

Open Source EMS Initiative's Performance Indicator Specification

OSEMSI Performance Indicator Group

This section of the Journal will provide detailed technical specifications for EMS related performance indicators that have been adopted by the Open Source EMS Initiative (OSEMSI) or other selected sources.

This document contains the format for development of EMS performance indicators, as approved by an open voting process involving the EMS community at large and the Open Source EMS Initiative's editorial board members. This version of the performance indicator format was officially accepted June 1, 2003. It is based on the healthcare performance indicator format developed by the Joint Commission on the Accreditation of Healthcare Organizations.

- **Indicator 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 on
- **Patient or Customer / Need** – Indicators are designed to reflect on how well and/or how efficiently a given patient or customer need is being met. This item shows what patient or customer / need that the indicator reflects on
- **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 Formula** – The equation for calculation of the indicator. If applicable, separate sections will separately address the numerator and denominator of the indicator equation.
- **Indicator 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

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Online Access: <http://www.emsmj.com/v1n1/Indicator/default.htm>

- **Denominator Data Sources** – Sources for data used in generating the denominator
- **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
- **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.

Using this format, the OSEMSI Cardiac Performance Indicator Section is working on a performance indicator specification for cardiac arrest survival rates based on the Utstein Criteria. This draft specification is shown below to illustrate use of the OSEMSI performance indicator format.

- **Indicator Name** – Cardiac Arrest Survival to Hospital Discharge Rate
- **Key Process Path** – Clinical / Cardiac / Resuscitation
- **Customer / Need** – Patient / Survival
- **Type of Measure** – Outcome
- **Objective** – Resuscitation from out-of-hospital sudden cardiac death is a key factor driving the design and clinical capabilities for EMS systems. This indicator includes several stratification criteria that allows for better comparisons between similar patient groups.
- **Indicator Formula** – # of patients that survived to hospital discharge / resuscitation attempts
- **Indicator Formula Description** – The numerator is a subset of the denominator that shows the portion of resuscitation attempts that survived, within the inclusion and exclusion criteria definitions.

- **Numerator Statement** – # of patients that survived to hospital discharge. This is a subset of the denominator.
 - **Numerator Inclusion Criteria** – N/A
 - **Numerator Exclusion Criteria** – N/A
 - **Numerator Data Sources** – Hospital discharge records or cardiac arrest registry
 - **Numerator Data Elements** – Hospital discharge status (alive, expired)
- **Denominator Statement** – Number of cases in which EMS attempted resuscitation
 - **Denominator Inclusion Criteria**
 - Chest compressions or defibrillation provided by EMS
 - Defibrillation or synchronized cardioversion provided a public access defibrillator followed by EMS care
 - **Denominator Exclusion Criteria**
 - No discharge information available
 - Resuscitation efforts discontinued by EMS personnel after resuscitation was initiated by non-EMS personnel for either a lack of evidence of an actual cardiac arrest or in cases where EMS crews immediately deemed that initiation of bystander resuscitation was inappropriate and discontinued it.
 - **Denominator Data Elements**
 - Procedures (chest compression, defibrillation, PAD discharge)
 - ECG rhythm
 - DNR status
 - Patient condition codes (i.e. major trauma, poisoning, overdose)
 - Bystander witnessed arrest event (y/n)
 - EMS witnessed arrest event (y/n)
 - **Denominator Data Source** – EMS medical record
- **Sampling Allowed** – No
- **Sampling Description** – N/A
- **Minimum Number of Data Points** – Series of 50 consecutive resuscitation attempt cases
- **Suggested Reporting Format: Numerical** – Percentage
- **Suggested Reporting Format – Graphical** – Run chart; statistical process control chart (p chart)
- **Suggested Reporting Frequency** – For each consecutive series of 50 cases
- **Testing** – Methodology published in peer-reviewed literature and numerous studies have applied the methodology.
- **Stratification** – Yes
 - **Stratification Options** – The following stratification options are applied to the denominator:
 - By bystander witnessed event status (y, n, aggregate)
 - By EMS witnessed event status (y, n, aggregate)
 - By presumed cardiac etiology (y, n, aggregate)
 - By bystander CPR status (y, n, aggregate)
 - Initial ECG rhythm (VF, VT, asystole, other, aggregate)
 - By public access defibrillator discharge status (y, n, aggregate)
 - By patient age bracket (neonate, newborn, infant, toddler, child, adolescent, teen, 20-39, 40-59, 60-79, >80, aggregate)
 - By EMS BLS response interval bracket (<4, <6, <8, <10, <12, >12 minutes, aggregate)
 - By EMS ALS response interval bracket (<4, <6, <8, <10, <12, >12 minutes, aggregate)
- **Current Development Status** – Draft only
- **Additional Information** – This indicator is based on the Utstein Style for reporting out-of-hospital survival data from cardiac arrest. Stratification options allow for compliance

to the various reporting categories from the Utstein Style Template. Additional stratification options were added to allow for ALS and BLS response intervals and patient age.

- **References** – Cummins RO, Chamberlain DA, et. al. (Task Force of the American Heart Association, European Resuscitation Council, Heart and Stroke Foundation of Canada and the Australian Resuscitation Council): Recommended Guidelines for Uniform Reporting of Data From Out-of-Hospital Cardiac Arrest: The Utstein Style. *Circulation* 1991;84(2):960-975
 - **Contributors** – To be named
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