-15 or E09-16 value 1785 "786.50- chest pain/discomfort"
10.b Denominator Exclusion Criteria	Patients with NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient less than age 35; patients with E12-10 value for intestinal/stomach ulcers or bleeding; patients with E12-08 "medication allergies" value for aspirin; patients with E12-14 "current medications" value for Coumadin or other anti-coagulants
10.c Denominator Data Sources	NEMSIS State level
11. Numerator Description	Number of patients creating a provider impression of chest pain/discomfort who are eligible for and receive aspirin administration
11.a Numerator Inclusion Criteria	Patients having a recorded NHTSA E09-15 "provider primary impression" or E09-16 "provider secondary impression" value of 1785 "786.50- chest pain/discomfort" and have an E18-03 "medications given value for aspirin"
11.b Numerator Exclusion Criteria	Patients with E12-10 value for intestinal/stomach ulcers or bleeding; patients with E12-08 "medication allergies" value for aspirin; patients with E12-14 "current medications" value for Coumadin or other anti-coagulants
11.c Numerator Data Sources	NEMSIS State level
12. Sampling Allowed	No
13. Sampling Description	NA
14. Minimum Number of Data Points	Eleven plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	

20. Stratification Options	
21. Current Development Status	This is considered an important indicator of care. The lack of accepted medications lists (to code aspirin, Coumadin and the like) and medical history lists (to code intestinal/stomach bleeding) impair development. Adoption by States/locales with local/ICD-9 definitions for these should be encouraged.
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	9(CC) INTERIM (see section 21 below)
2. Question	**What percentage of patients with field 12 lead ECG indicated ST Elevation Myocardial Infarction (STEMI) was transported to a hospital with emergency interventional cardiac catheterization capabilities?**
3. Indicator Name	STEMI Triage to Specialty Center Rate
4. Key Process Path	Clinical Care: ACS > STEMI Triage to Specialty Center Rate
5. Patient/Customer Need	Definitive care for suspected STEMI
6. Type of Measure	Process
7. Objective	Increase rate in appropriate patients
8. Indicator Formula	Number of patients with STEMI indicated by field 12 lead ECG transferred from scene to interventional cath-capable center in a given period divided by total patients with STEMI indicated by field 12 lead ECG in that period
9. Indicator Formula Description	Percentage of patients having a recorded "STEMI" value for an indicator like NHTSA E14-03 "cardiac rhythm" that have an E20-02 "destination/transferred to code" of an interventional cardiac cath center
10. Denominator Description	Number of patients having a recorded "STEMI" value for an indicator like NHTSA E14-03 "cardiac rhythm"
10.a Denominator Inclusion Criteria	Patients having a recorded "STEMI" value for an indicator like NHTSA E14-03 "cardiac rhythm"
10.b Denominator Exclusion Criteria	Patients with NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient date/time" value indicating patient less than age 35
10.c Denominator Data Sources	NEMSIS State level
11. Numerator Description	Number of patients having a recorded "STEMI" value for an indicator like NHTSA E14-03 "cardiac rhythm" that have an E20-02 "destination/transferred to code" of an interventional cardiac cath center
11.a Numerator Inclusion Criteria	Patients having a recorded "STEMI" value for an indicator like NHTSA E14-03 "cardiac rhythm" that have an E20-02 "destination/transferred to code" of an interventional cardiac cath center
11.b Numerator Exclusion Criteria	
11.c Numerator Data Sources	NEMSIS State level
12. Sampling Allowed	No
13. Sampling Description	NA
14. Minimum Number of Data Points	Six plus agency/locale and time/date identifiers, and defined hospital identifier codes for E20-02 by State
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	

21. Current Development Status	This is an Interim measure. There is now no "STEMI" variable in the NHTSA 2.2 dataset. States and locales are encouraged to begin employing this indicator with their own STEMI definition for use by field personnel. States also need to define hospital identifier codes for E20-02 for interventional cardiac catheterization centers
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	10.1(R) and 10.2(R)
2. Question	**What are the mean (10.1) and 90th percentile (10.2) emergency patient response time intervals?**
3. Indicator Name	**10.1**- Mean Emergency Patient Response Interval **10.2**- 90th Percentile Emergency Response Interval
4. Key Process Path	Operations: Response Intervals > Emergency Patient Response Intervals
5. Patient/Customer Need	Timely EMS arrival at patient's side from time PSAP call received
6. Type of Measure	Process
7. Objective	Reduce
8. Indicator Formula	**10.1**- Time intervals from "call received by PSAP" to "arrived at patient" summed for a given period, divided by the number of time intervals reported during the period; **10.2**- 90th percentile greatest value in a set of time interval samples ordered from least to greatest during a given period
9. Indicator Formula Description	**10.1**- The mean time interval from "call received by PSAP" (E05-02) in an emergency to "EMS arrived at the patient" (E05-07), for a given period of time; **10.2**- The 90th percentile time interval from "call received by PSAP" (E05-02) in an emergency to EMS "arrived at patient" (E05-07), for a given period of time
10. Denominator Description	**10.1**- Number of emergency events for which times are recorded; **10.2**- None
10.a Denominator Inclusion Criteria	**10.1**- All events for which NHTSA E02-04 "type of service requested" has value 30 "911 response (scene)," <u>and</u> E02-03 "EMS unit (vehicle) response number" value recorded corresponds to a D06-03 "vehicle type" value of 7370 "ambulance" or 7460 "quick response vehicle…," <u>and</u> E02-20 "response mode to scene" has a value of 390 "lights and sirens," <u>and</u> values for E05-02 and E05-07 are present and pass logic test; **10.2**- None
10.b Denominator Exclusion Criteria	
10.c Denominator Data Sources	NEMSIS State or agency level
11. Numerator/Percentile Data Point Description	Time intervals from PSAP notification to arrival at patient summed for a given period
11.a Numerator/ Percentile Data Point Inclusion Criteria	All events for which NHTSA E02-04 "type of service requested" has value 30 "911 response (scene)," <u>and</u> E02-03 "EMS unit (vehicle) response number" value recorded corresponds to a D06-03 "vehicle type" value of 7370 "ambulance" or 7460 "quick response vehicle…," <u>and</u> E02-20 "response mode to scene" has a value of 390 "lights and sirens," <u>and</u> values for E05-02 and E05-07 are present and pass logic test
11.b Numerator/Percentile Data Point Exclusion Criteria	
11.c Numerator/Percentile Data Point Data Sources	NEMSIS State or agency level
12. Sampling Allowed	
13. Sampling Description	
14. Minimum Number of Data Points	Five plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Minutes/seconds

16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Monthly/annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	The use of "arrived at patient" was a much deliberated decision, recognizing that many systems do not record this now. It was felt to more accurately reflect the public's view of response time (call received at PSAP and EMS arrival at patient as the two ends of the interval actually experienced by callers).
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	10.3(R) and 10.4(R)
2. Question	**What are the mean (10.1) and 90th percentile (10.2) emergency scene time intervals?**
3. Indicator Name	**10.3**- Mean Emergency Scene Interval **10.4**- 90th Percentile Emergency Scene Interval
4. Key Process Path	Operations: Response Intervals > Emergency Scene Intervals
5. Patient/Customer Need	Timely triage, treatment and departure from scene
6. Type of Measure	Process
7. Objective	Reduce
8. Indicator Formula	**10.3**- Time intervals from "arrival at patient" to "unit left scene" summed for a given period, divided by the number of time intervals reported during the period; **10.4** - 90th percentile greatest value in a set of time interval samples ordered from least to greatest during a given period
9. Indicator Formula Description	**10.3**- The mean time interval in an emergency from EMS "arrived at patient" (E05-07) to "unit left scene" (E05-09), for a given period of time; **10.4**- The 90th percentile time interval in an emergency from EMS "arrived at the patient" (E05-07) to "unit left scene" (E05-09), for a given period of time
10. Denominator Description	**10.3** - Number of emergency events for which times are recorded; **10.4**- None
10.a Denominator Inclusion Criteria	**10.3**- All events for which NHTSA E02-04 "type of service requested" has value 30 "911 response (scene)," and E02-03 "EMS unit (vehicle) response number" value recorded corresponds to a D06-03 "vehicle type" value of 7370 "ambulance" or 7460 "quick response vehicle…," and E02-20 "response mode to scene" has a value of 390 "lights and sirens," and values for E05-02 and E05-07 are present and pass logic test; **10.4**- None
10.b Denominator Exclusion Criteria	
10.c Denominator Data Sources	NEMSIS State or agency level
11. Numerator/Percentile Data Point Description	Time intervals from PSAP notification to arrival at patient summed for a given period
11.a Numerator/ Percentile Data Point Inclusion Criteria	All events for which NHTSA E02-04 "type of service requested" has value 30 "911 response (scene)," and E02-03 "EMS unit (vehicle) response number" value recorded corresponds to a D06-03 "vehicle type" value of 7370 "ambulance" or 7460 "quick response vehicle…," and E02-20 "response mode to scene" has a value of 390 "lights and sirens," and values for E05-07 and E05-09 are present and pass logic test
11.b Numerator/Percentile Data Point Exclusion Criteria	

11.c Numerator/Percentile Data Point Data Sources	NEMSIS State or agency level
12. Sampling Allowed	
13. Sampling Description	
14. Minimum Number of Data Points	Five plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Minutes/seconds
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Monthly/Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	10.5(R) and 10.6 (R)
2. Question	What are the mean (10.5) and 90th percentile (10.6) emergency transport time intervals?
3. Indicator Name	**10.5**- Mean Emergency Transport Interval **10.6**- 90th Percentile Emergency Transport Interval
4. Key Process Path	Operations: Response Intervals > Emergency Transport Intervals
5. Patient/Customer Need	Timely emergency transport from scene to hospital
6. Type of Measure	Process
7. Objective	Reduce
8. Indicator Formula	**10.5**- Time intervals from "unit left scene" to "patient arrived at destination" summed for a given period, divided by the number of time intervals reported during the period; **10.6**- 90th percentile greatest value in a set of time interval samples ordered from least to greatest during a given period
9. Indicator Formula Description	**10.5**- The mean time interval from unit left scene (E05-09) in an emergency to "patient arrived at destination" (E05-10), for a given period of time; **10.6** - The 90th percentile time interval from "unit left scene" (E05-09) in an emergency to "patient arrived at destination" (E05-10), for a given period of time
10. Denominator Description	**10.5**- Number of emergency events for which times are recorded; **10.6**- None
10.a Denominator Inclusion Criteria	**10.5**- All events for which NHTSA E02-04 "type of service requested" has value 30 "911 response (scene)," <u>and</u> E02-03 "EMS unit (vehicle) response number" value recorded corresponds to a D06-03 "vehicle type" value of 7370 "ambulance" or 7460 "quick response vehicle…," <u>and</u> E02-20 "response mode to scene" has a value of 390 "lights and sirens," <u>and</u> values for E05-02 and E05-07 are present and pass logic test; **10.6**- None
10.b Denominator Exclusion Criteria	
10.c Denominator Data Sources	NEMSIS State or agency level
11. Numerator/Percentile Data Point Description	Time intervals from the time the patient left the scene in an ambulance to the time the patient arrived at the facility destination summed for a given period
11.a Numerator/ Percentile Data Point Inclusion Criteria	All events for which NHTSA E02-04 "type of service requested" has value 30 "911 response (scene)," <u>and</u> E02-03 "EMS unit (vehicle) response number" value recorded corresponds to a D06-03 "vehicle type" value of 7370 "ambulance" or 7460 "quick response vehicle…," <u>and</u> E02-20 "response mode to scene" has a value of 390 "lights and sirens," <u>and</u> values for E05-09 and E05-10 are present and pass logic test

11.b Numerator/Percentile Data Point Exclusion Criteria	
11.c Numerator/Percentile Data Point Data Sources	NEMSIS State or agency level
12. Sampling Allowed	
13. Sampling Description	
14. Minimum Number of Data Points	Five plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Minutes/seconds
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Monthly/Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	11(F) PARKED (see section 21 below)
2. Question	What is the total EMS cost per capita?
3. Indicator Name	Per Capita Agency Operating Expense
4. Key Process Path	Finance:
5. Patient/Customer Need	Cost of service awareness and comparison
6. Type of Measure	Process
7. Objective	
8. Indicator Formula	Total agency annual operating expenses divided by population of service area
9. Indicator Formula Description	Cost per resident in service area of total operating expenses for that agency each year
10. Denominator Description	Population of service area
10.a Denominator Inclusion Criteria	Last 10 year census of service area
10.b Denominator Exclusion Criteria	None
10.c Denominator Data Sources	Federal census
11. Numerator Description	Total operating expenses for year
11.a Numerator Inclusion Criteria	Total operating expenses for year
11.b Numerator Exclusion Criteria	Any revenue-based element that would appear to reduce operating expenses
11.c Numerator Data Sources	Agency survey
12. Sampling Allowed	
13. Sampling Description	
14. Minimum Number of Data Points	Two plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Dollars/cents
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	

21. Current Development Status	Parked by steering committee, as too important to eliminate, but too complex to adequately measure without results from research that is on-going. Concern was also expressed about the extent to which per capita cost can be measured across geography (e.g., communities with stable populations versus seasonal population fluctuation) and serves as an accurate measure of quality of service.
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	12(Q) PARKED (see section 21 below)
2. Question	What percentage of patients is satisfied with their EMS experience?
3. Indicator Name	Patient Care Satisfaction Rate
4. Key Process Path	Operations: Stakeholder Satisfaction Scores > Patient
5. Patient/Customer Need	Patient satisfaction with care
6. Type of Measure	Process
7. Objective	Increase
8. Indicator Formula	Number of patients who answer "satisfied" to the survey question "Were you satisfied or dissatisfied with the care you received?" divided by the number of patients who answered "satisfied" plus the number of patients who answered "dissatisfied" to the survey question.
9. Indicator Formula Description	Percentage of patients who answered a survey on the subject who said that they were satisfied with the care received out of all patients who answered that they were either satisfied or dissatisfied with the care
10. Denominator Description	The number of patients who answered "satisfied" plus the number of patients who answered "dissatisfied" to the survey question "Were you satisfied or dissatisfied with the care you received?"
10.a Denominator Inclusion Criteria	All patients who answered "satisfied" plus all the patients who answered "dissatisfied" to the survey question "Were you satisfied or dissatisfied with the care you received?" If further degrees of satisfaction or dissatisfaction are used in a survey instrument (e.g., "very satisfied/dissatisfied") they will be aggregated into "satisfied" or dissatisfied for comparison purposes.
10.b Denominator Exclusion Criteria	Patients who did not answer the question or who answered in some other manner that does not indicate degree of satisfaction, including "nether satisfied nor dissatisfied."
10.c Denominator Data Sources	Anonymous mail/interview surveys by service providers
11. Numerator Description	Number of patients who answer "satisfied" to the survey question "Were you satisfied or dissatisfied with the care you received?"
11.a Numerator Inclusion Criteria	All patients who answered "satisfied" to the survey question "Were you satisfied or dissatisfied with the care you received?" If further degrees of satisfaction are used in a survey instrument (e.g., "very satisfied") they will be aggregated into "satisfied" for comparison purposes.
11.b Numerator Exclusion Criteria	Patients who answered "Neither satisfied nor dissatisfied" should an instrument include this for local use.
11.c Numerator Data Sources	Anonymous mail/interview surveys by service providers
12. Sampling Allowed	Yes
13. Sampling Description	
14. Minimum Number of Data Points	One plus agency and location identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual

18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	Parked by steering committee as too important to exclude, but with no consensus on the specific question to ask. The questions above were felt to be less useful than those in section 22, below. It was consensus that the questions be aligned with CMS HCAHPS EMS questions as they evolve. Some also felt that the scale in "A" below, in CMS HCAHPS format, should be applied to more specific indicators such as "professional skill demonstrated," "compassion demonstrated," and "knowledge demonstrated."
22. Additional Information	An alternative is suggested to align with hospital-based patient satisfaction measurement tools. It is based on a CMS HCAHPS Survey Measurement (a hospital measure converted to EMS). It could be one or both of the following: (A) Using any number from 0 to 10, where 0 is the worst ambulance service possible and 10 is the best ambulance service possible, what number would you use to rate this ambulance service during your stay? ☐ 0 Worst ambulance service possible ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Best ambulance service possible (B) Would you recommend this ambulance service to your friends and family? ☐ Definitely no ☐ Probably no ☐ Probably yes ☐ Definitely yes
23. References	
24. Contributors	

1. Indicator ID	13(Q)
2. Question	**What percentage of patients does your EMS agency/system survey to measure patient satisfaction?**
3. Indicator Name	Patient Care Satisfaction Survey Rate
4. Key Process Path	Operations: Stakeholder Satisfaction Scores > Patient
5. Patient/Customer Need	Patient satisfaction with care
6. Type of Measure	Process
7. Objective	Increase
8. Indicator Formula	Number of patients who were sent/administered a patient satisfaction survey during a given period of time divided by the number of patients served by the EMS agency for that period of time.
9. Indicator Formula Description	Percentage of patients who were sent/administered a patient satisfaction survey during a given period of time.
10. Denominator Description	The number of patients served by the EMS agency for a given period of time.
10.a Denominator Inclusion Criteria	All patients served by the agency.
10.b Denominator Exclusion Criteria	Patients who did provide contact information.
10.c Denominator Data Sources	Anonymous mail/interview surveys by service/system providers
11. Numerator Description	The number of patients who were sent/administered a patient satisfaction survey during a given period of time
11.a Numerator Inclusion Criteria	All patients to whom a survey was sent or for whom at least one phone call, and one follow-up call after a failed first call was made.
11.b Numerator Exclusion Criteria	
11.c Numerator Data Sources	Anonymous mail/interview surveys by service providers
12. Sampling Allowed	Yes
13. Sampling Description	
14. Minimum Number of Data Points	One plus agency and location identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	14(Q)
2. Question	**What percentage of patients in respiratory arrest/distress received oxygen?**
3. Indicator Name	Rate of Appropriate Oxygen Use
4. Key Process Path	Clinical Care: Respiratory Management > Rate of Appropriate Oxygen Use
5. Patient/Customer Need	Patients with respiratory compromise in the EMS setting require oxygen
6. Type of Measure	Process
7. Objective	Increase rate in appropriate patients
8. Indicator Formula	Number of respiratory arrest/distress patients receiving oxygen in a given period divided by total respiratory distress/arrest patients in that period
9. Indicator Formula Description	Percentage of patients for whom NHTSA E09-15 "provider's primary impression" has a value 1700 "786.09-respiratory distress" or 1705 "799.10-respiratory arrest," or for whom E09-16 "provider's secondary impression" has a value1835 "786.09-respiratory distress" or 1840 "799.10-respiratory arrest"
10. Denominator Description	Number of patients creating a provider impression of respiratory arrest/distress
10.a Denominator Inclusion Criteria	Patients for whom NHTSA E09-15 "provider's primary impression" has a value 1700 "786.09-respiratory distress" or 1705 "799.10-respiratory arrest," or for whom E09-16 "provider's secondary impression" has a value1835 "786.09-respiratory distress" or 1840 "799.10-respiratory arrest
10.b Denominator Exclusion Criteria	None
10.c Denominator Data Sources	NEMSIS State level
11. Numerator Description	Number of patients creating a provider impression of respiratory arrest/distress who receive oxygen
11.a Numerator Inclusion Criteria	Patients for whom NHTSA E09-15 "provider's primary impression" has a value 1700 "786.09-respiratory distress" or 1705 "799.10-respiratory arrest," or for whom E09-16 "provider's secondary impression" has a value1835 "786.09-respiratory distress" or 1840 "799.10-respiratory arrest, and who have a NHTSA E19-03 value for "oxygen"
11.b Numerator Exclusion Criteria	None
11.c Numerator Data Sources	NEMSIS State level
12. Sampling Allowed	No
13. Sampling Description	NA
14. Minimum Number of Data Points	Three plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	There is currently no medication list for E18-03.
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	15(Q)
2. Question	**What is the rate of undetected esophageal intubations?**
3. Indicator Name	Undetected Esophageal Intubation Rate
4. Key Process Path	Clinical Care:
5. Patient/Customer Need	To reduce procedure errors
6. Type of Measure	Process
7. Objective	Decrease
8. Indicator Formula	Number of events in which NHTSA E 19-07 "procedure complications") has a value 4535 "esophageal intubation-other" recorded divided by the number of events in which E19-03 "procedure" has values 96.041 "airway-nasotracheal intubation" and/or 96.040 "airway-orotracheal intubation" recorded
9. Indicator Formula Description	Calls with undetected esophageal intubations as a percentage of total calls where endotracheal intubations were attempted
10. Denominator Description	The total number of calls in which at least one endotracheal intubation attempt was made during a given period
10.a Denominator Inclusion Criteria	Events in which E19-03 "procedure" has values 96.041 "airway-nasotracheal intubation" and/or 96.040 "airway-orotracheal intubation" recorded
10.b Denominator Exclusion Criteria	
10.c Denominator Data Sources	NEMSIS National/State/Local Levels
11. Numerator Description	Number of calls in which an undetected esophageal intubation occurred
11.a Numerator Inclusion Criteria	Number of events in which NHTSA E 19-07 "procedure complications") has a value 4535 "esophageal intubation-other" recorded
11.b Numerator Exclusion Criteria	
11.c Numerator Data Sources	NEMSIS National/State/Local Levels
12. Sampling Allowed	Yes
13. Sampling Description	
14. Minimum Number of Data Points	Two plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	16.1(Q)
2. Question	**What is the rate of EMS crashes per 1,000 responses?**
3. Indicator Name	Delay-Causing Crash Rate per 1,000 EMS Responses
4. Key Process Path	Operations:
5. Patient/Customer Need	Reduce jeopardy caused by crashes and crash-induced delays in care and transport
6. Type of Measure	Process
7. Objective	Reduce the count and rate
8. Indicator Formula	The number of EMS crashes causing service delay divided by the total number of EMS responses, with the result multiplied by 1,000 to produce a rate per 1,000 responses
9. Indicator Formula Description	The number of events in which value 175 "vehicle crash" is selected for NHTSA 02-07 or 02-08 or 02-09 (response, scene, or transport delays), divided by the number of events in which values 30 "911 response (scene)" or 35 "intercept" or 50 "mutual aid" or 40 "interfacility transfer" or 45 "medical transport" is selected for NHTSA E02-04 "type of service requested." The result is multiplied times 1,000 to give a rate per 1,000 responses.
10. Denominator Description	The number of non-standby response events
10.a Denominator Inclusion Criteria	Events in which values 30 "911 response (scene)" or 35 "intercept" or 50 "mutual aid" or 40 "interfacility transfer" or 45 "medical transport" is selected for NHTSA E02-04 "type of service requested"
10.b Denominator Exclusion Criteria	Any other or no value is selected for E02-04
10.c Denominator Data Sources	NEMSIS State level
11. Numerator Description	The number of events in which an EMS vehicle crash caused delay
11.a Numerator Inclusion Criteria	Events in which NHTSA value "15- Vehicle Crash" is selected for elements 02-07 or 02-08 or 02-09 (response, scene, or transport delays)
11.b Numerator Exclusion Criteria	
11.c Numerator Data Sources	NEMSIS State level
12. Sampling Allowed	No
13. Sampling Description	
14. Minimum Number of Data Points	Four plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Rate per 1,000 responses
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	16.2(Q)
2. Question	**What is the rate of EMS crashes per 100,000 fleet miles?**
3. Indicator Name	EMS Crash Rate per 100,000 Fleet Miles
4. Key Process Path	
5. Patient/Customer Need	Improve response by reducing the rate of crashes
6. Type of Measure	Process
7. Objective	Reduce
8. Indicator Formula	Number of EMS crashes reported by a respondent agency or system divided by the number of fleet miles reported as traveled by that respondent agency's or system's vehicles for a given period of time. The result is multiplied times 100,000 to give a rate of crashes per 100,000 miles
9. Indicator Formula Description	Rate of EMS crashes per 100,000 fleet miles
10. Denominator Description	Fleet miles traveled in a given period of time
10.a Denominator Inclusion Criteria	All miles
10.b Denominator Exclusion Criteria	
10.c Denominator Data Sources	Survey
11. Numerator Description	Number of EMS vehicle crashes reported
11.a Numerator Inclusion Criteria	All crashes that cause a vehicle repair or replacement
11.b Numerator Exclusion Criteria	
11.c Numerator Data Sources	Survey
12. Sampling Allowed	No
13. Sampling Description	
14. Minimum Number of Data Points	Two plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Rate per 100,000 miles
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	16.3(Q) and 16.4(Q)
2. Question	**What are the Rate of Injuries (16.3) and Deaths (16.4) because of EMS Crashes per 100,000 Fleet Miles?**
3. Indicator Name	**16.3**- EMS Crash Injury Rate per 100,000 Fleet Miles **16.4**- EMS Crash Death Rate per 100,000 Fleet Miles
4. Key Process Path	
5. Patient/Customer Need	Reduce the rate of injuries and deaths resulting from EMS crashes
6. Type of Measure	Process
7. Objective	Reduce
8. Indicator Formula	**16.3**- Number of injuries resulting from EMS crashes reported by a respondent agency or system divided by the number of fleet miles reported as traveled by that respondent agency's or system's vehicles for a given period of time. The result is multiplied times 100,000 to give a rate of crash injuries per 100,000 miles **16.4**- Number of deaths resulting from EMS crashes reported by a respondent agency or system divided by the number of fleet miles reported as traveled by that respondent agency's or system's vehicles for a given period of time. The result is multiplied times 100,000 to give a rate of crash injuries per 100,000 miles
9. Indicator Formula Description	**16.3**- Rate of EMS crash injuries per 100,000 fleet miles **16.4**- **16.3**- Rate of EMS crash deaths per 100,000 fleet miles
10. Denominator Description	Fleet miles traveled in a given period of time
10.a Denominator Inclusion Criteria	All miles
10.b Denominator Exclusion Criteria	
10.c Denominator Data Sources	Survey
11. Numerator Description	**16.3**- Number of EMS crash injuries reported **16.4**- Number of EMS crash deaths reported
11.a Numerator Inclusion Criteria	All injured or dead regardless of whether EMS provider, patient, or the public (including other public safety or transportation responders)
11.b Numerator Exclusion Criteria	
11.c Numerator Data Sources	Survey
12. Sampling Allowed	No
13. Sampling Description	
14. Minimum Number of Data Points	Three plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	Rate per 100,000 miles
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	Annual
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Attribute ID	17.1(CD) and 17.2(CD)
2. Question	**What is the number and distribution of primary complaints to which EMS responds?**
3. Attribute Name	**17.1**- Call Complaint Distribution **17.2**- Call Complaint Rate
4. Key Process Path	Operations:
5. Patient/Customer Need	Training/planning for call types experienced
6. Type of Measure	Structure
7. Objective	
8. Attribute Formula	**17.1** A distribution of the NHTSA values of E03-01 "complaint reported by dispatch" as a count of each and **17.2** as a percentage of each against the total values reported.
9. Attribute Formula Description	**17.1** A simple distribution of the complaints reported at dispatch and **17.2** their percentage as a part of the total complaints reported
10. Denominator Description	**17.1** N/A; **17.2** The number of events in which a complaint at dispatch is reported
10.a Denominator Inclusion Criteria	**17.1** N/A; **17.2** The number of events in which a value for E03-01 is selected
10.b Denominator Exclusion Criteria	No value for E03-01 is selected
10.c Denominator Data Sources	NEMSIS agency level
11. Numerator Description	**17.1** N/A; **17.2** For each value, the number of times that it is selected
11.a Numerator Inclusion Criteria	**17.1** N/A; **17.2** A value is uniquely selected
11.b Numerator Exclusion Criteria	**17.1** N/A; **17.2** No value or more than one value is selected for a single event
11.c Numerator Data Sources	NEMSIS agency level
12. Sampling Allowed	No
13. Sampling Description	
14. Minimum Number of Data Points	One plus agency/locale and time/date identifiers
15. Suggest Reporting Format: Numerical	**17.1** Whole numbers; **17.1** Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

1. Indicator ID	18.1(CC) and 18.2(CC)
2. Question	**What percentage of patients experiencing cardiac arrest after EMS arrival survives to discharge from the emergency department (18.1) and discharge from the hospital (18.2)?**
3. Indicator Name	**18.1**- EMS Cardiac Arrest Survival Rate to ED Discharge **18.2**- EMS Cardiac Arrest Survival Rate to Hospital Discharge
4. Key Process Path	Clinical Care: ACS > Cardiac Arrest > Survival Rates
5. Patient/Customer Need	Successful resuscitation from cardiac arrest
6. Type of Measure	Outcome
7. Objective	Increase rates
8. Indicator Formula	**18.1**- Number of patients experiencing cardiac origin cardiac arrest after EMS arrival who survive to discharge from the ED divided by the total number of patients experiencing cardiac origin cardiac arrest after EMS arrival in a given period **18.2**- Number of patients experiencing cardiac origin cardiac arrest after EMS arrival who survive to discharge from the hospital divided by the total number of patients experiencing cardiac origin cardiac arrest after EMS arrival in a given period
9. Indicator Formula Description	**18.1**- Percentage of patients having a recorded NHTSA E11-01 "cardiac arrest" value of 2245 "yes-after EMS arrival" who have E22-01"emergency department disposition" values indicating that they left the ED alive **18.2**- Percentage of patients having a recorded NHTSA E11-01 "cardiac arrest" value of 2245 "yes-after EMS arrival" who have E22-02 "hospital disposition" values indicating that they left the first hospital to which they were transported
10. Denominator Description	Total number of patients experiencing cardiac origin cardiac arrest after EMS arrival in a given period
10.a Denominator Inclusion Criteria	Patients having a recorded NHTSA E11-01 "cardiac arrest" value of 2245 "yes-after EMS arrival," <u>and</u> E11-02 "cardiac arrest etiology" value of 2250 "presumed cardiac" <u>and</u> E11-03 "resuscitation attempted" values 2280 "attempted defibrillation" or 2285 "attempted ventilation" or 2290 "initiated chest compressions"
10.b Denominator Exclusion Criteria	Patients with NHTSA E06-14/E06-15 "age/age units" values, or NHTSA E06-16 "date of birth" value minus E05-07 "arrived at patient data/time" value indicating patient less than age 35
10.c Denominator Data Sources	NEMSIS agency or State level
11. Numerator Description	**18.1**- Number of patients experiencing cardiac origin cardiac arrest after EMS arrival who survive to discharge from the ED **18.2**- Number of patients experiencing cardiac origin cardiac arrest after EMS arrival who survive to discharge from the hospital
11.a Numerator Inclusion Criteria	**18.1**- Patients having a recorded NHTSA E11-01 "cardiac arrest" value of 2245 "yes-after EMS arrival," <u>and</u> E11-02 "cardiac arrest etiology" value of 2250 "presumed cardiac," <u>and</u> E11-03 "resuscitation attempted" values 2280 "attempted defibrillation" or 2285 "attempted ventilation" or 2290 "initiated chest compressions," <u>and</u> E22-01 "emergency department disposition" values 5335 "admitted to hospital floor" or 5340 "admitted to hospital ICU" or 5355 "released" or 5360 "transferred" **18.2**- Patients having a recorded NHTSA E11-01 "cardiac arrest" value of 2245 "yes-after EMS arrival," <u>and</u> E11-02 "cardiac arrest etiology" value of 2250 "presumed cardiac," <u>and</u> E11-03 "resuscitation attempted" values 2280 "attempted defibrillation" or 2285 "attempted ventilation" or 2290 "initiated chest compressions," <u>and</u> E22-02 "hospital disposition" values 5370 "discharged" or 5380 "transfer to hospital" or 5380 "transfer to nursing home" or 5385 "transfer to other" or 5390 "transfer to rehabilitation facility"
11.b Numerator Exclusion Criteria	

11.c Numerator Data Sources	NEMSIS agency or State level
12. Sampling Allowed	No
13. Sampling Description	
14. Minimum Number of Data Points	Nine plus agency/locale/destination and time/date identifiers
15. Suggest Reporting Format: Numerical	Percentage
16. Suggest Reporting Format: Graphical	
17. Suggest Reporting Frequency	
18. Testing	
19. Stratification	
20. Stratification Options	
21. Current Development Status	
22. Additional Information	
23. References	
24. Contributors	

Appendix – Project Steering Committee List

Association/Agency	Representative
American Ambulance Association (AAA)	Troy Hogue
Association of Air Medical Services (AAMS)	Shawn Salter
American College of Emergency Physicians (ACEP)	John Krohmer
American Heart Association (AHA)	Bonnie Sekenske
Commission on the Accreditation of Ambulance Services (CAAS)	Meredith Hellestrae
Commission on Accreditation of Medical Transport Systems (CAMTS)	Eileen Frazer
EMS Outcomes Project and Value of EMS Project	Ron Maio
Emergency Nurses Association (ENA)	Kathy Robinson
International Association of Fire Chiefs (IAFC)	Jack Krakeel
International Association of Fire Fighters (IAFF)	Jonathan Moore/Lori Moore
National Academy of Emergency Medical Dispatch (NAEMD)	Carlynn Page
National Association of EMTS (NAEMT)	Nathan Williams
Open Source EMS Initiative	Mic Gunderson
National Association of EMS Physicians (NAEMSP)	Beth Adams, Bob Swor
National Association of State EMS Officials (NASEMSO) and Project Principal Investigator	Kevin McGinnis
National EMS Information System (NEMSIS)	Greg Mears
North Central EMS Institute (NCEMSI)	Aarron Reinert/Gary Wingrove
Centers for Disease Control (CDC)	Rick Hunt
Joint Commission On the Accreditation of Health Care Organizations	Jerod Loeb
Health Resources and Services Administration Emergency Medical Services for Children Program (EMSC)	Dan Kavanaugh
Health Resources and Services Administration Office of Rural Health Policy (ORHP)/REMSTTAC	Nels Sanddal/Joseph Hanson
National Highway Traffic Safety Administration (NHTSA) Office of EMS	Drew Dawson
National Highway Traffic Safety Administration (NHTSA) Office of EMS	Susan McHenry

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