

NEMSQA National EMS Quality Measure Set

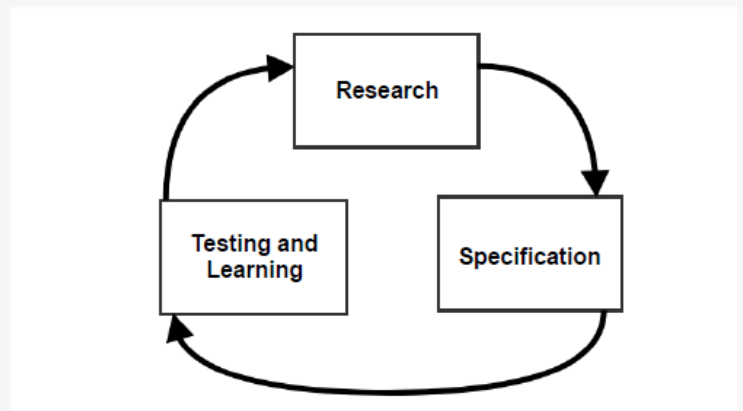


EMS Compass Measures, developed and released as candidate measures by the National Association of State EMS Officials (NASEMSO) in 2016 have been revised. Revisions were issued in 2019 by NEMSQA, working under a grant from the National Highway Traffic Safety Administration (NHTSA).

What processes were used for re-specification?

A rigorous, scientific process was employed to ensure the measures are evidence-based, feasible, valid, and reliable

- Evidence-based measure development processes were used to re-specify measures
- Redevelopment phases included research, specification, and testing of measures
- A new, lifecycle approach will ensure measures are consistently maintained and remain up-to-date



Why adopt the re-specified measures?



Revised measures include the most up-to-date research and guidelines; 2016 measures are outdated



Measures have undergone rigorous feasibility, validity, and reliability testing



New resources, including technical artifacts, facilitate ease of implementation



Standardization throughout the EMS community will enable better benchmarking

Measure ID	Measure Title	Measure Description	Initial Patient Population	Denominator	Numerator	Denominator Exclusions	Denominator Exceptions	NQS Domain	Measure Type	Traditional or Inverse	Scoring Method
Asthma-01 <i>*Previously Pediatrics-02</i>	Administration of Beta Agonist for Asthma	Percentage of EMS responses originating from a 911 request for patients with a diagnosis of asthma who had an aerosolized beta agonist administered.	All EMS responses originating from a 911 request for patients greater than or equal to 2 years of age with a primary or secondary impression of asthma exacerbation or acute bronchospasm.	Population 1: EMS responses in the initial population Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age. Population 3: EMS responses in the initial population for patients age 2 to 17 years of age.	Numerator for Populations 1-3 (Calculate 3 Rates): EMS responses patients who had an aerosolized beta agonist administered by an EMS professional during the EMS response.	None	None	Clinical Process - Effectiveness	Process	Traditional	Proportional
Hypoglycemia-01	Treatment Administered for Hypoglycemia	Percentage of EMS responses originating from a 911 request for patients with symptomatic hypoglycemia who receive treatment to correct their hypoglycemia.	All EMS responses originating from a 911 request for patients with hypoglycemia and a GCS of <15 or an AVPU of <A or patients with a primary or secondary impression of altered mental status and a blood glucose level of <60.	Population 1: EMS responses in the initial population Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age. Population 3: EMS responses in the initial population for patients less than 18 years of age.	Numerator for Populations 1-3 (Calculate 3 Rates): EMS responses for patients receiving treatment to correct their hypoglycemia during the EMS response.	Apply Denominator Exclusion to Populations 1 and 3: Patients less than 24 hours of age.	None	Clinical Process - Effectiveness	Process	Traditional	Proportional
Pediatrics-03	Documentation of Estimated Weight in Kilograms	Percentage of EMS responses originating from a 911 request for patients less than 18 years of age who received a weight-based medication and had a documented weight in kilograms or length-based weight estimate documented during the EMS response.	All EMS responses originating from a 911 request for patients less than 18 years of age who received a weight-based medication during the EMS response.	EMS responses for patients in the initial population.	EMS responses for patients in which a weight value was documented in kilograms or a length-based weight was documented during the EMS response.	None	EMS responses for patients who receive non-weight-based medications.	Patient Safety	Process	Traditional	Proportional
Respiratory-01 <i>*Previously Pediatrics-01</i>	Respiratory Assessment	Percentage of EMS responses originating from a 911 request for patients with primary or secondary impression of respiratory distress who had a respiratory assessment.	All EMS responses originating from a 911 request for patients with a primary or secondary impression of respiratory distress.	Population 1: EMS responses in the initial population Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age. Population 3: EMS responses in the initial population for patients less than 18 years of age.	Numerator for Populations 1-3 (Calculate 3 Rates): EMS responses for patients who received both a SPO2 and respiratory rate measurement during the EMS response.	None	None	Clinical Process - Effectiveness	Process	Traditional	Proportional

**National EMS Quality Alliance EMS
Quality Measure Set Specifications (2021)**

Seizure-02	Patient with Status Epilepticus Receiving Intervention	Percentage of EMS responses originating from a 911 request for patients with status epilepticus who received benzodiazepine during the EMS response.	All EMS responses originating from a 911 request for patients with a primary or secondary impression of status epilepticus.	Population 1: EMS responses in the initial population Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age. Population 3: EMS responses in the initial population for patients less than 18 years of age.	Numerator for Populations 1-3 (Calculate 3 Rates): EMS responses patients who received benzodiazepine during the EMS response.	None	None	Clinical Process - Effectiveness	Process	Traditional	Proportional
Stroke-01	Suspected Stroke Receiving Prehospital Stroke Assessment	Percentage of EMS responses originating from a 911 request for patients suffering from a suspected stroke who had a stroke assessment performed during the EMS response.	All EMS responses originating from a 911 request for patients with a primary or secondary impression of stroke.	EMS responses in the initial population	EMS responses for patients who had a stroke assessment performed on scene during the EMS response.	Patients who are unresponsive.	None	Clinical Process - Effectiveness	Process	Traditional	Proportional
Trauma-01	Injured Patients Assessed for Pain	Percentage of EMS responses originating from a 911 request for patients with injury who were assessed for pain.	All EMS responses originating from a 911 request for patients with injury and a Glasgow Coma Score (GCS) of 15 or an Alert Verbal Painful Unresponsiveness (AVPU) of A.	Population 1: EMS responses in the initial population Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age. Population 3: EMS responses in the initial population for patients less than 18 years of age.	Numerator for Populations 1-3 (Calculate 3 Rates): EMS responses for patients with any pain scale value documented during the EMS encounter.	None	None	Patient Experience	Process	Traditional	Proportional
Trauma-03	Effectiveness of Pain Management for Injured Patients	Percentage of EMS transports originating from a 911 request for patients whose pain score was lowered during the EMS encounter.	All EMS transports originating from a 911 request for patients with injury who had an initial pain score of greater than zero.	Population 1: EMS responses in the initial population Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age. Population 3: EMS responses in the initial population for patients less than 18 years of age.	Numerator for Populations 1-3 (Calculate 3 Rates): EMS transports for patients with two or more documented pain scores and a final pain score value less than the first documented pain score.	None	None	Patient Experience	Outcome	Traditional	Proportional
Trauma-04	Trauma Patients Transported to a Trauma Center	Percentage of EMS responses originating from a 911 request for patients who meet CDC criteria for trauma and are transported to a trauma center.	All EMS transports originating from a 911 request for patients who meet 2011 CDC Step 1 or 2 criteria for trauma.	Population 1: EMS responses in the initial population Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age. Population 3: EMS responses in the initial population for patients less than 18 years of age.	Numerator for Populations 1-3 (Calculate 3 Rates): EMS transports for patients transported to a trauma center.	None	None	Clinical Process - Effectiveness	Process	Traditional	Proportional

**National EMS Quality Alliance EMS
Quality Measure Set Specifications (2021)**

Safety-01	Use of Lights and Sirens During Response to Scene	Percentage of EMS responses originating from a 911 request in which lights and sirens were not used during response.	All EMS responses originating from a 911 request.	Population 1: EMS responses in the initial population Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age. Population 3: EMS responses in the initial population for patients less than 18 years of age.	Numerator for Populations 1-3 (Calculate 3 Rates): EMS responses during which lights and sirens were not used.	None	None	Patient Safety	Process	Traditional	Proportional
Safety-02	Use of Lights and Sirens During Transport	Percentage of EMS transports originating from a 911 request during which lights and sirens were not used during patient transport.	All EMS transports originating from a 911 request.	Population 1: EMS responses in the initial population Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age. Population 3: EMS responses in the initial population for patients less than 18 years of age.	Numerator for Populations 1-3 (Calculate 3 Rates): EMS transports during which lights and sirens were not used.	None	None	Patient Safety	Process	Traditional	Proportional

National EMS Quality Alliance

2021 Asthma-01 Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets. NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

Asthma-01: Administration of Beta Agonist for Asthma

Asthma is a common disease among both children and adults, and a common reason for EMS calls. With EMS being utilized so often for pediatric asthma exacerbation, the TEP felt strongly about continuing to include this measure in the measure set. There is strong evidence demonstrating the benefits of albuterol administration to patients with an acute asthma exacerbation in the Emergency Department setting based on patient centered outcomes. There is also evidence to support that it can be administered safely and effectively by EMS. There are also national guidelines that support this measure. The intent of this measure is to determine if pediatric and adult patients experiencing asthma exacerbation are receiving a beta agonist.

The denominator for Asthma-01 (previously Pediatrics-02) includes EMS responses for patients greater than or equal to 2 years of age with a primary or secondary impression of asthma. Patients less than 2 years of age are not part of the inclusion criteria. The rationale for this exclusion is to exclude patients with wheezing from other etiologies such as bronchiolitis in which the evidence does not support routine use of beta agonists. The inclusion criteria for age have been changed to include all patients greater than 2 years of age, as the evidence continues to support administering beta agonist medications to this age group. However, the measure is stratified for patients 2-18 years of age and patients greater than 18 years of age to allow continued focus on the pediatric population but also allow for evaluation of all patients who would benefit from beta agonist treatment.

Two substantive changes were made to the numerator of Asthma-01 (previously Pediatrics-02) during the measure re-specification process. In order to meet quality standards for the measure, not only does a beta agonist have to be administered, but it must be an aerosolized beta agonist; and the beta agonist must be administered by an EMS professional. There was meaningful discussion among the members of the TEP in order to get to these changes. TEP members felt requiring that beta agonist medication be administered by an EMS professional makes Asthma-01 (previously Pediatrics-02) a true quality measure, as improvement can be driven by the EMS providers themselves.]

Every State and Region will have variation with regard to availability of Advanced Life Support, Basic Life Support and First Responders as well as protocols for care of pediatric and adult patients with asthma. In considering this measure, the TEP envisioned a patient-centric stance – in other words – it doesn't matter who is responding, or, if BLS can not administer albuterol in a particular state or region, if the patient is not receiving this important, possibly life-saving medication in the course of their EMS care, there might be an opportunity to make system changes to address this lack of care.

Asthma-01: Administration of Beta Agonist for Asthma

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients greater than or equal to 2 years of age with a diagnosis of asthma who had an aerosolized beta agonist administered.	
Measure Components	
Initial Population	All EMS responses originating from a 911 request for patients greater than or equal to 2 years of age with a primary or secondary impression of asthma exacerbation or acute bronchospasm
Denominator Statement	<p>Population 1: EMS responses in the initial population</p> <p>Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age.</p> <p>Population 3: EMS responses in the initial population for patients age 2 to 17 years of age</p>
Denominator Exclusions	None
Denominator Exceptions	None
Numerator Statement	<p>Numerator for Populations 1-3 (Calculate 3 Rates):</p> <p>EMS responses for patients who had an aerosolized beta agonist administered by an EMS professional during the EMS response</p> <p>Beta agonist medications may include:</p> <ul style="list-style-type: none"> • Albuterol • Levalbuterol • Metaproterenol
Supporting Guidance & Other Evidence	<p>The following evidence statements are quoted verbatim from the referenced clinical guidelines and other statements:</p> <p>A Model Protocol for Emergency Medical Services Management of Asthma Exacerbations:ⁱ</p> <p>For patients with prior diagnosis of asthma or prior use of an inhaled asthma medication and who are experiencing an acute exacerbation, the workgroup recommends that EMS personnel, consistent with their scope of practice, should:</p> <ul style="list-style-type: none"> • Transport all patients to the appropriate medical facility (e.g., hospital emergency department). • Provide oxygen • Provide inhaled bronchodilators, such as albuterol and ipratropium

	<ul style="list-style-type: none"> Consider systemic corticosteroids in more severe exacerbations and when transport times are prolonged. <p>National Heart, Lung, and Blood Institute. National Asthma Education and Prevention Program. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Full Report 2007:ⁱⁱ</p> <p>The Expert Panel recommends that emergency medical services (EMS) providers administer supplemental oxygen and SABA to patients who have signs or symptoms of an asthma exacerbation (Evidence A).</p>
Measure Importance	
Rationale	<p>Asthma is a very common disease among both children and adults. In fact, according to the Centers for Disease Control and Prevention, 1 in 13 individuals have asthmaⁱⁱⁱ, and asthma is the leading chronic disease in children.^{iv}</p> <p>Of all the EMS calls that occur on an annual basis, approximately 10% are pediatric transports, and 14% of these pediatric transports are attributed to patients in respiratory distress. Because prehospital administration of beta-agonists has shown to reduce airflow obstruction and relieve symptoms of asthma,^{v,vi,vii} protocols have been established in most states to administer beta-agonists and other medications to prehospital patients having an asthma exacerbation.^{viii}</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Quality Improvement <input type="checkbox"/> Accountability <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Process <input type="checkbox"/> Outcome <input type="checkbox"/> Structure <input type="checkbox"/> Efficiency
National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Clinical Process-Effectiveness <input type="checkbox"/> Patient Safety <input type="checkbox"/> Patient Experience <input type="checkbox"/> Care Coordination <input type="checkbox"/> Efficiency: Overuse <input type="checkbox"/> Efficiency: Cost <input type="checkbox"/> Population & Community Health
CMS Meaningful Measure Domain	<ul style="list-style-type: none"> <input type="checkbox"/> Medication Management <input type="checkbox"/> Admissions and Readmissions to Hospitals <input type="checkbox"/> Transfer of Health Information and Interoperability <input type="checkbox"/> Preventative Care <input checked="" type="checkbox"/> Management of Chronic Conditions

	<ul style="list-style-type: none"> <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health <input type="checkbox"/> Prevention and Treatment of Opioid and Substance <input type="checkbox"/> Risk Adjusted Mortality <input type="checkbox"/> Equity of Care <input type="checkbox"/> Community Engagement <input type="checkbox"/> Appropriate Use of Healthcare <input type="checkbox"/> Patient-focused Episode of Care <input type="checkbox"/> Risk-Adjusted Total Cost of Care <input type="checkbox"/> Healthcare-associated infections <input type="checkbox"/> Preventable Healthcare Harm <input type="checkbox"/> Care is Personalized and Aligned with Patient's Goals <input type="checkbox"/> End of Life Care according to Preferences <input type="checkbox"/> Patient's Experience of Care <input type="checkbox"/> Patient Reported Functional Outcomes
Level of measurement	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Individual EMS Professional <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) <input checked="" type="checkbox"/> Paper medical record/Chart abstracted <input checked="" type="checkbox"/> Registry

NEMSIS Pseudocode: Asthma-01: Administration of Beta Agonist for Asthma

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients with a diagnosis of asthma who had an aerosolized beta agonist administered.	
Measure Components	
Initial Population	<p>(</p> <p>(</p> <p>Situation.11 Provider's Primary Impression matches /^(J45) (J98.01\$)/ ("Asthma..." or "Acute Bronchospasm")</p> <p>or</p> <p>Situation.12 Provider's Secondary Impressions matches /^(J45) (J98.01\$)/ ("Asthma..." or "Acute Bronchospasm")</p> <p>)</p> <p>and</p> <p>eResponse.05 Type of Service Requested is</p> <p>(</p> <p>2205001 ("Emergency Response (Primary Response Area)"),</p> <p>22205003 ("Emergency Response (Intercept)"),</p> <p>2205009 ("Emergency Response (Mutual Aid)"))</p> <p>and</p> <p>(</p> <p>and</p> <p>ePatient.15 Age is greater than or equal to 2</p> <p>and</p> <p>ePatient.16 Age Units is 2516009 ("Years")</p> <p>or</p> <p>and</p> <p>ePatient.15 Age is greater than or equal to 24</p> <p>and</p> <p>ePatient.16 Age Units is 2516007 ("Months"))</p> <p>)</p>
Denominator	<p>Population 1:</p> <p>Equals Initial Population</p> <p>Population 2:</p> <p>(</p> <p>Initial Population</p> <p>and</p> <p>(</p> <p>and</p> <p>ePatient.15 Age is greater than or equal to 18</p> <p>and</p> <p>ePatient.16 Age Units is 2516009 ("Years"))</p> <p>Population 3:</p> <p>(</p>

	<p>Initial Population</p> <p>and</p> <p>(</p> <p>ePatient.15 Age is greater than or equal to 2</p> <p>and ePatient.15 Age is less than 18</p> <p>and ePatient.16 Age Units is 2516009 ("Years"))</p> <p>or</p> <p>(</p> <p>ePatient.15 Age is greater than or equal to 24</p> <p>and ePatient.16 Age Units is 2516007 ("Months"))))</p>
Denominator Exclusions	None
Numerator	<p>Numerator logic for Populations 1-3 (Calculate three separate rates)</p> <p>eMedication.03 Medication Administered is in</p> <p>(</p> <p>435 ("Albuterol"),</p> <p>7688 ("metaproterenol"),</p> <p>214199 ("Albuterol/Ipratropium"),</p> <p>237159 ("Levalbuterol"),</p> <p>487066 ("levalbuterol tartrate"),</p> <p>1154062 ("Albuterol Inhalant Product"),</p> <p>1163444 ("Levalbuterol Inhalant Product"),</p> <p>1649559 ("Albuterol Dry Powder Inhaler"),</p> <p>1165719 ("metaproterenol Inhalant Product"),</p> <p>2108209 ("Levalbuterol Inhalation Solution"),</p> <p>2108252 ("metaproterenol Inhalation Solution"))</p>

ⁱ CDC.gov. (2019). CDC – Asthma. Accessed May 8, 2019 at: <http://www.cdc.gov/asthma/default.htm>.

ⁱⁱ National Heart, Lung, and Blood Institute (2007) Expert panel report 3: Guidelines for the diagnosis and management of asthma. J Allergy Clin Immunol, 120(5):S94-138.)

ⁱⁱⁱ CDC.gov (2018). Asthma | Healthy Schools | CDC. Accessed May 8, 2019 at: <http://www.cdc.gov/healthyschools/asthma>

^{iv} Nassif, A., Ostermayer, K., Hoang, K.B., Claiborne, M.K., Camp, E.A., Shah, M.I., (2018) Implementation of a Prehospital Protocol for Change For Asthmatic Children. Prehospital Emergency Care, 22:4, 457-465.

^v Fergusson RJ, Stewart CM, Wathen CG, Moffat R, et al. (1995) Effectiveness of nebulised salbutamol administered in ambulances to patients with severe acute asthma. Thorax; 50(1):81-2.

^{vi} Markenson D, Foltin G, Tunik M, Cooper A, et al. (2004) Albuterol sulfate administration by EMT-basics: results of a demonstration project. Prehosp Emerg Care; 8(1):34-40.

^{vii} Richmond NJ, Silverman R, Kusick M, Matalana L, et al. (2005) Out-of-hospital administration of albuterol for asthma by basic life support providers. Acad Emerg Med; 12(5):396-403.

^{viii} Nassif, A., Ostermayer, K., Hoang, K.B., Claiborne, M.K., Camp, E.A., Shah, M.I., (2018) Implementation of a Prehospital Protocol for Change For Asthmatic Children. Prehospital Emergency Care, 22:4, 457-465.

National EMS Quality Alliance

2021 Hypoglycemia-01 Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets. NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

Hypoglycemia-01: Treatment Administered for Hypoglycemia

Direct evidence for treating hypoglycemia/low blood sugar in the EMS environment is not available. However, it has clearly the standard of care for patients who have the condition. The medical community/literature understands that untreated hypoglycemia can cause brain injury, coma and other consequences. AS noted above a randomized trial of this therapy would not be ethical. Clearly, EMS has a role in giving early treatment, be it oral, IV or IO delivery. Patients, wherever they may be, should have access to this critical, simple antidote for a life-threatening condition. The intent of this measure is to determine if treatment is being administered to EMS patients who are experiencing hypoglycemia.

The denominator, or initial population included in this measure is EMS encounters for patients who have a clinical condition associated with hypoglycemia. After much debate and discussion, it was decided that the initial population could be captured in one of two ways— encounters for patients with a documented primary or secondary impression of Altered Mental Status and a blood sugar less than 60 ug/mL (The TEP decided on this number because it is the most specific/lowest and captures the sickest patients), OR, encounters for patients with a primary impression of Hypoglycemia with a documented GCS of <15 or an AVPU score of V, P or U. The TEP believes that this denominator will offer the best opportunity to identify the patients affected by this condition.

Because the definition of and treatment for hypoglycemia in the newly born (< 24 hours old) has different parameters this population of patients has been excluded from the denominator for Hypoglycemia-01. Any EMS responses for this population of patients who meet the inclusion criteria should be removed from the denominator.

The numerator consists of EMS responses for patients who receive the care expected (and was documented!)- in this case, these are the number of patients from the denominator who receive sugar in one way or another. Many medication codes correlate to the NEMSIS capture of this treatment including IV/IO and oral formulations of dextrose and glucose; however, there is no existing treatment code for “food” We understand that some of our EMS treated patients will get this care but not be recorded for electronic specification. NEMSQA anticipates this may lower overall treatment percentages for any given EMS agency – this is likely to affect EMS agencies throughout the country. NEMSQA also hopes that NEMSIS and ePCR vendors will consider adding this code in the next round of updates so that agencies can get credit for this treatment.

Different EMS systems will allow different treatment for hypoglycemia at different levels – some BLS may be able to use a glucometer to find this condition but if the patient cannot take oral glucose, their only option is to transport without ALS backup - in this type of system, there may be a lower rate of EMS treatment of hypoglycemia compared to other similar systems. This low number might therefore incentivize the system to adapt, add resources to EMS or look for mutual aid to improve the rates of improvement for their patients suffering from hypoglycemia.

Hypoglycemia-01: Treatment Administered for Hypoglycemia

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients with symptomatic hypoglycemia who received treatment to correct their hypoglycemia.	
Measure Components	
Initial Population	All EMS responses originating from a 911 request for patients with a GCS of <15 or an AVPU of <A or patients with a primary or secondary impression of altered mental status and a blood glucose level of <60
Denominator Statement	<p>Population 1: EMS responses in the initial population</p> <p>Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age</p> <p>Population 3: EMS responses in the initial population for patients less than 18 years of age</p>
Denominator Exclusions	EMS responses for patients less than 24 hours of age
Denominator Exceptions	None
Numerator Statement	<p>Numerator for Populations 1-3 (Calculate 3 Rates):</p> <p>EMS responses for patients receiving treatment to correct their hypoglycemia during the EMS response</p> <p>Treatments to correct hypoglycemia:</p> <ul style="list-style-type: none"> • Food • Oral glucose (tablets, glucose gel, tube of cake icing, etc.) • Dextrose IV/IN • Glucagon IM/IN
Supporting Guidance & Other Evidence	<p>The following evidence statement is quoted verbatim from the referenced clinical guideline:</p> <p>National Model EMS Clinical Guidelines for Hypoglycemia Management, 2017:ⁱ</p> <p>Treatment and Interventions</p> <ol style="list-style-type: none"> 1. If altered level of consciousness or stroke, treat per Altered Mental Status or Suspected Stroke/Transient Ischemic Attack guidelines accordingly 2. If blood glucose is 60 mg/dL or less administer one of the following: <ol style="list-style-type: none"> a. Conscious patient with a patent airway:

	<ul style="list-style-type: none"> a. Glucose, oral (in form of glucose tablets, glucose gel, tube of cake icing, etc.) b. Unconscious patient, or patients who are unable to protect their own airway: <ul style="list-style-type: none"> a. Dextrose IV – administer in incremental doses until mental status improves or maximum field dosing is reached b. Glucagon IM/IN c. Remove or disable insulin pump if above treatment cannot be completed
Measure Importance	
Rationale	<p>One common diabetic emergency EMS professionals encounter is hypoglycemia, which is a condition caused by very low blood sugar levels. Signs of hypoglycemia include altered mental status, confusion, diaphoresis, shaking, tachycardia, and feeling of extreme hunger. If glucose levels are not restored, the patient’s mental status will change, and they will become confused, experience headache, and progress into semi-unconsciousness and unconsciousness, rapidly progressing to brain damage. While hypoglycemia may occur in both diabetic and non-diabetic patients, it is a medical emergency in either case that must be treated immediately.ⁱⁱ</p> <p>Because hypoglycemia does not delay gastrointestinal absorption of glucose, if an adult patient is identified as hypoglycemic and is alert and able to protect their airway, they should first receive a dose of oral glucose, which should take effect within 10-15 minutes. For patients who are unwilling or unable to safely consume oral glucose, IV dextrose is recommended.ⁱⁱⁱ</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Quality Improvement • <input type="checkbox"/> Accountability • <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Process • <input type="checkbox"/> Outcome • <input type="checkbox"/> Structure • <input type="checkbox"/> Efficiency
National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Clinical Process-Effectiveness • <input type="checkbox"/> Patient Safety • <input type="checkbox"/> Patient Experience • <input type="checkbox"/> Care Coordination • <input type="checkbox"/> Efficiency: Overuse • <input type="checkbox"/> Efficiency: Cost • <input type="checkbox"/> Population & Community Health

CMS Meaningful Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Medication Management • <input type="checkbox"/> Admissions and Readmissions to Hospitals • <input type="checkbox"/> Transfer of Health Information and Interoperability • <input type="checkbox"/> Preventative Care • <input checked="" type="checkbox"/> Management of Chronic Conditions • <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health • <input type="checkbox"/> Prevention and Treatment of Opioid and Substance • <input type="checkbox"/> Risk Adjusted Mortality • <input type="checkbox"/> Equity of Care • <input type="checkbox"/> Community Engagement • <input type="checkbox"/> Appropriate Use of Healthcare • <input type="checkbox"/> Patient-focused Episode of Care • <input type="checkbox"/> Risk-Adjusted Total Cost of Care • <input type="checkbox"/> Healthcare-associated infections • <input type="checkbox"/> Preventable Healthcare Harm • <input type="checkbox"/> Care is Personalized and Aligned with Patient's Goals • <input type="checkbox"/> End of Life Care according to Preferences • <input type="checkbox"/> Patient's Experience of Care • <input type="checkbox"/> Patient Reported Functional Outcomes
Level of measurement	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Individual EMS Professional • <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data • <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) • <input checked="" type="checkbox"/> Paper medical record/Chart abstracted • <input checked="" type="checkbox"/> Registry

NEMSIS Pseudocode: Hypoglycemia-01: Treatment Administered for Hypoglycemia

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients with symptomatic hypoglycemia who received treatment to correct their hypoglycemia.	
Measure Components	
Initial Population	<p>((</p> <p>eSituation.11 Provider's Primary Impression matches/^(E13.64) (E16.2)/("Other specified diabetes mellitus with hypoglycemia" or "Hypoglycemia, unspecified")</p> <p>or</p> <p>eSituation.12 Provider's Secondary Impressions matches/^(E13.64) (E16.2)/("Other specified diabetes mellitus with hypoglycemia" or "Hypoglycemia, unspecified")</p> <p>)</p> <p>and (eVitals.23 Total Glasgow Coma Score is less than 15</p> <p>or eVitals.26 Level of responsiveness (AVPU) is in</p> <p>(</p> <p>3326003 ("Verbal")</p> <p>3326005 ("Painful") 3326007 ("Unresponsive"))))</p> <p>or</p> <p>((</p> <p>eSituation.11 Provider's Primary Impression matches/^R41.82/("Altered Mental Status, unspecified")</p> <p>or</p> <p>eSituation.12 Provider's Secondary Impressions matches/^R41.82/("Altered Mental Status, unspecified")</p> <p>and</p> <p>(</p> <p>eVitals.18 Blood Glucose Level is less than 60</p> <p>or</p> <p>eVitals.18 Blood Glucose Level is "low"))</p> <p>and eResponse.05 Type of Service Requested is-</p> <p>(</p> <p>2205001 ("Emergency Response (Primary Response Area)"),</p> <p>2205003 ("Emergency Response (Intercept)"),</p> <p>2205009 ("Emergency Response (Mutual Aid)"))))</p>
Denominator	<p>Population 1: Equals Initial Population</p> <p>Population 2:</p>

	<p>(Initial Population and (ePatient.15 Age is greater than or equal to 18 and ePatient.16 Age Units is 2516009 ("Years")))</p> <p>Population 3: (Initial Population and ((ePatient.15 Age is less than 18 and ePatient.16 Age Units is 2516009 ("Years")) or (ePatient.15 Age is not null and ePatient.16 Age Units is in (2516001 ("Days"), 2516003 ("Hours"), 2516005 ("Minutes"), 2516007 ("Months"))))</p>
Denominator Exclusions	<p>Apply Denominator Exclusion to Populations 1 and 3: ((ePatient.15 Age is less than 1 and ePatient.16 Age in Units is 2516001 ("Days")) or (ePatient.15 Age is less than 24 and ePatient.16 Age in Units is 2516003 ("Hours")) or (ePatient.15 Age is less than or equal to 120 and ePatient.16 Age in Units is 2516005 ("Minutes"))</p>
Numerator	<p>Numerator logic for Populations 1-3 (Calculate three separate rates)</p> <p>eMedications.03 Medication Administered is in (4832 ("Glucagon"), 4850 ("Glucose"), 377980 (Glucose Oral Gel), 376937 (Glucose Injectable Solution), 372326 (Glucose Chewable Tablet), 237653 ("Glucose 500 MG/ML Injectable Solution"),</p>

	<p>260258 ("Glucose 250 MG/ML Injectable Solution"), 309778 ("Glucose 50 MG/ML Injectable Solution"), 1795610 ("250 ML Glucose 50 MG/ML Injection"), 1795477 ("500 ML Glucose 100 MG ML Injection"), 1794567 ("Glucose Injection") 1165823 ("Glucose Oral Product") 1165822 ("Glucose Oral Liquid Product") 1165819 ("Glucose Injectable Product"))</p> <p>or eProcedures.03 Procedure is in (</p> <p>710925007 ("Provision of food"), 225285007 ("Giving oral fluid"))</p>
--	--

ⁱ NASEMSO Medical Directors Council. (2017) National Model EMS Clinical Guidelines. National Association of State EMS Officials, 78-81.

ⁱⁱ Maggiore, W.A. (2013) Highs & Lows, Recognizing & treating hypoglycemia, hyperglycemia & other diabetes-related health problems. Journal of Emergency Medicine Services, 45-47.

ⁱⁱⁱ Carroll, M.F., Burge, M.R., Schade, D.S. (2003) Severe Hypoglycemia in Adults. Reviews in Endocrine & Metabolic Disorders. 4: 149-157.

National EMS Quality Alliance

2021 Pediatrics-03b Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets.

NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

National EMS Quality Alliance

Pediatrics-03b: Documentation of Estimated Weight in Kilograms

Pediatrics-03b is classified as a pediatrics measure in the NEMSQA Measure Set, but its intent is deeply rooted in safety. There is significant published literature that attributes pediatric medication errors to errors in converting pounds to kilograms while dosing a medication. With pounds and kilograms commonly being confused, leading to pediatric medication errors, Pediatrics-03b is important for measuring a clinical documentation process that can lead to better patient outcomes. The intent of Pediatrics-03b is to determine if the weight of EMS pediatric patients is being documented in kilograms.

The denominator for Pediatrics-03b includes EMS responses for patients less than 18 years of age who receive a weight-based medication during the EMS response. The TEP discussed this inclusion criteria at great length, even considering developing a measure that would assess documentation of weight in kilograms for all pediatric patients, regardless if a weight-based medication was administered. However, after much discussion, it was determined to leave weight-based medication in the inclusion criteria so the true intent of the measure, which is to reduce medication errors, will not get lost. During the re-specification project, the inclusion criteria was also expanded so EMS responses for patients up to 18 years of age are measured, rather than limiting it to patients less than 15 years of age. The decision to expand the age range of the inclusion criteria was made to ensure the process of documenting weight in kilograms is encouraged for all pediatric patients.

Patients who receive non-weight based medications have been identified as an exception for this measure. It is still encouraged to document estimated weight in kilograms for these patients; but, patients receiving a non-weight based medication for whom weight is not documented in kilograms will be removed from the denominator (excepted).

The numerator for Pediatrics-03b was not changed during the measure re-specification project. EMS professionals can meet the performance for Pediatrics-03 in one of two ways – documenting the patient weight in kilograms or documenting a length-based weight.

Pediatric patients make up approximately 5-10% of patients taken care of by EMS. Critical pediatric patients make up < 1 percent of these patients. The accurate dosing of many medications to pediatric patients requires calculation based on the patient's weight in kilograms. In these rare high stress situations, the likelihood of making a medication error on a pediatric patient is high even when the weight is measured and documented appropriately. Measuring this specific population will drive regions/systems to consider how they are performing this critical task and how they can improve. This will, in turn, lead to an EMS system that will have higher likelihood of providing the correct dose to a patient thereby improving the safety of medication administration.

Pediatrics-03b: Documentation of Estimated Weight in Kilograms

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients less than 18 years of age who received a medication and had a documented weight in kilograms or length-based weight estimate documented during the EMS response.	
Measure Components	
Initial Population	All EMS responses originating from a 911 request for patients less than 18 years of age who received a medication during the EMS response
Denominator Statement	Equals initial population.
Denominator Exclusions	None
Denominator Exceptions	EMS responses for patients who received non-weight-based medications (e.g., inhaled, topical).
Numerator Statement	EMS responses for patients in which a weight value was documented in kilograms or a length-based weight was documented during the EMS response
Supporting Guidance & Other Evidence	<p>The following evidence statements are quoted verbatim from the referenced policy statement:</p> <p>The Joint Commission: Preventing Pediatric Medication Errors: Sentinel Event Alert: 2008:ⁱ</p> <p>4. GUIDELINES TO IMPROVE PEDIATRIC PATIENT SAFETY IN THE ED</p> <p>The delivery of pediatric care should reflect an awareness of unique pediatric patient safety concerns and should include the following policies or practices:</p> <p>a. Children should be weighed in kg, with the exception of children requiring emergent stabilization, and the weight should be recorded in a prominent place on the medical record, such as with the vital signs.</p> <p>i. For children requiring resuscitation or emergency stabilization, a standard method for estimating weight in kg should be used (eg, length-based system)."</p> <p>The Joint Commission offers the following suggested actions to prevent pediatric medication errors and their related adverse events in pediatric care settings:</p> <p>Since patient weight is used to calculate most dosing (either as weight-based dosing, body surface area calculation, or other age- appropriate</p>

	dose determination), all pediatric patients should be weighed in kilograms at the time of admission (including outpatient and ambulatory clinics) or within four hours of admission in an emergency situation. Kilograms should be the standard nomenclature for weight on prescriptions, medical records and staff communications.
Measure Importance	
Rationale	<p>Pediatric medications require weight based on dosing and several calculations are often required to ensure that the correct dose is administered. It is common pharmaceutical practice to list medication doses in mg/kg, thus weighing pediatric patients in pounds may lead to two errors;</p> <ol style="list-style-type: none"> 1. Other clinicians may see the patient's weight in pounds and assume that the weight is documented in kilograms, leading to a potential overdose of medication. 2. Errors in conversion from pounds to kilograms may lead to under dosing or overdosing. <p>Making it common practice to weigh pediatric patients in kilograms will eliminate the need for assumptions on how weight is documented and eliminate the need for converting weight in order to calculate medication doses. The elimination of the conversion calculation will remove a potential source for potential medication error.ⁱⁱ</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Quality Improvement • <input type="checkbox"/> Accountability • <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Process • <input type="checkbox"/> Outcome • <input type="checkbox"/> Structure • <input type="checkbox"/> Efficiency
National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Clinical Process-Effectiveness • <input checked="" type="checkbox"/> Patient Safety • <input type="checkbox"/> Patient Experience • <input type="checkbox"/> Care Coordination • <input type="checkbox"/> Efficiency: Overuse • <input type="checkbox"/> Efficiency: Cost • <input type="checkbox"/> Population & Community Health
CMS Meaningful Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Medication Management • <input type="checkbox"/> Admissions and Readmissions to Hospitals • <input type="checkbox"/> Transfer of Health Information and Interoperability

	<ul style="list-style-type: none"> • <input type="checkbox"/> Preventative Care • <input type="checkbox"/> Management of Chronic Conditions • <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health • <input type="checkbox"/> Prevention and Treatment of Opioid and Substance • <input type="checkbox"/> Risk Adjusted Mortality • <input type="checkbox"/> Equity of Care • <input type="checkbox"/> Community Engagement • <input type="checkbox"/> Appropriate Use of Healthcare • <input type="checkbox"/> Patient-focused Episode of Care • <input type="checkbox"/> Risk-Adjusted Total Cost of Care • <input type="checkbox"/> Healthcare-associated infections • <input checked="" type="checkbox"/> Preventable Healthcare Harm • <input type="checkbox"/> Care is Personalized and Aligned with Patient's Goals • <input type="checkbox"/> End of Life Care according to Preferences • <input type="checkbox"/> Patient's Experience of Care • <input type="checkbox"/> Patient Reported Functional Outcomes
Level of measurement	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Individual EMS Professional • <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data • <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) • <input checked="" type="checkbox"/> Paper medical record/Chart abstracted • <input checked="" type="checkbox"/> Registry

NEMSIS Pseudocode: Pediatrics-03b: Documentation of Estimated Weight in Kilograms

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients less than 18 years of age who received a medication and had a documented weight in kilograms or length-based weight estimate documented during the EMS response.	
Measure Components	
Initial Population	<p>((ePatient.15 Age is less than 18 and ePatient.16 Age Units is 2516009 ("Years")) or (ePatient.15 Age is not null and ePatient.16 Age Units is in (2516001 ("Days"), 2516003 ("Hours"), 2516005 ("Minutes"), 2516007 ("Months")))) and eMedications.03 Medication Administered is not null and eResponse.05 Type of Service Requested is (2205001 ("Emergency Response (Primary Response Area)"), 2205003 ("Emergency Response (Intercept)"), 2205009 ("Emergency Response (Mutual Aid)"))</p>
Denominator	Equals Initial Population
Denominator Exclusions	N/A
Denominator Exception	<p>eMedication.04 Medication Administered Route is in (9927009 ("Inhalation"), 9927049 ("Topical"))</p>
Numerator	<p>eExam.01 Estimated Body Weight in Kilograms is not null or eExam.02 Length Based Tape Measure not null</p>

ⁱ Commission, TJ (2008) Preventing pediatric medication errors: Sentinel Event Alert. Accessed March 12, 2019: http://www.jointcommission.org/assets/1/18/sea_39.pdf.

ⁱⁱ Authority PPS, (2009) Medication errors, significance of accurate patient weights.

National EMS Quality Alliance

2021 Respiratory-01 Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets.

NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

Respiratory-01: Respiratory Assessment

This measure also does not have direct evidence to support its validity. However, it is known that providers often express discomfort especially with assessment of children and that respiratory distress is one of the most common serious conditions encountered by EMS providers in pediatric patients. The TEP agreed this measure is clinically important and there is value to measuring it. The medical community agrees that, if a pediatric or adult patient is experiencing respiratory distress, a respiratory assessment should be conducted.

Performing the respiratory assessment on the patient is the first step to determining if additional clinical interventions are necessary, and it is important that this process in care be measured. The intent of this measure is to determine if patients experiencing respiratory distress are receiving respiratory assessments.

The denominator, or initial population, for this measure includes EMS encounters for patients with a primary or secondary impression of respiratory distress. The measure is stratified for patients less or equal to 18 years of age and patients greater than 18 years of age to allow continued focus on the pediatric population but also allow for evaluation of all patients who should receive respiratory assessment.

The numerator for the re-specified measure has not changed. While the TEP discussed potentially adding additional elements of a respiratory assessment, such as auscultation of the lung, it was ultimately decided to limit the numerator to SPO2 and respiratory rate measurements, due to feasibility concerns. While there are other elements to a respiratory assessment, Respiratory 01 (previously Pediatrics-01) focuses on the completion and documentation of these two elements.

To the experienced EMS Professional, Respiratory-01 (previously Pediatrics-01) appears to state the obvious – Every patient should have an assessment of their respiratory status. However, documentation of this fundamental element of care is often not completed. This may be simply a documentation omission but may also represent an incomplete clinical assessment or perhaps because providers are less comfortable assessing children than adults. An agency or system can use this measure to identify gaps in standard care or documentation of that care and target areas for improvement. This will drive recognition for the importance of this measure.

Respiratory-01: Respiratory Assessment

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients with primary or secondary impression of respiratory distress who had a respiratory assessment.	
Measure Components	
Initial Population	<p>All EMS responses originating from a 911 request for patients with a primary or secondary impression of respiratory distress</p> <p>Respiratory distress may include impressions of:</p> <ul style="list-style-type: none"> • Asthma • Dyspnea • Unspecified Orthopnea • Shortness of breath • Diagnosis of a respiratory ailment • Complaint or condition commonly associated with dyspnea
Denominator Statement	<p>Population 1: EMS responses in the initial population</p> <p>Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age</p> <p>Population 3: EMS responses in the initial population for patients less than 18 years of age</p>
Denominator Exclusions	None
Denominator Exceptions	None
Numerator Statement	<p>Numerator for Populations 1-3 (Calculate 3 Rates):</p> <p>EMS responses for patients who received both a SPO2 and respiratory rate measurement during the EMS response</p>
Supporting Guidance & Other Evidence	<p>The following flowcharts were taken verbatim from the referenced treatment protocol:</p> <p>National Association of State EMS Officials, National Model EMS Clinical Guidelines for Pediatric Respiratory Distress:Error! Bookmark not defined.</p> <p>Patient Management</p> <ol style="list-style-type: none"> History <ol style="list-style-type: none"> Onset of symptoms (history of choking)

	<ul style="list-style-type: none"> b. Concurrent symptoms (fever, cough, rhinorrhea, tongue/lip swelling, rash, labored breathing, foreign body aspiration) c. Sick contacts d. Treatments given e. Personal history of asthma, wheezing, or croup in past <p>2. Exam</p> <ul style="list-style-type: none"> a. Full set of vital signs (T, BP, RR, P, O2 sat) b. Presence of stridor at rest or when agitated c. Description of cough d. Other signs of distress (grunting, nasal flaring, retracting) e. Color (pallor, cyanosis, normal) f. Mental status (alert, tired, lethargic, unresponsive)
Measure Importance	
Rationale	<p>Pediatric transports make up approximately 10% of all EMS requests, and respiratory distress is a common reason for these requests. A 2015 retrospective study found that 13.7% of pediatric EMS transports were due to respiratory distress.ⁱ Respiratory distress is also a common reason for prehospital adult transports, as an estimated 6-12% of all EMS transports are adults in respiratory distress.^{ii,iii,iv}</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Quality Improvement • <input type="checkbox"/> Accountability • <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Process • <input type="checkbox"/> Outcome • <input type="checkbox"/> Structure • <input type="checkbox"/> Efficiency
National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Clinical Process-Effectiveness • <input type="checkbox"/> Patient Safety • <input type="checkbox"/> Patient Experience • <input type="checkbox"/> Care Coordination • <input type="checkbox"/> Efficiency: Overuse • <input type="checkbox"/> Efficiency: Cost • <input type="checkbox"/> Population & Community Health
CMS Meaningful Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Medication Management • <input type="checkbox"/> Admissions and Readmissions to Hospitals • <input type="checkbox"/> Transfer of Health Information and Interoperability • <input type="checkbox"/> Preventative Care • <input checked="" type="checkbox"/> Management of Chronic Conditions • <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health • <input type="checkbox"/> Prevention and Treatment of Opioid and Substance • <input type="checkbox"/> Risk Adjusted Mortality

	<ul style="list-style-type: none"> <input type="checkbox"/> Equity of Care <input type="checkbox"/> Community Engagement <input type="checkbox"/> Appropriate Use of Healthcare <input type="checkbox"/> Patient-focused Episode of Care <input type="checkbox"/> Risk-Adjusted Total Cost of Care <input type="checkbox"/> Healthcare-associated infections <input type="checkbox"/> Preventable Healthcare Harm <input type="checkbox"/> Care is Personalized and Aligned with Patient's Goals <input type="checkbox"/> End of Life Care according to Preferences <input type="checkbox"/> Patient's Experience of Care <input type="checkbox"/> Patient Reported Functional Outcomes
Level of measurement	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Individual EMS Professional <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) <input checked="" type="checkbox"/> Paper medical record/Chart abstracted <input checked="" type="checkbox"/> Registry

NEMSIS Pseudocode: Respiratory-01: Respiratory Assessment

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients with primary or secondary impression of respiratory distress who had a respiratory assessment.	
Measure Components	
Initial Population	<p>((eSituation.11 Provider's Primary Impression matches /^I50.9 J00 J05 J18.9 J20.9 J44.1 J45.901 J80 J81 J93.9 J96 J98.01 J98.9 R05 R06 R09.2 T17.9/ ("Heart failure, unspecified," "Acute nasopharyngitis....," "Acute obstructive laryngitis and epiglottitis...," "Pneumonia, unspecified organism," "Acute bronchitis, unspecified," "Chronic obstructive pulmonary disease with (acute) exacerbation," "Unspecified asthma with (acute) exacerbation," "Acute respiratory distress syndrome," "Pulmonary edema...," "Pneumothorax, unspecified," "Respiratory failure, unspecified," "Acute bronchospasm," "Respiratory disorder, unspecified," "Cough," "Abnormalities of breathing," "Respiratory arrest," or "Foreign body in respiratory tract, part unspecified") or eSituation.12 Provider's Secondary Impressions matches /^I50.9 J00 J05 J18.9 J20.9 J44.1 J45.901 J80 J81 J93.9 J96 J98.01 J98.9 R05 R06 R09.2 T17.9/ ("Heart failure, unspecified," "Acute nasopharyngitis....," "Acute obstructive laryngitis and epiglottitis...," "Pneumonia, unspecified organism," "Acute bronchitis, unspecified," "Chronic obstructive pulmonary disease with (acute) exacerbation," "Unspecified asthma with (acute) exacerbation," "Acute respiratory distress syndrome," "Pulmonary edema...," "Pneumothorax, unspecified," "Respiratory failure, unspecified," "Acute bronchospasm," "Respiratory disorder, unspecified," "Cough,"</p>

	<p>“Abnormalities of breathing,” “Respiratory arrest,” or “Foreign body in respiratory tract, part unspecified”)) and eResponse.05 Type of Service Requested is (2205001 (“Emergency Response (Primary Response Area)”), 2205003 (“Emergency Response (Intercept)”), 2205009 (“Emergency Response (Mutual Aid)”)))</p>
Denominator	<p>Population 1: Equals Initial Population</p> <p>Population 2: (Initial Population and (ePatient.15 Age is greater than or equal to 18 and ePatient.16 Age Units is 2516009 (“Years”))</p> <p>Population 3: (Initial Population and (ePatient.15 Age is less than 18 and ePatient.16 Age Units is 2516009 (“Years”)) or (ePatient.15 Age is not null and ePatient.16 Age Units is in (2516001 (“Days”), 2516003 (“Hours”), 2516005 (“Minutes”), 2516007 (“Months”)))))</p>
Denominator Exclusions	None
Numerator	<p>Numerator logic for Populations 1-3 (Calculate three separate rates)</p> <p>eVitals.12 Pulse Oximetry is not null and eVitals.14 Respiratory Rate is not null</p>

ⁱ Drayna, P.C., Browne, L.R., Guse, C.E. Brousseau, D.C., & Lerner, E.B. (2015) Prehospital Pediatric Care: Opportunities for Training, Treatment, and Research, *Prehospital Emergency Care*, 19:3, 441-447.

ⁱⁱ Sporer KA, Tabas JA, Tam RK, et al. (2006) Do medications affect vital signs in the prehospital treatment of acute decompensated heart failure? *Prehosp Emerg Care*; 2006(10):41-5.

ⁱⁱⁱ Pittet V, Burnand B, Yersin B, Carron PN (2014) Trends of pre-hospital emergency medical services activity over 10 years: a population-based registry analysis. *BMC Health Serv Res*; 14:380.

^{iv} Prekker ME, Feemester LC, Hough CL, et al. (2014) The epidemiology and outcome of prehospital respiratory distress. *Acad Emerg Med*; 21:543-50.

National EMS Quality Alliance

2021 Safety-01 Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets.

NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

Safety-01 – Safety-02: Use of Lights and Sirens During Response/Transport

Safety-01 Safety-02 focus on the judicious use of lights and sirens during response to scene (Safety-01) and during patient transport (Safety-02). These measures may have the strongest evidence any measure in the EMS Compass Measure Set. There are strong guidelines and published studies that support the limited use of lights and sirens to protect not only the public but also EMS providers and patients from potential danger, as a consequence of lights and sirens use. The intent of these two measures is to determine how often EMS professionals are not using lights and sirens during response and transport.

The denominator for these measures is the total number of EMS responses/transports originating from a 911 request. The TEP decided not to add denominator exclusions to these measures, as even though there may be times where an EMS provider is responding to a high-risk emergency or transporting a high-acuity patient, the principle this measure was built upon is, *Above All Do No Harm*, and in order to uphold this principle and the intent of the measures, lights and sirens usage on all EMS responses and transports will be measured.

The numerator for both Safety-01 and Safety-02 was changed during the measure re-specification process. The original measures released as part of the candidate EMS Compass measure set were inverse measures, meaning lower measure scores indicated better quality. However, to eliminate confusion of the measure score interpretation, the TEP decided to change the measures to standard scoring, where higher scores will indicate better quality. This means the numerator for both Safety-01 and Safety-02 measure the process in which lights and sirens were **not** used.

The TEP understands the use of lights and sirens is often governed by state or local agency protocols. However, quality measures are built upon published guidance and rationale and the intent is to drive change. While individual EMS providers may still have to follow written protocols, NEMSQA and the TEP hopes that these quality measures will help drive change at the state and local levels, so protocols that are more in-line with the guidelines and evidence for lights and sirens use can be developed.

Safety-01: Use of Lights and Sirens During Response to Scene

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request in which lights and sirens were not used during response.	
Measure Components	
Initial Population	All EMS responses originating from a 911 request
Denominator Statement	<p>Population 1: EMS responses in the initial population</p> <p>Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age</p> <p>Population 3: EMS responses in the initial population for patients less than 18 years of age</p>
Denominator Exclusions	None
Denominator Exceptions	None
Numerator Statement	<p>Numerator for Populations 1-3 (Calculate 3 Rates):</p> <p>EMS responses during which lights and sirens were not used</p>
Supporting Guidance & Other Evidence	<p>The following evidence statements are quoted verbatim from the reference guidance:</p> <p>U.S. Department of Transportation, National Highway Traffic Safety Administration, Office of Emergency Medical Services: Lights and Siren Use by Emergency Medical Services (EMS) Above All Do No Harm:ⁱ</p> <p>Recommendations for EMS Vehicle Operators:</p> <ul style="list-style-type: none"> • The driver is responsible for the mode of response to the scene based upon dispatch category, information available from dispatcher, and agency policy • The EMS provider, with the highest level of training, caring for the patient should direct whether or not L&S are used during transport based upon the patient's medical condition and potential benefit of time saved with L&S transport. • L&S merely request the right of way from other drivers, but neither emergency warning lights nor siren are very effective. Do not assume that your vehicle has been seen by other drivers, and

always proceed with caution and due regard.

- Consider the following when driving an EMS vehicle:
 - Automatic daytime running lights or manual headlights increase vehicle visibility and should be on at all times when vehicle is moving
 - Both L&S should be used when exercising moving privileges (e.g., traveling through a red traffic signal or in travel lanes that oppose normal traffic). Likewise, if the driver does not intend to exercise the privileges, neither light nor siren should be used during the response or transport. Traffic is confused by an EMS vehicle that approaches an e signal to turn green if the traffic has given the right of way.
 - EMS vehicle operators (assisted by EMS provider passengers) should ensure eye contact with other drivers and clear intersections before proceeding through intersections before proceeding through intersections against a red traffic signal or stop sign.
 - EMS vehicle drivers should primarily use a combination of wail and yelp when “requesting a right-of-way” with a siren. High-low and air horns are less effective siren modes.
 - EMS agencies and EMS vehicle operators should avoid continuous use of siren during L&S response or transport and should limit the siren use when needed to “request right-of-way” or when exercising privileges only permitted by emergency vehicles with L&S. Using sirens when travelling at highway speeds with traffic or when traveling unimpeded without exercising emergency vehicle privileges may impede crucial communication related to the response or patient care.
 - Avoid flashing white lights after dark, as these may blind oncoming drivers.
 - Do not exceed the posted speed limit in EMS vehicles (some experts suggest not exceeding the speed limit by more than 10 mph).
 - Drivers should have the mindset that L&S use is only asking permission of other drivers – never assume that permission will be granted.
 - Come to a “full stop” at red traffic signals or stop signs before proceeding, when using L&S.
 - Limit speed to less than 20 mph when traveling in a lane apposing the normal flow of traffic.
 - Downgrade L&S use if not indicated after more information

	<p>becomes available during response or transport.</p> <ul style="list-style-type: none"> ○ L&S are not indicated if ALS is not indicated. ○ L&S use is a medical treatment that should be used only when indicated. ○ Consider specific approach to crossing intersections during EMS vehicle L&S driving (From Ambulance Insurance Services, Inc. Sample Intersection Crossing Policy). <ul style="list-style-type: none"> • Crossing on Green – slow down, look all 3 directions, proceed with caution. • Crossing on Red – come to complete stop, make eye contact with drivers of other vehicles, wait for partner to communicate all clear, wait 2 seconds, proceed with caution. • Making right or left turns across stopped vehicle – come to complete stop next to vehicle, establish eye contact via partner or self, wait for partner to tell you all clear, be aware of vehicles from behind, proceed with caution. • Other – use yelp siren mode, use headlights hi-lo beam, be patient. • Other – avoid passing on the right unless it is the last resort. • Other – avoid traveling in opposing traffic unless you are certain traffic is clear. If you must, use extreme caution and stay to your far right. ○ When “blocking the right-of-way” at a scene, consider altering the lighting pattern of the vehicle with the goal of drawing attention without blinding or overwhelming other drivers. <ul style="list-style-type: none"> • Do not use headlights or flashing white lights. • Consider decreasing the number and intensity of flashing lights overall. • Consider using scene floodlights to illuminate the scene and areas around the vehicle. • Consider turning off distracting flashing emergency lights if the EMS vehicle is not the primary vehicle “blocking the right-of-way” for traffic. • Consider using amber warning lights to warn of hazards ahead of amber directional signals to direct traffic away from hazards.
Measure Importance	

Rationale	<p>When the National Highway Traffic Safety Administration reviewed two decades of data in 2005, it was found that there is an average of 4,500 MVC's involving ambulances each year, and of these crashes, an average of 34% involve injuries and 33 people are killed.ⁱⁱ</p> <p>A 1999 study of ambulance response times in Syracuse, New York found that the use of lights and sirens reduced ambulance response times by an average of 1 minute, 46 seconds, which is statistically significant but unlikely to make a difference in clinical outcomes for most patients.ⁱⁱⁱ</p> <p>A 2005 study of motor vehicle crashes in Pennsylvania found that ambulances were more likely to be in crashes at intersections and traffic signals than other vehicles of similar size. In addition to the increased MVC rate for ambulances, the study found that MVC crashes involving ambulances typically involve more people and more injuries than MVCs among vehicles of similar size.^{iv}</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Quality Improvement • <input type="checkbox"/> Accountability • <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Process • <input type="checkbox"/> Outcome • <input type="checkbox"/> Structure • <input type="checkbox"/> Efficiency
National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Clinical Process-Effectiveness • <input checked="" type="checkbox"/> Patient Safety • <input type="checkbox"/> Patient Experience • <input type="checkbox"/> Care Coordination • <input type="checkbox"/> Efficiency: Overuse • <input type="checkbox"/> Efficiency: Cost • <input type="checkbox"/> Population & Community Health
CMS Meaningful Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Medication Management • <input type="checkbox"/> Admissions and Readmissions to Hospitals • <input type="checkbox"/> Transfer of Health Information and Interoperability • <input type="checkbox"/> Preventative Care • <input type="checkbox"/> Management of Chronic Conditions • <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health • <input type="checkbox"/> Prevention and Treatment of Opioid and Substance • <input type="checkbox"/> Risk Adjusted Mortality • <input type="checkbox"/> Equity of Care • <input type="checkbox"/> Community Engagement • <input type="checkbox"/> Appropriate Use of Healthcare • <input type="checkbox"/> Patient-focused Episode of Care

	<ul style="list-style-type: none"> <input type="checkbox"/> Risk-Adjusted Total Cost of Care <input type="checkbox"/> Healthcare-associated infections <input checked="" type="checkbox"/> Preventable Healthcare Harm <input type="checkbox"/> Care is Personalized and Aligned with Patient's Goals <input type="checkbox"/> End of Life Care according to Preferences <input type="checkbox"/> Patient's Experience of Care <input type="checkbox"/> Patient Reported Functional Outcomes
Level of measurement	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Individual EMS Professional <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) <input checked="" type="checkbox"/> Paper medical record/Chart abstracted <input checked="" type="checkbox"/> Registry

NEMSIS Pseudocode: Safety-01: Use of Lights and Sirens During Response to Scene

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request in which lights and sirens were not used during response.	
Measure Components	
Initial Population	eResponse.05 Type of Service Requested is in (2205001 ("Emergency Response (Primary Response Area)"), 2205003 ("Emergency Response (Intercept)"), 2205009 ("Emergency Response (Mutual Aid)"))
Denominator	<p>Population 1: Equals Initial Population</p> <p>Population 2: (Initial Population and (ePatient.15 Age is greater than or equal to 18 and ePatient.16 Age Units is 2516009 ("Years"))</p> <p>Population 3: (Initial Population and ((ePatient.15 Age is less than 18 and ePatient.16 Age Units is 2516009 ("Years")) or (ePatient.15 Age is not null and ePatient.16 Age Units is in (2516001 ("Days"), 2516003 ("Hours"), 2516005 ("Minutes"), 2516007 ("Months"))))</p>
Denominator Exclusions	None
Numerator	<p>Numerator logic for Populations 1-3 (Calculate three separate rates)</p> <p>eResponse.24 Additional Response Mode Descriptors is</p>

	2224019 ("No Lights or Sirens")
--	---------------------------------

-
- ⁱ Kupas, D.F. (2017) Lights and Siren Use by Emergency Medical Services (EMS): Above All Do No Harm. U.S. Department of Transportation, National Highway Traffic Safety Administration, Office of Emergency Medical Services, 49-51.
- ⁱⁱ Smith, N. (2005) A National Perspective on Ambulance Crashes and Safety, EMS World, 2015; 44(9): 91-94.
- ⁱⁱⁱ Lawrence H. Brown, Christa L. Whitney, Richard C. Hunt, Michael Addario & Troy Hogue (2000) Do Warning Lights and Sirens Reduce Ambulance Response Times? Prehospital Emergency Care, 4:1, 70-74
- ^{iv} Ray, A.F. & Kupas, D.F. (2005) Comparison of Crashes Involving Ambulances with Those of Similar-Sized Vehicles, Prehospital Emergency Care, 9:4, 412-415.

National EMS Quality Alliance

2021 Safety-02 Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets.

NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

Safety-01 – Safety-02: Use of Lights and Sirens During Response/Transport

Safety-01 Safety-02 focus on the judicious use of lights and sirens during response to scene (Safety-01) and during patient transport (Safety-02). These measures may have the strongest evidence any measure in the EMS Compass Measure Set. There are strong guidelines and published studies that support the limited use of lights and sirens to protect not only the public but also EMS providers and patients from potential danger, as a consequence of lights and sirens use. The intent of these two measures is to determine how often EMS professionals are not using lights and sirens during response and transport.

The denominator for these measures is the total number of EMS responses/transport originating from a 911 request. The TEP decided not to add denominator exclusions to these measures, as even though there may be times where an EMS provider is responding to a high-risk emergency or transporting a high-acuity patient, the principle this measure was built upon is, *Above All Do No Harm*, and in order to uphold this principle and the intent of the measures, lights and sirens usage on all EMS responses and transports will be measured.

The numerator for both Safety-01 and Safety-02 was changed during the measure re-specification process. The original measures released as part of the candidate EMS Compass measure set were inverse measures, meaning lower measure scores indicated better quality. However, to eliminate confusion of the measure score interpretation, the TEP decided to change the measures to standard scoring, where higher scores will indicate better quality. This means the numerator for both Safety-01 and Safety-02 measure the process in which lights and sirens were **not** used.

The TEP understands the use of lights and sirens is often governed by state or local agency protocols. However, quality measures are built upon published guidance and rationale and the intent is to drive change. While individual EMS providers may still have to follow written protocols, NEMSQA and the TEP hopes that these quality measures will help drive change at the state and local levels, so protocols that are more in-line with the guidelines and evidence for lights and sirens use can be developed.

Safety-02: Use of Lights and Sirens During Transport

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS transports originating from a 911 request during which lights and sirens were not used during patient transport.	
Measure Components	
Initial Population	All EMS transports originating from a 911 request
Denominator Statement	<p>Population 1: EMS transports in the initial population</p> <p>Population 2: EMS transports in the initial population for patients greater than or equal to 18 years of age</p> <p>Population 3: EMS transports in the initial population for patients less than 18 years of age</p>
Denominator Exclusions	None
Denominator Exceptions	None
Numerator Statement	<p>Numerator for Populations 1-3 (Calculate 3 Rates):</p> <p>EMS transports during which lights and sirens were not used</p>
Supporting Guidance & Other Evidence	<p>The following evidence statements are quoted verbatim from the referenced guidance:</p> <p>U.S. Department of Transportation, National Highway Traffic Safety Administration, Office of Emergency Medical Services: Lights and Siren Use by Emergency Medical Services (EMS) Above All Do No Harm:¹</p> <p>Recommendations for EMS Vehicle Operators:</p> <ul style="list-style-type: none"> • The driver is responsible for the mode of response to the scene based upon dispatch category, information available from dispatcher, and agency policy • The EMS provider, with the highest level of training, caring for the patient should direct whether or not L&S are used during transport based upon the patient's medical condition and potential benefit of time saved with L&S transport. • L&S merely request the right of way from other drivers, but neither emergency warning lights nor siren are very effective. Do not assume that your vehicle has been seen by other drivers, and

always proceed with caution and due regard.

- Consider the following when driving an EMS vehicle:
 - Automatic daytime running lights or manual headlights increase vehicle visibility and should be on at all times when vehicle is moving
 - Both L&S should be used when exercising moving privileges (e.g., traveling through a red traffic signal or in travel lanes that oppose normal traffic). Likewise, if the driver does not intend to exercise the privileges, neither light nor siren should be used during the response or transport. Traffic is confused by an EMS vehicle that approaches an e signal to turn green if the traffic has given the right of way.
 - EMS vehicle operators (assisted by EMS provider passengers) should ensure eye contact with other drivers and clear intersections before proceeding through intersections before proceeding through intersections against a red traffic signal or stop sign.
 - EMS vehicle drivers should primarily use a combination of wail and yelp when “requesting a right-of-way” with a siren. High-low and air horns are less effective siren modes.
 - EMS agencies and EMS vehicle operators should avoid continuous use of siren during L&S response or transport and should limit the siren use when needed to “request right-of-way” or when exercising privileges only permitted by emergency vehicles with L&S. Using sirens when travelling at highway speeds with traffic or when traveling unimpeded without exercising emergency vehicle privileges may impede crucial communication related to the response or patient care.
 - Avoid flashing white lights after dark, as these may blind oncoming drivers.
 - Do not exceed the posted speed limit in EMS vehicles (some experts suggest not exceeding the speed limit by more than 10 mph).
 - Drivers should have the mindset that L&S use is only asking permission of other drivers – never assume that permission will be granted.
 - Come to a “full stop” at red traffic signals or stop signs before proceeding, when using L&S.
 - Limit speed to less than 20 mph when traveling in a lane apposing the normal flow of traffic.
 - Downgrade L&S use if not indicated after more information becomes available during response or transport.

	<ul style="list-style-type: none"> ○ L&S are not indicated if ALS is not indicated. ○ L&S use is a medical treatment that should be used only when indicated. ○ Consider specific approach to crossing intersections during EMS vehicle L&S driving (From Ambulance Insurance Services, Inc. Sample Intersection Crossing Policy). <ul style="list-style-type: none"> • Crossing on Green – slow down, look all 3 directions, proceed with caution. • Crossing on Red – come to complete stop, make eye contact with drivers of other vehicles, wait for partner to communicate all clear, wait 2 seconds, proceed with caution. • Making right or left turns across stopped vehicle – come to complete stop next to vehicle, establish eye contact via partner or self, wait for partner to tell you all clear, be aware of vehicles from behind, proceed with caution. • Other – use yelp siren mode, use headlights hi-lo beam, be patient. • Other – avoid passing on the right unless it is the last resort. • Other – avoid traveling in opposing traffic unless you are certain traffic is clear. If you must, use extreme caution and stay to your far right. ○ When “blocking the right-of-way” at a scene, consider altering the lighting pattern of the vehicle with the goal of drawing attention without blinding or overwhelming other drivers. <ul style="list-style-type: none"> • Do not use headlights or flashing white lights. • Consider decreasing the number and intensity of flashing lights overall. • Consider using scene floodlights to illuminate the scene and areas around the vehicle. • Consider turning off distracting flashing emergency lights if the EMS vehicle is not the primary vehicle “blocking the right-of-way” for traffic. • Consider using amber warning lights to warn of hazards ahead of amber directional signals to direct traffic away from hazards.
Measure Importance	

Rationale	<p>When the National Highway Traffic Safety Administration reviewed two decades of data in 2005, it was found that there is an average of 4,500 MVC's involving ambulances each year, and of these crashes, an average of 34% involve injuries and 33 people are killed.ⁱⁱ</p> <p>A 2005 study of motor vehicle crashes in Pennsylvania found that ambulances were more likely to be in crashes at intersections and traffic signals than other vehicles of similar size. In addition to the increased MVC rate for ambulances, the study found that MVC crashes involving ambulances typically involve more people and more injuries than MVCs among vehicles of similar size.ⁱⁱⁱ</p> <p>A 2018 study of trauma outcomes and prehospital transport time was unable to identify a correlation between increased prehospital transport times and 30-day mortality rates or hospital length of stay.^{iv}</p> <p>A 2015 medical record review of pediatric transports found that of 490 RLS transports, 19.6% of them unnecessarily used lights and sirens.^v</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Quality Improvement • <input type="checkbox"/> Accountability • <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Process • <input type="checkbox"/> Outcome • <input type="checkbox"/> Structure • <input type="checkbox"/> Efficiency
National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Clinical Process-Effectiveness • <input checked="" type="checkbox"/> Patient Safety • <input type="checkbox"/> Patient Experience • <input type="checkbox"/> Care Coordination • <input type="checkbox"/> Efficiency: Overuse • <input type="checkbox"/> Efficiency: Cost • <input type="checkbox"/> Population & Community Health
CMS Meaningful Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Medication Management • <input type="checkbox"/> Admissions and Readmissions to Hospitals • <input type="checkbox"/> Transfer of Health Information and Interoperability • <input type="checkbox"/> Preventative Care • <input type="checkbox"/> Management of Chronic Conditions • <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health • <input type="checkbox"/> Prevention and Treatment of Opioid and Substance • <input type="checkbox"/> Risk Adjusted Mortality • <input type="checkbox"/> Equity of Care • <input type="checkbox"/> Community Engagement • <input type="checkbox"/> Appropriate Use of Healthcare

	<ul style="list-style-type: none"> • <input type="checkbox"/> Patient-focused Episode of Care • <input type="checkbox"/> Risk-Adjusted Total Cost of Care • <input type="checkbox"/> Healthcare-associated infections • <input checked="" type="checkbox"/> Preventable Healthcare Harm • <input type="checkbox"/> Care is Personalized and Aligned with Patient's Goals • <input type="checkbox"/> End of Life Care according to Preferences • <input type="checkbox"/> Patient's Experience of Care • <input type="checkbox"/> Patient Reported Functional Outcomes
Level of measurement	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Individual EMS Professional • <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data • <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) • <input checked="" type="checkbox"/> Paper medical record/Chart abstracted • <input checked="" type="checkbox"/> Registry

NEMSIS Pseudocode: Safety-02: Use of Lights and Sirens During Transport

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS transports originating from a 911 request during which lights and sirens were not used during patient transport.	
Measure Components	
Initial Population	<p>(eResponse.05 Type of Service Requested is in (2205001 ("Emergency Response (Primary Response Area)"), 2205003 ("Emergency Response (Intercept)"), 2205009 ("Emergency Response (Mutual Aid)")) and (eDisposition.28 Patient Evaluation/Care is 4228001 ("Patient Evaluated and Care Provided") and eDisposition.30 Transport Disposition is in (4230001 ("Transport by This EMS Unit (This Crew Only)"), 4230003 ("Transport by This EMS Unit, with a Member of Another Crew"), 4230007 ("Transport by Another EMS Unit, with a Member of this Crew"))))</p>
Denominator	<p>Population 1: Equals Initial Population</p> <p>Population 2: (Initial Population and (ePatient.15 Age is greater than or equal to 18 and ePatient.16 Age Units is 2516009 ("Years"))</p> <p>Population 3: (Initial Population and ((ePatient.15 Age is less than 18</p>

	<p>and ePatient.16 Age Units is 2516009 ("Years"))</p> <p>or</p> <p>(</p> <p>ePatient.15 Age is not null</p> <p>and ePatient.16 Age Units is in</p> <p>(</p> <p>2516001 ("Days"),</p> <p>2516003 ("Hours"),</p> <p>2516005 ("Minutes"),</p> <p>2516007 ("Months"))))</p>
Denominator Exclusions	None
Numerator	<p>Numerator logic for Populations 1-3 (Calculate three separate rates)</p> <p>Disposition.18 Additional Transport Mode Descriptors is 4218015 ("No Lights or Sirens")</p>

-
- ⁱ Kupas, D.F. (2017) Lights and Siren Use by Emergency Medical Services (EMS): Above All Do No Harm. U.S. Department of Transportation, *National Highway Traffic Safety Administration, Office of Emergency Medical Services*, 49-51.
- ⁱⁱ Smith, N. (2005) A National Perspective on Ambulance Crashes and Safety, *EMS World*, 2015; 44(9): 91-94.
- ⁱⁱⁱ Ray, A.F. & Kupas, D.F. (2005) Comparison of Crashes Involving Ambulances with Those of Similar-Sized Vehicles, *Prehospital Emergency Care*, 9:4, 412-415.
- ^{iv} Brown, E., Hideo, T., Bailey, P., Fatovich, D., Pereira, G., & Finn, J. (2018) Longer Prehospital Time was not Associated with Mortality in Major Trauma: A retrospective Cohort Study, *Prehospital Emergency Care*.
- ^v Burns, B., Hansen, ML, Valenzuela, S., Summers, C., Van Otterloo, J., Skarica, B., Warden, C., Guise, J.M. (2016) Unnecessary Use of Red Lights and Sirens in Pediatric Transport, *Prehospital Emergency Care*, May-Jun;20(3):354-61.

National EMS Quality Alliance

2021 Seizure-02 Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets.

NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

Seizure-02: Patient with Status Epilepticus Receiving Intervention

EMS is commonly faced with caring for patients with status epilepticus. The published rationale and guidelines support this measure – patients experiencing status epilepticus utilize EMS for care and the efficacy of treatments (e.g., benzodiazepines) is evident. There is also strong evidence that earlier treatment of status epilepticus results in improved patient outcomes. With the current evidence and guidelines, Seizure-02 remains in the EMS Compass 2.0 Measure Set, with the intent of measuring whether or not patients with status epilepticus are receiving benzodiazepines.

During the re-specification project, no substantive changes were made to the denominator of Seizure-02. The denominator remains EMS response for patients with a primary or secondary impression of status epilepticus. However, the TEP did remove the definition of status epilepticus from the measure denominator. After much discussion, the TEP decided that limiting the condition of “status epilepticus” to a specific definition would incidentally exclude a large number of patients who meet the intent of the measure. The intent being treatment of patient with active seizures while in the care of the EMS professional. The final decision was to remove the measure definition and to allow each EMS provider (or agency) to determine if the patient they are treating is experiencing status epilepticus, either by following their own agency’s guidelines or using their own assessment skills.

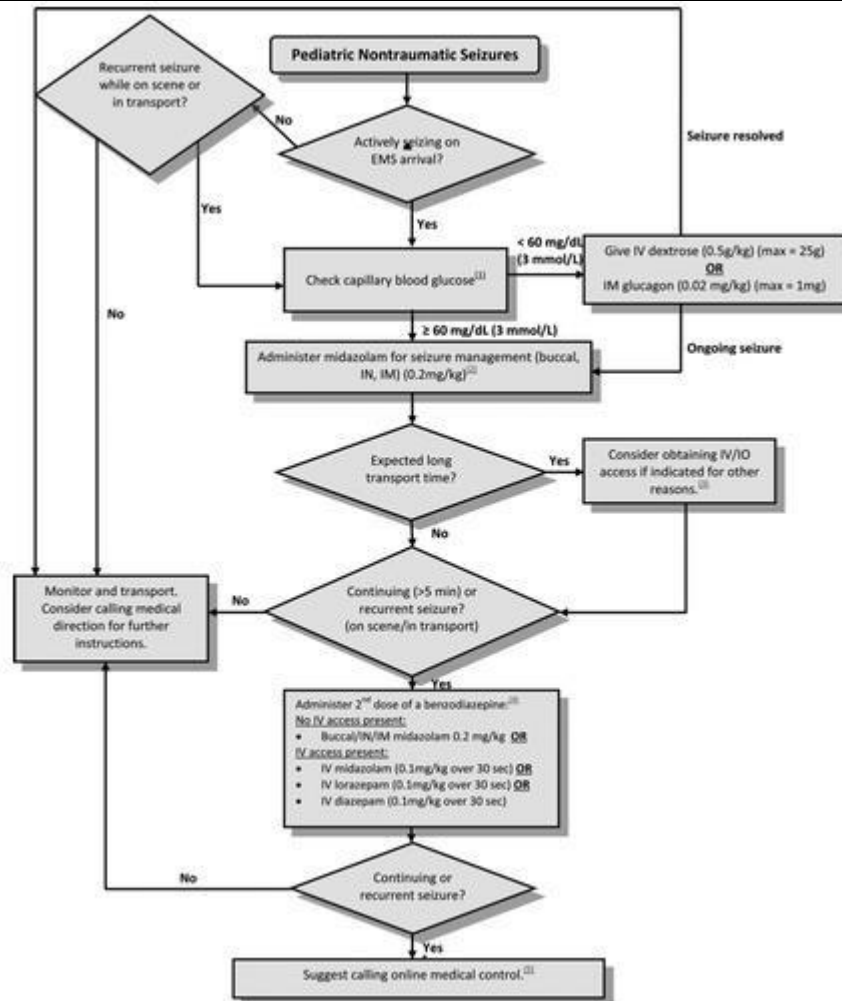
The specifications for the numerator for Seizure-02 have been narrowed down to include only benzodiazepines as an intervention at terminating a patient’s status seizure. This does not change the intent of the original EMS Compass candidate measure, but rather makes the measure more specific, focusing on one, evidence-based clinical process, rather than leaving it open-ended for interpretation.

EMS systems have the opportunity to provide well evidenced benefit to patients by initiating prehospital treatment of status epilepticus. EMS agencies and systems can use this measure to establish how often they are providing this potentially lifesaving therapy. If variability in care or areas for improvement are identified quality improvement efforts can be targeted for this group of patients.

Seizure-02: Patient with Status Epilepticus Receiving Intervention

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients with status epilepticus who received benzodiazepine aimed at terminating their status seizure during the EMS response.	
Measure Components	
Initial Population	All EMS responses originating from a 911 request for patients with a primary or secondary impression of status epilepticus
Denominator Statement	<p>Population 1: EMS responses in the initial population</p> <p>Population 2: EMS responses in the initial population for patients greater than or equal to 18 years of age</p> <p>Population 3: EMS responses in the initial population for patients less than 18 years of age</p>
Denominator Exclusions	None
Denominator Exceptions	None
Numerator Statement	<p>Numerator for Populations 1-3 (Calculate 3 Rates):</p> <p>EMS responses for patients who received benzodiazepine aimed at terminating their status seizure during the EMS response</p> <p>Benzodiazepines may include:</p> <ul style="list-style-type: none"> • Diazepam • Lorazepam • Midazolam
Supporting Guidance & Other Evidence	<p>The following evidence statements are quoted verbatim from the referenced clinical guideline:</p> <p>An Evidence-Based Guideline for Pediatric Pre-Hospital Seizure Management Using GRADE Methodology:ⁱ</p>



National Association of State EMS Officials, National Model EMS Clinical Guidelines for Seizure.ⁱⁱ

Patient Presentation

Seizures due to trauma, pregnancy, hyperthermia, or toxic exposure should be managed according to those condition-specific guidelines

Inclusion Criteria

Seizure activity upon arrival of prehospital personnel or new/recurrent seizure activity lasting greater than 5 minutes

Exclusion Criteria

None

Patient Management

Assessment

1. History

- Duration of current seizure
- Prior history of seizures, diabetes, or hypoglycemia
- Typical appearance of seizures
- Baseline seizure frequency and duration

- e. Focality of onset, direction of eye deviation
- f. Concurrent symptoms of apnea, cyanosis, vomiting, bowel/bladder incontinence, or fever
- g. Bystander administration of medications to stop the seizure
- h. Current medications, including anticonvulsants
- i. Recent dose changes or non-compliance with anticonvulsants
- j. History of trauma, pregnancy, heat exposure, or toxin exposure
- 2. Exam
 - a. Air entry/airway patency
 - b. Breath sounds, respiratory rate and effectiveness of ventilation
 - c. Signs of perfusion (pulses, capillary refill, color)
 - d. Neurologic status (GCS, nystagmus, pupil size, focal neurologic deficit or signs of stroke)

Treatment and Interventions

- 1. If signs of airway obstruction are present and a chin-lift, jaw thrust, positioning, and/or suctioning does not alleviate it, place oropharyngeal airway (if gag reflex is absent) or nasopharyngeal airway
- 2. Place pulse oximeter and/or waveform capnography to monitor oxygenation/ventilation
- 3. Administer oxygen as appropriate with a target of achieving 94-98% saturation. Use bag-valve-mask ventilation if oxygenation/ventilation are compromised
- 4. Assess perfusion
- 5. Assess neurologic status
- 6. Routes for treatment
 - a. IN/IM routes are preferred over rectal (PR), IV, or IO routes, if within the provider's scope of practice
 - i. If none of these routes (IN/IM/IV/IO) of medication administration are in provider's scope of practice, diazepam 0.2 mg/kg PR (maximum dose 10 mg) is an acceptable route of administration
 - b. IV placement is not necessary for treatment of seizures, but could be obtained if needed for other reasons
- 7. Anticonvulsant Treatment
 - a. If vascular access is absent: midazolam 0.2 mg/kg (maximum dose 10 mg), IM preferred, or IN
 - b. If vascular access (IV or IO) is present:
 - i. Diazepam 0.1mg/kg IV or IO, maximum 4mg
 - ii. Lorazepam 0.1mg/kg IV or IO, maximum 4mg
 - iii. Midazolam 0.1mg/kg IV or IO, maximum 4mg

Measure Importance

Rationale	<p>According to the Centers for Disease Control and Prevention (CDC), in 2015, 3.4 million people in the United States have epilepsy,ⁱⁱⁱ with status epilepticus being the most severe and extreme form of epileptic seizure. While treatment of seizure and status epilepticus has changed over time, the administration of benzodiazepines is now commonly used as first-line treatment for patients with status epilepticus.^{iv}</p> <p>Emergency Medical Services are commonly utilized to treat patients with complaints of seizure. In a 1997 study to determine the frequency of patients with seizure disorders who visit the ED, it was found that 368 patients, or 1.2%, of the total patient population, visited 12 EDs over the course of 18.25 days. Of these patients, 257, or 71%, utilized EMS for transport and care.^v</p> <p>A study published in 2012, which reviewed patients experiencing status epilepticus who were treated by EMS professionals with either intramuscular midazolam with intravenous lorazepam found that IM midazolam is at least as safe and effective at terminating prehospital seizures as IV lorazepam.^{vi}</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Quality Improvement • <input type="checkbox"/> Accountability • <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Process • <input type="checkbox"/> Outcome • <input type="checkbox"/> Structure • <input type="checkbox"/> Efficiency
National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Clinical Process-Effectiveness • <input type="checkbox"/> Patient Safety • <input type="checkbox"/> Patient Experience • <input type="checkbox"/> Care Coordination • <input type="checkbox"/> Efficiency: Overuse • <input type="checkbox"/> Efficiency: Cost • <input type="checkbox"/> Population & Community Health
CMS Meaningful Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Medication Management • <input type="checkbox"/> Admissions and Readmissions to Hospitals • <input type="checkbox"/> Transfer of Health Information and Interoperability • <input type="checkbox"/> Preventative Care • <input checked="" type="checkbox"/> Management of Chronic Conditions • <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health • <input type="checkbox"/> Prevention and Treatment of Opioid and Substance • <input type="checkbox"/> Risk Adjusted Mortality • <input type="checkbox"/> Equity of Care

	<ul style="list-style-type: none"> • <input type="checkbox"/> Community Engagement • <input type="checkbox"/> Appropriate Use of Healthcare • <input type="checkbox"/> Patient-focused Episode of Care • <input type="checkbox"/> Risk-Adjusted Total Cost of Care • <input type="checkbox"/> Healthcare-associated infections • <input type="checkbox"/> Preventable Healthcare Harm • <input type="checkbox"/> Care is Personalized and Aligned with Patient's Goals • <input type="checkbox"/> End of Life Care according to Preferences • <input type="checkbox"/> Patient's Experience of Care • <input type="checkbox"/> Patient Reported Functional Outcomes
Level of measurement	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Individual EMS Professional • <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data • <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) • <input checked="" type="checkbox"/> Paper medical record/Chart abstracted • <input checked="" type="checkbox"/> Registry

NEMSIS Pseudocode: Seizure-02: Patient Received Intervention for Status Epilepticus

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients with status epilepticus who received benzodiazepine during the EMS response	
Measure Components	
Initial Population	(<div>(eSituation.11 Provider's Primary Impression matches /^G40...[1,3]/ ("Epilepsy,..., with status epilepticus") or eSituation.12 Provider's Secondary Impressions matches /^G40...[1,3]/ ("Epilepsy,..., with status epilepticus")) and eResponse.05 Type of Service Requested is in (2205001 ("Emergency Response (Primary Response Area)"), 2205003 ("Emergency Response (Intercept)"), 2205009 ("Emergency Response (Mutual Aid)"))))</div>
Denominator	<p>Population 1: Equals Initial Population</p> <p>Population 2: (Initial Population and (ePatient.15 Age is greater than or equal to 18 and ePatient.16 Age Units is 2516009 ("Years"))))</p> <p>Population 3: (Initial Population and (ePatient.15 Age is greater than or equal to 2 and ePatient.15 Age is less than 18 and ePatient.16 Age Units is 2516009 ("Years")) or (ePatient.15 Age is greater than or equal to 24 and ePatient.16 Age Units is 2516007 ("Months"))))</p>
Denominator Exclusions	None

Numerator	Numerator logic for Populations 1-3 (Calculate three separate rates): <u>eMedications.03 Medication Administered</u> is in (3322 ("Diazepam"), 6960 ("Midazolam"), 203128 ("Midazolam Hydrochloride"), 6470 ("Lorazepam"))
-----------	--

-
- ⁱ Shah, M.I., Macias, C.G., Dayan, P.S., Weik, T.S., Brown, K.M., Fuchs, S.M., Fallat, M.E., Wright, J.L., Lang, E.S. (2014) An Evidence-based Guideline for Pediatric Prehospital Seizure Management Using GRADE Methodology, *Prehospital Emergency Care*, 18:15-24.
- ⁱⁱ NASEMSO Medical Directors Council. (2017) National Model EMS Clinical Guidelines. National Association of State EMS Officials, 91-95.
- ⁱⁱⁱ Centers for Disease Control and Prevention (2019) Epilepsy Data and Statistics. Accessed on May 8, 2019 at <http://www.cdc.gov/epilepsy/data/index.html>
- ^{iv} Trinka, E., Hofler, J., Leitinger, M., Brigo, F. (2015) Pharmacotherapy for Status Epilepticus, *Drugs*, 75:1499-1521.
- ^v Huff, S.J., Morris, D.J., Kothari, R.U., Gibbs, M.A. (2001) Emergency Department Management of Patients with Seizures: A Multicenter Study, *Academic Emergency Medicine*; 8(6):622-628.
- ^{vi} Silbergleit, R., Durkalski, V., Lowenstein, D., Conwit, R., Pancioli, A., Palesch, Y., Barsan, W. (2012) Intramuscular versus Intravenous Therapy for Prehospital Status Epilepticus, *The New England Journal of Medicine*, 366:7, 591-600.

National EMS Quality Alliance

2021 Stroke-01 Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets.

NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

Stroke-01: Suspected Stroke Receiving Prehospital Stroke Assessment

Because stroke is such a significant public health problem, and timing of treatment is so important to achieve better patient outcomes, the TEP felt strongly that Stroke-01 has value to the EMS Community. While the direction of published evidence can vary for prehospital stroke scales, it is widely understood that stroke assessments are helpful tools in helping identify patients with stroke and determining which facilities are most appropriate for their transport. The intent of this measure is to determine how many suspected stroke patients are receiving prehospital stroke assessments (and having the assessment documented), on scene during the EMS encounter.

No changes were made to the denominator of Stroke-01 during the re-specification project. The TEP determined that the denominator used in the original candidate measure is appropriate. However, a denominator exclusion was added to the measure – patients who are unresponsive and unable to participate in the assessment. For the purposes of this measure, patients who are unresponsive will be excluded and not be counted in the measure calculation, since they are not able to participate in the stroke assessment.

The numerator for this measure includes EMS responses for patients who had a stroke assessment performed on scene during the EMS response. The addition of on scene to the numerator ensures that the stroke assessment was conducted during the EMS response and by the EMS professional, which protects the intent of the measure. During the project, the TEP discussed limiting the stroke assessments to certain types, such as CPSS or LAMS; however, the experts decided against limiting to specific assessment types, as the intent of the measure is to determine if any stroke assessment was performed.

As Stroke Systems of Care become more robust across the country and EMS becomes an increasingly important partner in identifying stroke, this measure will support a key task of prehospital providers in the care of stroke patients – making the diagnosis and key transport decisions.

Stroke-01: Suspected Stroke Receiving Prehospital Stroke Assessment

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients suffering from a suspected stroke who had a stroke assessment performed during the EMS response.	
Measure Components	
Initial Population	All EMS responses originating from a 911 request for patients with a primary or secondary impression of stroke
Denominator Statement	EMS responses in the initial population
Denominator Exclusions	EMS responses for patients who are unresponsive
Denominator Exceptions	None
Numerator Statement	EMS responses for patients who had a stroke assessment performed on scene during the EMS response
Supporting Guidance & Other Evidence	<p>The following evidence statements are quoted verbatim from the referenced clinical guideline:</p> <p>American Heart Association American Stroke Association: EMS Stroke Assessment Guide:ⁱ</p> <p>EMS management of suspected stroke:</p> <ul style="list-style-type: none"> • Support ABCs: airway, breathing, circulation – give oxygen if needed • Perform prehospital stroke assessment • Establish time when patient last known normal • Rapid transport (consider triage to a center with a stroke unit if appropriate; consider bringing a witness, family member, or caregiver) • Alert receiving hospital stroke center “STROKE CODE” • Check glucose level, if possible
Measure Importance	
Rationale	Stroke is a significant public health problem. More than 795,000 strokes occur in the United States each year, resulting in 889,000 hospitalizations. ⁱⁱ The timing of treatment for patients with stroke is an important factor in determining their outcomes for morbidity and mortality. ⁱⁱⁱ Stroke assessments are helpful tools in identifying patients with stroke in the prehospital setting, who will require therapies to treat stroke upon hospital arrival. ^{iv} In addition, stroke assessments can help prehospital professionals determine the type of facility in which to transport a patient. For example, interventions to treat a large vessel occlusion (LVO), a type of ischemic stroke that results from a blockage of

	<p>the major artery in the brain, are often only available at hospitals in heavily populated, urban areas. Treatments for LVOs are often not available at rural or tertiary facilities, thus, prehospital screening and identification of LVOs is important to determine the most appropriate patient destination.^v</p> <p>Although rates have significantly improved in the past decades, stroke remained the fifth leading cause of death in the United States in 2013. Despite improvements, almost 800,000 individuals in the US each year have a new or recurrent stroke, and of these people, 140,000 of them die. Stroke continues to account for one in every 20 deaths. With better recognition of stroke and stroke symptoms by emergency medical service professionals, patient outcomes can be improved.^{vi}</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Quality Improvement • <input type="checkbox"/> Accountability • <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Process • <input type="checkbox"/> Outcome • <input type="checkbox"/> Structure • <input type="checkbox"/> Efficiency
National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Clinical Process-Effectiveness • <input type="checkbox"/> Patient Safety • <input type="checkbox"/> Patient Experience • <input type="checkbox"/> Care Coordination • <input type="checkbox"/> Efficiency: Overuse • <input type="checkbox"/> Efficiency: Cost • <input type="checkbox"/> Population & Community Health
CMS Meaningful Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Medication Management • <input type="checkbox"/> Admissions and Readmissions to Hospitals • <input type="checkbox"/> Transfer of Health Information and Interoperability • <input type="checkbox"/> Preventative Care • <input type="checkbox"/> Management of Chronic Conditions • <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health • <input type="checkbox"/> Prevention and Treatment of Opioid and Substance • <input type="checkbox"/> Risk Adjusted Mortality • <input type="checkbox"/> Equity of Care • <input type="checkbox"/> Community Engagement • <input type="checkbox"/> Appropriate Use of Healthcare • <input type="checkbox"/> Patient-focused Episode of Care • <input type="checkbox"/> Risk-Adjusted Total Cost of Care

	<ul style="list-style-type: none"> <input type="checkbox"/> Healthcare-associated infections <input type="checkbox"/> Preventable Healthcare Harm <input type="checkbox"/> Care is Personalized and Aligned with Patient's Goals <input type="checkbox"/> End of Life Care according to Preferences <input type="checkbox"/> Patient's Experience of Care <input type="checkbox"/> Patient Reported Functional Outcomes
Level of measurement	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Individual EMS Professional <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) <input checked="" type="checkbox"/> Paper medical record/Chart abstracted <input checked="" type="checkbox"/> Registry

NEMSIS Pseudocode: Stroke-01: Suspected Stroke Patient Receiving Prehospital Stroke Assessment

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS responses originating from a 911 request for patients suffering from a suspected stroke who had a stroke assessment performed during the EMS response.	
Measure Components	
Initial Population	<p>(</p> <p>(</p> <p>eSituation.11 Provider's Primary Impression matches /^(I60) (I61) (I63) (G45) (G46)/ ("Nontraumatic subarachnoid hemorrhage...," "Nontraumatic intracerebral hemorrhage...," "Cerebral infarction..." "Transient cerebral ischemic attacks..." or "Vascular syndromes of brain in cerebrovascular diseases...")</p> <p>or</p> <p>eSituation.12 Provider's Secondary Impressions matches /^(I60) (I61) (I63) (G45) (G46)/ ("Nontraumatic subarachnoid hemorrhage...," "Nontraumatic intracerebral hemorrhage...," "Cerebral infarction..." "Transient cerebral ischemic attacks..." or "Vascular syndromes of brain in cerebrovascular diseases...")</p> <p>)</p> <p>and</p> <p>eResponse.05 Type of Service Requested is in (2205001 ("Emergency Response (Primary Response Area)"), 2205003 ("Emergency Response (Intercept)"), 2205009 ("Emergency Response (Mutual Aid)"))</p>
Denominator	Equals Initial Population
Denominator Exclusions	<p>(</p> <p>eVitals.23 Total Glasgow Coma Score is less than or equal to 9</p> <p>or</p> <p>eVitals.26 Level of responsiveness (AVPU) is 3326007 ("Unresponsive"))</p>
Numerator	<p>eVitals.29 Stroke Scale Score is not null</p> <p>or</p> <p>eVitals.30 Stroke Scale Type is not null</p>

ⁱAmerican Heart Association (2011) Target Stroke.

ⁱⁱ American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee (2019) Heart Disease and Stroke Statistics – 2019 Update. A Report From The American Heart Association, *Circulation*, 139:e56-e528.

ⁱⁱⁱ Musuka, TD, Wilton, SB, Traboulsi, M, Hill, M (2015) Diagnosis and management of acute ischemic stroke: speed is critical, *Canadian Medical Association Journal*, 187(12): 887-893.

^{iv} Kothari, R.U., Pancioli, A., Liu, T., Brott, T., Broderick, J. (1999) Cincinnati Prehospital Stroke Scale: reproducibility and validity, *Annals of Emergency Medicine*, Apr;33(4):373-8.

^v Krebs, W., Sharkey-Toppen, T.P., Cheek, F., Cortez, E., Larrimore, A., Keseg, D., & Panchal, A.R. (2018) Prehospital Stroke Assessment for Large Vessel Occlusions: A Systematic Review, *Prehospital Emergency Care*, 22:2, 180-188.

^{vi} Yang, Q, Tong X, Schieb L, (2017) et al. Vital Signs: Recent Trends in Stroke Death Rates — United States, 2000–2015. *MMWR Morb Mortal Wkly Rep*, ;66:933–939.

National EMS Quality Alliance

2021 Trauma-01 Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets.

NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

National EMS Quality Alliance

Trauma-01: Pain Assessment of Injured Patients

EMS has a role in assisting with pain management and it is important that pain is assessed and documented. There is evidence of variability in how often pain is assessed and treated by EM professionals. The intent of this measure is to determine if pain is assessed (and documented) for injured patients who are transported by EMS.

The most substantive change made to the denominator during the re-specification process was the change from EMS responses to EMS **transports**. This change was made to ensure the accurate population of patients is being measured. During the measure testing phase, when documented pain scale scores were measured for EMS responses, the measure scores were significantly lower than anticipated. However, when the inclusion criteria were changed to transports, the scores were more in line with expectations. The rationale behind this change is many injured patients involved in motor vehicle crashes refuse transport or care by EMS. Since these patients are still part of the inclusion criteria for EMS responses for injured patients, the measure score was being driven down. The change to transports will allow the EMS community to better understand their individual and agency performance for this measure. Additionally, the TEP decided to limit the denominator to patients with a **GCS of 15** or an **A on the AVPU scale**, to ensure only patients who are fully alert and conscious are being included in the denominator.

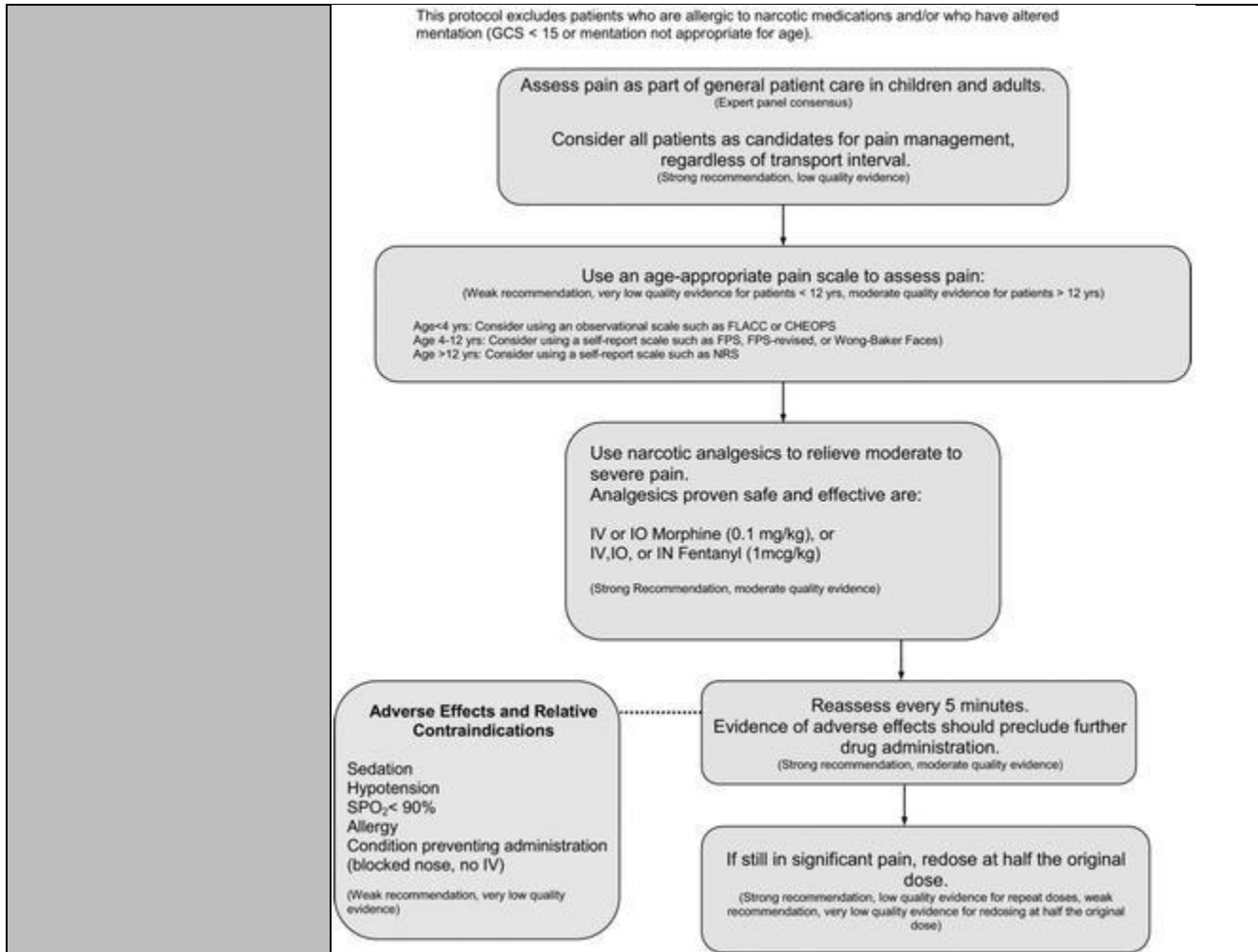
The numerator for Trauma-01 includes patients with any pain scale value documented during the EMS encounter. This numerator mirrors that of the original EMS Compass candidate measure of Trauma-01.

Assessment and treatment of pain in the prehospital environment is an opportunity for EMS to impact an outcome that is highly valued by patients (relief of pain). Published evidence demonstrates that there is wide variability and opportunities for improvement in this area. EMS systems or agencies can use this measure to assess how they are performing and identify areas for quality improvement efforts.

Trauma-01: Injured Patients Assessed for Pain

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS transports originating from a 911 request for patients with injury who were assessed for pain.	
Measure Components	
Initial Population	All EMS transports originating from a 911 request for patients with injury and a Glasgow Coma Score (GCS) of 15 or an Alert Verbal Painful Unresponsiveness (AVPU) of A
Denominator Statement	<p>Population 1: EMS transports in the initial population</p> <p>Population 2: EMS transports in the initial population for patients greater than or equal to 18 years of age</p> <p>Population 3: EMS transports in the initial population for patients less than 18 years of age</p>
Denominator Exclusions	None
Denominator Exceptions	None
Numerator Statement	<p>Numerator for Populations 1-3 (Calculate 3 Rates):</p> <p>EMS transports for patients with any pain scale value documented during the EMS encounter</p>
Supporting Guidance & Other Evidence	<p>The following evidence statements are quoted verbatim from the referenced clinical guideline:</p> <p>Evidence-Based Guideline for Prehospital Analgesia in Trauma:ⁱ</p>



Measure Importance

Rationale

Pain is a common symptom in prehospital care. In a study conducted in 2007, it was found that among the patients who indicated they were in pain, 64% reported they were in intense to severe pain.ⁱⁱ

Due to the complexities of pain, one-dimensional scales where the patient can self-report intensity are recommended. However, providers must take young children and infants, who cannot adequately self-report into consideration.ⁱⁱⁱ

Pain control benefits patients in ways that go beyond making them comfortable. Proper identification and treatment of pain can prevent long-term consequences in very young children. As well, uncontrolled pain can also cause side effects such as elevations in heart rate and blood pressure that may be misinterpreted as other clinical conditions or may have consequences on existing disease processes.^{iv}

In a review of NEMSIS research data from 2012-2014, it was found that of the 69,564,130 patients who were transported for trauma conditions

	<p>such as fracture, burn and/or penetrating injury, only 29.5% of them had “pain” as a documented symptom in their EMS record.^v</p> <p>While prehospital providers document that they conducted a pain assessment on pediatric patients, the presence or absence of pain remains undocumented 20% of the time.^{vi}</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Quality Improvement • <input type="checkbox"/> Accountability • <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Process • <input type="checkbox"/> Outcome • <input type="checkbox"/> Structure • <input type="checkbox"/> Efficiency
National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Clinical Process-Effectiveness • <input type="checkbox"/> Patient Safety • <input checked="" type="checkbox"/> Patient Experience • <input type="checkbox"/> Care Coordination • <input type="checkbox"/> Efficiency: Overuse • <input type="checkbox"/> Efficiency: Cost • <input type="checkbox"/> Population & Community Health
CMS Meaningful Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Medication Management • <input type="checkbox"/> Admissions and Readmissions to Hospitals • <input type="checkbox"/> Transfer of Health Information and Interoperability • <input type="checkbox"/> Preventative Care • <input type="checkbox"/> Management of Chronic Conditions • <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health • <input type="checkbox"/> Prevention and Treatment of Opioid and Substance • <input type="checkbox"/> Risk Adjusted Mortality • <input type="checkbox"/> Equity of Care • <input type="checkbox"/> Community Engagement • <input type="checkbox"/> Appropriate Use of Healthcare • <input type="checkbox"/> Patient-focused Episode of Care • <input type="checkbox"/> Risk-Adjusted Total Cost of Care • <input type="checkbox"/> Healthcare-associated infections • <input type="checkbox"/> Preventable Healthcare Harm • <input type="checkbox"/> Care is Personalized and Aligned with Patient’s Goals • <input type="checkbox"/> End of Life Care according to Preferences • <input checked="" type="checkbox"/> Patient’s Experience of Care • <input type="checkbox"/> Patient Reported Functional Outcomes

Level of measurement	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Individual EMS Professional • <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data • <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) • <input checked="" type="checkbox"/> Paper medical record/Chart abstracted • <input checked="" type="checkbox"/> Registry

NEMSIS Pseudocode: Trauma-01: Injured Patients Assessed for Pain

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS transports originating from a 911 request for patients with injury who were assessed for pain.	
Measure Components	
Initial Population	<p>(eSituation.02 Possible Injury is 9922005 ("Yes") and (eVitals.23 Total Glasgow Coma Score is equal to 15 or eVitals.26 Level of responsiveness (AVPU) is 3326001 ("Alert")) and (eResponse.05 Type of Service Requested is in (2205001 ("Emergency Response (Primary Response Area)"), 2205003 ("Emergency Response (Intercept)"), 2205009 ("Emergency Response (Mutual Aid)")) and (eDisposition.28 Patient Evaluation/Care is 4228001 ("Patient Evaluated and Care Provided") and eDisposition.30 Transport Disposition is in (4230001 ("Transport by This EMS Unit (This Crew Only)"), 4230003 ("Transport by This EMS Unit, with a Member of Another Crew"), 4230007 ("Transport by Another EMS Unit, with a Member of this Crew")))))))</p>
Denominator	<p>Population 1: Equals Initial Population</p> <p>Population 2: (Initial Population and (ePatient.15 Age is greater than or equal to 18</p>

	<p>and ePatient.16 Age Units is 2516009 ("Years"))</p> <p>Population 3:</p> <p>(</p> <p>Initial Population</p> <p>and</p> <p>((ePatient.15 Age is less than 18</p> <p>and ePatient.16 Age Units is 2516009 ("Years"))</p> <p>or</p> <p>(</p> <p>ePatient.15 Age is not null</p> <p>and ePatient.16 Age Units is in</p> <p>(</p> <p>2516001 ("Days"),</p> <p>2516003 ("Hours"),</p> <p>2516005 ("Minutes"),</p> <p>2516007 ("Months"))))</p>
Denominator Exclusions	None
Numerator	<p>Numerator logic for Populations 1-3 (Calculate three separate rates)</p> <p>eVitals.27 Pain Scale Score is not null</p>

-
- ⁱ Gausche-Hill, M., Brown, K.M., Oliver, Z.J., Sasson, C., Dayan, P.S., Eschmann, N.M., Weik, T.S., Lawner, B.J., Shani, R., Flack-Ytter, Y., Wright, J.L., Todd, K., Lang, E.S. (2014) An Evidence-based Guideline for Prehospital Analgesia in Trauma, *Prehospital Emergency Care*, 18:sup1, 25-34.
- ⁱⁱ Galinski, M., Ruscev, M., Gonzalez, G., Kavas, J., Ameer, L., Biens, D., Lapostolle, F. & Adnet, F (2010) Prevalence and Management of Acute Pain in Prehospital Emergency Medicine, *Prehospital Emergency Care*, 14:3, 334-339.
- ⁱⁱⁱ National Association of EMS Physicians. (2003). *Prehospital Pain Management (Position Paper)*. Overland Park, KS: Alonso-Serra, H.M., Wesley, K.
- ^{iv} Izsak, E., Moore, J.L., Stringfellow, K., Oswanski, M.F., Lindstrom, D.A., & Stombaugh, H.A., (2008) Prehospital Pain Assessment in Pediatric Trauma, *Prehospital Emergency Care*, 12:2, 182-186.
- ^v Hewes, H.A., Dai, M., Mann, N.C., Baca, T, & Taillac, P. (2018) Prehospital Pain Management: Disparity By Age and Race, *Prehospital Emergency Care*, 22:2, 189-197.
- ^{vi} Sasser, S.M., Hunt, R.C., Faul, M., Sugerman, D., Pearson, W.S., Dulski, T., Wald, M.M., Jurkovich, G.J., Newgard, C.D., Lerner, E.B., Cooper, A., Wang, S.C., Henry, M.C., Salomone, J.P., Galli, R.L. (2011) Guidelines for Field Triage of Injured Patients: Recommendations of the National Expert Panel on Field Triage, 2011. *MMWR Morb Mortal Wkly Rep*; 61(RR01), 1 - 20.

National EMS Quality Alliance

2021 Trauma-03 Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets.

NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

Trauma-03: Effectiveness of Pain Management for Injured Patients

Trauma-03, an outcome measure, measures the effectiveness of pain management for injured patients who are transported by EMS. The published evidence supporting this measure is similar to that of Trauma-01, as EMS often treats patients with pain and there are many clinical indicators for pain management. The intent of this measure is to determine if pain is being reduced for EMS patients during the EMS encounter. However, for this measure, the TEP feels it is important to note that there are alternative pain management methods to the administration of drugs, and drug administration should be used judiciously. The true intent of this measure is to determine if EMS providers are helping their injured patients feel better, not if they are administering opioids to their patients.

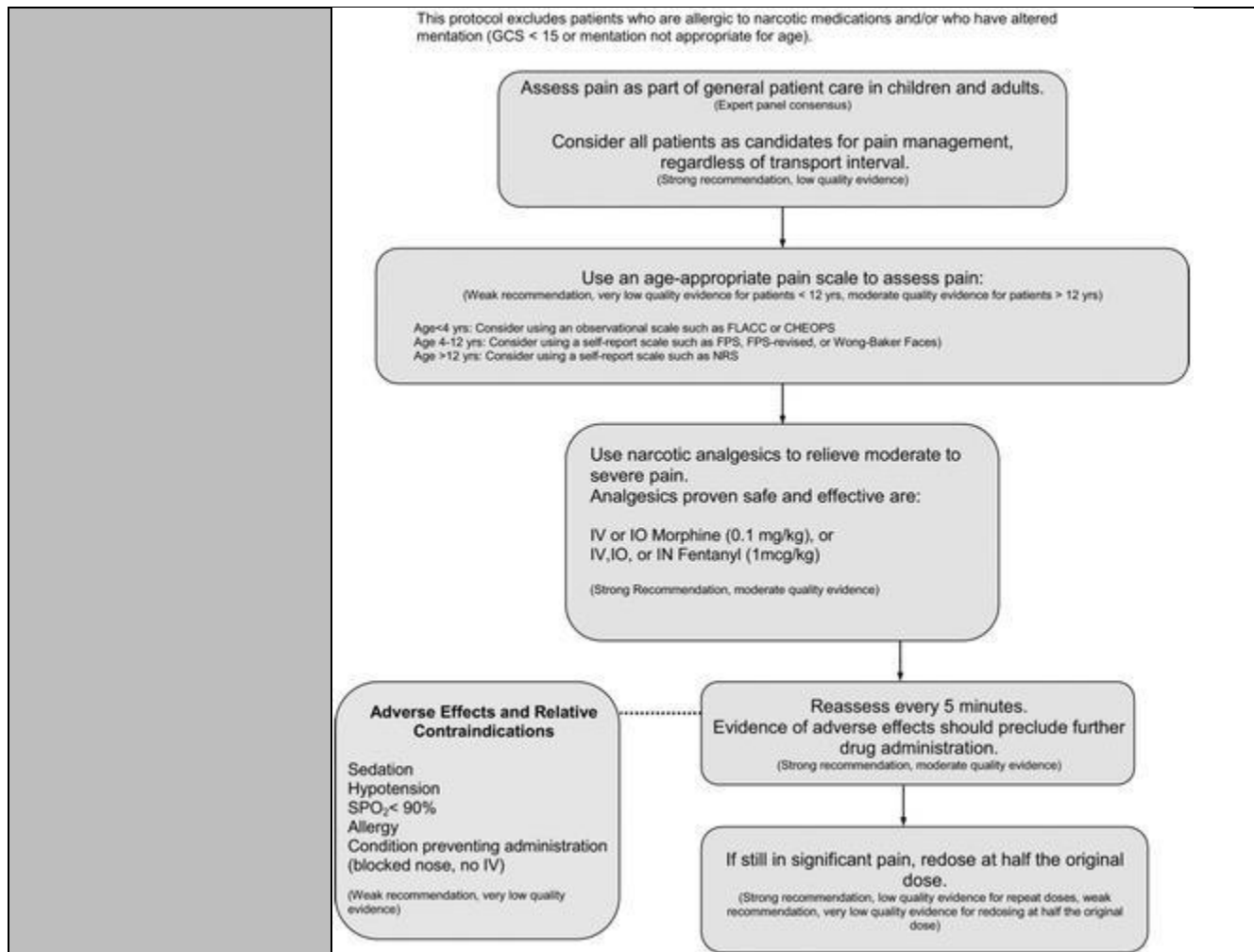
Similar to Trauma-01, the initial inclusion criteria for Trauma-03 was changed to EMS **transports** rather than EMS responses, to ensure the accurate initial population is being captured to protect the true intent of the measure – which is to measure how well EMS is helping injured patients who are in pain feel better. As for the threshold for the initial pain scale score, it remains at **greater than zero**. Much discussion took place among TEP members when it came to deciding upon this initial pain score value. However, in the end, the experts decided that the initial value should be any score greater than zero, because, again, the intent of the measure is to measure how well EMS is helping injured patients who are in pain feel better, not to measure the effectiveness of opioid administration or other medication-related outcomes.

While the intent of the numerator for Trauma-03 has not been changed, the language has been revised for clarity. The numerator for this measure includes EMS transports for patients with two or more documented pain scores and a final pain score value less than the first documented pain score. In order to determine if the clinical outcome for this measure has been met, a calculation must be completed.

Trauma-03: Effectiveness of Pain Management for Injured Patients

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS transports originating from a 911 request for patients whose pain score was lowered during the EMS encounter.	
Measure Components	
Initial Population	All EMS transports originating from a 911 request for patients with injury and a Glasgow Coma Score (GCS) of 15 or an Alert Verbal Painful Unresponsive (AVPU) of A who had an initial pain score of greater than zero
Denominator Statement	<p>Population 1: EMS transports in the initial population</p> <p>Population 2: EMS transports in the initial population for patients greater than or equal to 18 years of age</p> <p>Population 3: EMS transports in the initial population for patients less than 18 years of age</p>
Denominator Exclusions	None
Denominator Exceptions	None
Numerator Statement	<p>Numerator for Populations 1-3 (Calculate 3 Rates):</p> <p>EMS transports for patients with two or more documented pain scores and a final pain score value less than the first documented pain score</p>
Supporting Guidance & Other Evidence	<p>The following evidence statement is quoted verbatim from the referenced clinical guideline:</p> <p>Evidence-Based Guideline for Prehospital Analgesia in Trauma:ⁱ</p>



Measure Importance	
Rationale	<p>Pain is a common symptom in prehospital care. In a study conducted in 2007, it was found that among the patients who indicated they were in pain, 64% reported they were in intense to severe pain.ⁱⁱ</p> <p>Pain control benefits patients in ways that go beyond making them comfortable. Proper identification and treatment of pain can prevent long- term consequences in very young children. As well, uncontrolled pain can also cause side effects such as elevations in heart rate and blood pressure that may be misinterpreted as other clinical conditions or may have consequences on existing disease processes.ⁱⁱⁱ</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Quality Improvement <input type="checkbox"/> Accountability <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Process <input type="checkbox"/> Outcome <input type="checkbox"/> Structure <input type="checkbox"/> Efficiency

National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> <input type="checkbox"/> Clinical Process-Effectiveness <input type="checkbox"/> Patient Safety <input checked="" type="checkbox"/> Patient Experience <input type="checkbox"/> Care Coordination <input type="checkbox"/> Efficiency: Overuse <input type="checkbox"/> Efficiency: Cost <input type="checkbox"/> Population & Community Health
CMS Meaningful Measure Domain	<ul style="list-style-type: none"> <input type="checkbox"/> Medication Management <input type="checkbox"/> Admissions and Readmissions to Hospitals <input type="checkbox"/> Transfer of Health Information and Interoperability <input type="checkbox"/> Preventative Care <input type="checkbox"/> Management of Chronic Conditions <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health <input type="checkbox"/> Prevention and Treatment of Opioid and Substance <input type="checkbox"/> Risk Adjusted Mortality <input type="checkbox"/> Equity of Care <input type="checkbox"/> Community Engagement <input type="checkbox"/> Appropriate Use of Healthcare <input type="checkbox"/> Patient-focused Episode of Care <input type="checkbox"/> Risk-Adjusted Total Cost of Care <input type="checkbox"/> Healthcare-associated infections <input type="checkbox"/> Preventable Healthcare Harm <input type="checkbox"/> Care is Personalized and Aligned with Patient's Goals <input type="checkbox"/> End of Life Care according to Preferences <input checked="" type="checkbox"/> Patient's Experience of Care <input type="checkbox"/> Patient Reported Functional Outcomes
Level of measurement	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Individual EMS Professional <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) <input checked="" type="checkbox"/> Paper medical record/Chart abstracted <input checked="" type="checkbox"/> Registry

NEMIS Pseudocode: Trauma-03: Effectiveness of Pain Management for Injured Patients

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS transports originating from a 911 request for patients whose pain score was lowered during the EMS encounter.	
Measure Components	
Initial Population	<p>((eSituation.02 Possible Injury is 9922005 ("Yes") and first (eVitals.27 Pain Scale Score where e.Vitals.01 Date/Time Vital Signs Taken is not null sorted by eVitals.01 Date/Time Vital Signs Taken) is greater than 0) and (eResponse.05 Type of Service Requested is in (2205001 ("Emergency Response (Primary Response Area)"), 2205003 ("Emergency Response (Intercept)"), 2205009 ("Emergency Response (Mutual Aid)")) and (eDisposition.28 Patient Evaluation/Care is 4228001 ("Patient Evaluated and Care Provided") and eDisposition.30 Transport Disposition is in (4230001 ("Transport by This EMS Unit (This Crew Only)"), 4230003 ("Transport by This EMS Unit, with a Member of Another Crew"), 4230007 ("Transport by Another EMS Unit, with a Member of this Crew")))))))</p>
Denominator	<p>Population 1: Equals Initial Population</p> <p>Population 2: (Initial Population and (ePatient.15 Age is greater than or equal to 18 and ePatient.16 Age Units is 2516009 ("Years"))</p>

	<p>Population 3:</p> <p>(</p> <p>Initial Population</p> <p>and</p> <p>((ePatient.15 Age is less than 18</p> <p>and ePatient.16 Age Units is 2516009 ("Years"))</p> <p>or</p> <p>(</p> <p>ePatient.15 Age is not null</p> <p>and ePatient.16 Age Units is in</p> <p>(</p> <p>2516001 ("Days"),</p> <p>2516003 ("Hours"),</p> <p>2516005 ("Minutes"),</p> <p>2516007 ("Months"))))</p>
Denominator Exclusions	None
Numerator Pseudocode	<p>Numerator logic for Populations 1-3 (Calculate three separate rates)</p> <p>(</p> <p>last (eVitals.27 Pain Scale Score where e.Vitals.01 Date/Time Vital Signs Taken is not null sorted by eVitals.01 Date/Time Vital Signs Taken)</p> <p>is less than</p> <p>first (eVitals.27 Pain Scale Score where e.Vitals.01 Date/Time Vital Signs Taken is not null sorted by eVitals.01 Date/Time Vital Signs Taken))</p>

ⁱ Gausche-Hill, M., Brown, K.M., Oliver, Z.J., Sasson, C., Dayan, P.S., Eschmann, N.M., Weik, T.S., Lawner, B.J., Shani, R., Flack-Ytter, Y., Wright, J.L., Todd, K., Lang, E.S. (2014) An Evidence-based Guideline for Prehospital Analgesia in Trauma, *Prehospital Emergency Care*, 18:sup1, 25-34.

ⁱⁱ Galinski, M., Ruscev, M., Gonzalez, G., Kavas, J., Ameer, L., Biens, D., Lapostolle, F. & Adnet., F (2010) Prevalence and Management of Acute Pain in Prehospital Emergency Medicine, *Prehospital Emergency Care*, 14:3, 334-339.

ⁱⁱⁱ Izsak, E., Moore, J.L., Stringfellow, K., Oswanski, M.F., Lindstrom, D.A., & Stombaugh, H.A., (2008) Prehospital Pain Assessment in Pediatric Trauma, *Prehospital Emergency Care*, 12:2, 182-186.

National EMS Quality Alliance

2021 Trauma-04 Measure Package

Disclaimer

EMS Performance Measures (Measures) and related data specifications developed by the National EMS Quality Alliance (NEMSQA) are intended to facilitate quality improvement activities by EMS professionals.

These measures are intended to assist EMS professionals in enhancing quality of care. These Measures are not clinical guidelines and do not establish a standard of medical care and have not been tested for all potential applications. NEMSQA encourages testing and evaluation of its Measures.

Measures are subject to review and may be revised or rescinded at any time by NEMSQA. The measures may not be altered without prior written approval from NEMSQA. The measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes (e.g., use by health care providers in connection with their practices). Commercial use is defined as the sale, license, or distribution of the measures for commercial gain, or incorporation of the measures into a product or service that is sold, licensed, or distributed for commercial gain. Commercial uses of the measures require a license agreement between the user and NEMSQA. Neither NEMSQA nor its members shall be responsible for any use of the measures.

THESE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

©2021 National EMS Quality Alliance. All rights reserved.

Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary coding sets should obtain all necessary licenses from the owners of these code sets.

NEMSQA and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications. ICD-10 copyright 2020 International Health Terminology Standards Development Organization.

CPT ® is a registered trademark of the American Medical Association and is copyright 2020. CPT® codes contained in the Measure specifications are copyright 2004-2020 American Medical Association.

Trauma-04: Trauma Patients Transported to the Trauma Center

Trauma-04 was designed using CDC guidelines for Field Triage of Trauma Patients. Along with the CDC guidelines, published literature clearly supports this measure, as patients who receive appropriate trauma care often have better outcomes. As this measure was being re-specified, the TEP discussed many concerns with the pragmatic implementation of this measure – including the availability of trauma centers in rural communities and whether the measure should focus on transporting patients to the appropriate level of trauma center. While there are many possible variations and stratifications of this measure, the TEP ultimately decided to stay with the intent of the original EMS Compass candidate measure, which is measuring if patients with trauma are being transported to a trauma center.

During the re-specification process, the TEP closely reviewed the CDC Guidelines for Field Triage, which were used to build the denominator for this measure. Originally, in the EMS Compass candidate measures, Step 1, 2, and 3 criteria were part of the denominator inclusion criteria. But, after reviewing the guidelines again, the TEP decided to remove Step 3 from the denominator for the re-specified measure, as Steps 1 and 2 identify the most seriously injured patients. The experts determined that limiting the denominator to **Steps 1 and 2** will satisfy the intent of the measure without running the risk of over transporting patients to trauma centers who may not need the care of such a facility.

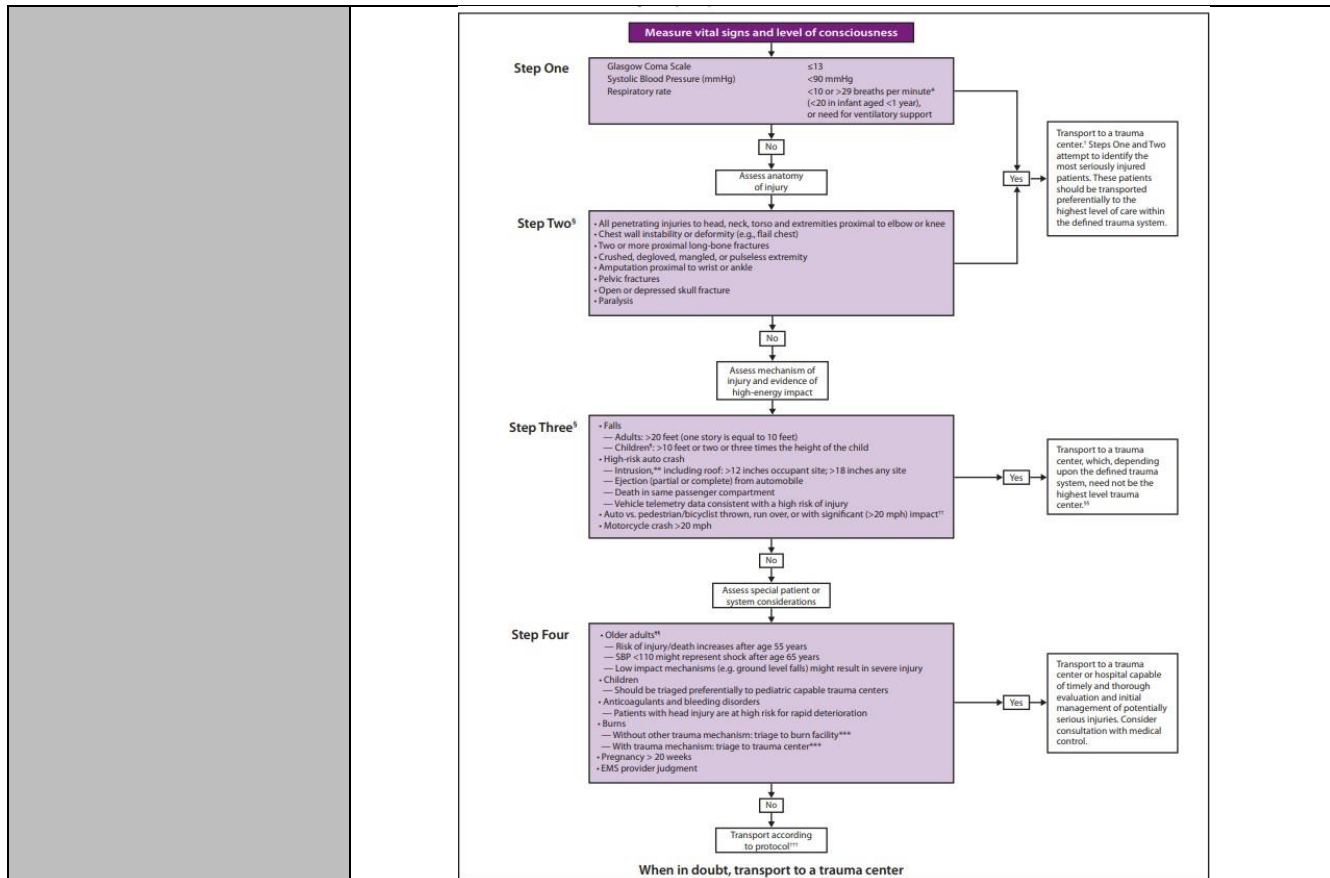
As stated above, much discussion was had about the numerator of Trauma-04. While everyone on the TEP agreed that transporting a trauma center is the best course of treatment for certain patients, it was noted that trauma centers are not always available or well-defined. The TEP discussed many different options for the numerator for Trauma-04, including transporting patient with trauma to the nearest hospital and transporting patients to a specific level of trauma center. However, the final measure has been specified to require the patient to be transported to a trauma center.

The TEP understands concerns about limited access to trauma centers in certain communities and concerns that some hospitals labeled as trauma centers may not be as equipped as others. But, as measurement is used to drive change, the TEP hopes data collected from Trauma-04 will help drive change in the availability and standards of trauma centers across the nation.

Trauma-04: Trauma Patients Transported to a Trauma Center

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS transports originating from a 911 request for patients who meet CDC criteria for trauma and are transported to a trauma center.	
Measure Components	
Initial Population	All EMS transports originating from a 911 request for patients who meet 2011 CDC Step 1 or 2 criteria for trauma
Denominator Statement	<p>Population 1: EMS transports in the initial population</p> <p>Population 2: EMS transports in the initial population for patients greater than or equal to 18 years of age</p> <p>Population 3: EMS transports in the initial population for patients less than 18 years of age</p>
Denominator Exclusions	None
Denominator Exceptions	None
Numerator Statement	<p>Numerator for Populations 1-3 (Calculate 3 Rates):</p> <p>EMS transports for patients transported to a trauma center</p>
Supporting Guidance & Other Evidence	<p>The following evidence statement is quoted verbatim from the referenced clinical guideline:</p> <p>Centers for Disease Control and Prevention: Guidelines for Field Triage of Injured Patients:ⁱ</p>



Measure Importance	
Rationale	<p>Victims of severe violent injuries involving trauma not only see a slight improvement in survival rates if they receive treatment in a trauma center, but they also benefit from less complications and shorter lengths of stay.ⁱⁱ</p> <p>A study on the effect of trauma center care on mortality published in 2006 found that one-year survival rates among patients with traumatic injuries were significantly higher when patients received care in trauma centers as opposed to non-trauma centers. This same study showed a 25% decrease in mortality for severely injured adult patients who received care at Level I trauma centers.ⁱⁱⁱ</p>
Measure Designation	
Measure purpose	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Quality Improvement • <input checked="" type="checkbox"/> Accountability • <input type="checkbox"/> MOC
Type of measure	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Process • <input type="checkbox"/> Outcome • <input type="checkbox"/> Structure • <input type="checkbox"/> Efficiency

National Quality Strategy/Priority/CMS Measure Domain	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Clinical Process-Effectiveness • <input type="checkbox"/> Patient Safety • <input type="checkbox"/> Patient Experience • <input type="checkbox"/> Care Coordination • <input type="checkbox"/> Efficiency: Overuse • <input type="checkbox"/> Efficiency: Cost • <input type="checkbox"/> Population & Community Health
CMS Meaningful Measure Domain	<ul style="list-style-type: none"> • <input type="checkbox"/> Medication Management • <input type="checkbox"/> Admissions and Readmissions to Hospitals • <input type="checkbox"/> Transfer of Health Information and Interoperability • <input type="checkbox"/> Preventative Care • <input type="checkbox"/> Management of Chronic Conditions • <input type="checkbox"/> Prevention, Treatment, and Management of Mental Health • <input type="checkbox"/> Prevention and Treatment of Opioid and Substance • <input type="checkbox"/> Risk Adjusted Mortality • <input type="checkbox"/> Equity of Care • <input type="checkbox"/> Community Engagement • <input type="checkbox"/> Appropriate Use of Healthcare • <input type="checkbox"/> Patient-focused Episode of Care • <input type="checkbox"/> Risk-Adjusted Total Cost of Care • <input type="checkbox"/> Healthcare-associated infections • <input type="checkbox"/> Preventable Healthcare Harm • <input checked="" type="checkbox"/> Care is Personalized and Aligned with Patient's Goals • <input type="checkbox"/> End of Life Care according to Preferences • <input type="checkbox"/> Patient's Experience of Care • <input type="checkbox"/> Patient Reported Functional Outcomes
Level of measurement	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Individual EMS Professional • <input checked="" type="checkbox"/> EMS Agency
Care setting	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Pre-Hospital Care
Data source	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Electronic Patient Care Record (eCPR) data • <input type="checkbox"/> Administrative Data/Claims (inpatient, outpatient or multiple-source claims) • <input checked="" type="checkbox"/> Paper medical record/Chart abstracted • <input checked="" type="checkbox"/> Registry

NEMSIS Pseudocode: Trauma-04: Trauma Patients Transferred to Trauma Center

Measure Score Interpretation: For this measure, a higher score indicates better quality

Measure Description	
Percentage of EMS transports originating from a 911 request for patients who meet CDC criteria for trauma and are transported to a trauma center.	
Measure Components	
Initial Population	<p>(</p> <p>((</p> <p>eSituation.02 Possible Injury is 9922005 ("Yes")</p> <p>and first (eVitals.27 Pain Scale Score where e.Vitals.01 Date/Time Vital Signs Taken is not null sorted by eVitals.01 Date/Time Vital Signs Taken) is greater than 0)</p> <p>and</p> <p>eInjury.03 Trauma Triage Criteria (Steps 1 and 2) is in</p> <p>(</p> <p>2903001 ("Amputation proximal to wrist or ankle"),</p> <p>3903003 ("Crushed, degloved, mangled, or pulseless extremity"),</p> <p>2903005 ("Chest wall instability or deformity (e.g., flail chest),</p> <p>2903007 ("Glasgow Coma Score <=13"),</p> <p>2903009 ("Open or depressed skull fracture"),</p> <p>2903011 ("Paralysis"),</p> <p>2903013 ("Pelvic fractures"),</p> <p>2903015 ("All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee"),</p> <p>2903017 ("Respiratory Rate <10 or >29 breaths per minute (<20 in infants aged <1 year) or need for ventilatory support),</p> <p>2903019 ("Systolic Blood Pressure <90 mmHg"),</p> <p>2903021 ("Two or more proximal long-bone fractures"))</p> <p>and</p> <p>(</p> <p>eResponse.05 Type of Service Requested is in</p> <p>(</p> <p>2205001 ("Emergency Response (Primary Response Area)"),</p> <p>2205003 ("Emergency Response (Intercept)"),</p> <p>2205009 ("Emergency Response (Mutual Aid)"))</p> <p>and</p> <p>(</p>

	<p>eDisposition.28 Patient Evaluation/Care is 4228001 (“Patient Evaluated and Care Provided”)</p> <p>and eDisposition.30 Transport Disposition is in (4230001 (“Transport by This EMS Unit (This Crew Only)”), 4230003 (“Transport by This EMS Unit, with a Member of Another Crew”), 4230007 (“Transport by Another EMS Unit, with a Member of this Crew”))))</p>
Denominator	<p>Population 1: Equals Initial Population</p> <p>Population 2: (Initial Population and (ePatient.15 Age is greater than or equal to 18 and ePatient.16 Age Units is 2516009 (“Years”))</p> <p>Population 3: (Initial Population and ((ePatient.15 Age is less than 18 and ePatient.16 Age Units is 2516009 (“Years”)) or (ePatient.15 Age is not null and ePatient.16 Age Units is in (2516001 (“Days”), 2516003 (“Hours”), 2516005 (“Minutes”), 2516007 (“Months”))))</p>
Denominator Exclusions	None
Numerator Pseudocode	<p>Numerator logic for Populations 1-3 (Calculate three separate rates)</p> <p>eDisposition.23 Hospital Capability is in (9908021 (“Trauma Center Level 1”),</p>

	9908023 (“Trauma Center Level 2”), 9908025 (“Trauma Center Level 3”), 9908027 (“Trauma Center Level 4”), 9908029 (“Trauma Center Level 5”))
--	--

ⁱ Sasser, S.M., Hunt, R.C., Faul, M., Sugerman, D., Pearson, W.S., Dulski, T., Wald, M.M., Jurkovich, G.J., Newgard, C.D., Lerner, E.B., Cooper, A., Wang, S.C., Henry, M.C., Salomone, J.P., Galli, R.L. (2011) Guidelines for Field Triage of Injured Patients: Recommendations of the National Expert Panel on Field Triage, 2011. MMWR Morb Mortal Wkly Rep; 61(RR01), 1- 20.

ⁱⁱ Baez, A.A., Lane, P.L., Sorondo, B., Nituica, C. (2006) Receiving Care Facility and Outcome Differences for Victims of Severe Violent injuries, Prehospital Emergency Care, 10:2, 220-223

ⁱⁱⁱ MacKenzie, E.J., Rivara, F.P., Jurkovich, G.J., Nathens, A.B., Frey, K.P., Egleston, B.L., Salkever, D.S., Scharfstein, D.O., (2006) A National Evaluation of the Effect of Trauma-Center Care on Mortality, The New England Journal of Medicine, 354;4, 366-378.

Introduction to the National EMS Quality Measure Set Project

The National EMS Quality Alliance has had the privilege of working to vet and re-specify the EMS Compass candidate measures produced by the EMS Compass team from 2016. Funded by National Highway Traffic Safety Administration (NHTSA) Office of EMS to further develop Quality Measures for the EMS community, NEMSQA has endeavored to conduct this work in an open, structured, systematic way. After establishing organization bylaws and infrastructure, the Measure Development Committee (MDC), chaired by Kathleen Brown and Jonathan Washko, went to work on creating an organized process to perform measure development. Kelly Burlison, a measure development expert, was brought on as the project manager for this work. As the primary operational committee for this project, the MDC developed a clear collaborative subcommittee effort in three areas: Research/Evidence, Specifications, and Testing/Learning.

These key subcommittees went to work on evaluating the EMS Compass candidate measures as proposed and approved by the original EMS Compass project executive committee. The NEMSQA leadership asked for participation from key stakeholders in the EMS community including ePCR vendors, NEMSIS leadership and other leaders in EMS data and quality. This group of experts made up the Technical Expert Panel (TEP) for this project.

This is the story of how these measures were discussed, vetted and re-specified – an open discussion of the debates that were had, the challenges that this team faced in deciding details of these measures within the existing context of EMS as practiced and documented today in the United States. As you will see, there is philosophical tension about what these measures are designed to do; however, the question we asked ourselves first is - *How will this measure help patients treated by EMS?*

The next set of questions we asked ourselves are –
How will tracking these measures improve the EMS systems of care that exist today?
How will this measure impact our EMS agencies across the country?

Many of these measures, In this round of development measure basic elements of care that either in prior studies or in analyses of large prehospital data sets have demonstrated inconsistency in performance across the country. Most of the evidence and rationale for these measures is Level II or Level III, which does not include randomized control trials. In some cases, it was recognized that since the measure represents established standard of care it would not be ethical to withhold standard treatment from a patient for the purposes of a study. Thus, even though the evidence for these measures is not as strong as it could be, there is available information to support the rationale for their existence as a measure of quality , and the consensus that these processes are the right thing to do for EMS patients is very strong.

Each of these 14 measures were discussed at length and supporting evidence from the research, specifications and testing/learning subcommittees were brought to bear at two key meetings of the TEP on April 15^h, 2019 and August 5, 2019.

While each measure was discussed in detail during the meetings of the TEP, one overarching item that was discussed at length that applies to all measures is the definition of *911 Request* and how it is defined. The TEP agreed that the measures should be limited to emergency requests, but also understood there are many ways an emergency request can be made at the local level. After much discussion, the TEP decided to use the standards set by Medicare for 911 Request, which is-911 Request must be in accord with local 911 or equivalent service dispatch protocol. By using the Medicare standard which includes the equivalent protocol, the TEP feels that other methods of emergency requests, other than 911 calls, will be included in the denominator criteria. This is also in line with the NEMSIS registry, as 911 requests and equivalents map to the registry data element of eResponse.05

Clarifications and Definitions.

Each measure was broken down into parts, or elements, required for calculation. Since all the EMS Compass 2.0 measures were proportion measures, which means they calculate percentage scores, their elements include numerators and denominators. Some of them also include denominator exclusions.

For the purposes of quality measurement, ***numerator*** is defined as the processes or outcomes expected for each encounter defined in the denominator. The measure numerator essentially defines the action that satisfies the conditions of the measure.

For the re-specified measures, ***denominator***, which can also be referred to as the *initial population*, refers to the encounters being evaluated for performance. The encounters included in the denominator share a common set of specified characteristics.

In some of the re-specified measures, ***denominator exclusions*** are used, which specify encounters or patients that should be removed from the denominator before determining if numerator criteria are met. Denominator exclusions are used when the clinical processes or outcomes expected in the numerator do not apply to the subset of patients/encounters.

Other descriptive items are also included in the measure specifications, including measure title, score interpretation, definition, guidance and evidence, and rationale. These items provide additional information on the background, intent, and implementation of each measure. This package of comprehensive information should provide a detailed and informative picture of each measure.

Hypoglycemia-01: Treatment Administered for Hypoglycemia

Direct evidence for treating hypoglycemia/low blood sugar in the EMS environment is not available. However, it has clearly the standard of care for patients who have the condition. The medical community/literature understands that untreated hypoglycemia can cause brain injury, coma and other consequences. AS noted above a randomized trial of this therapy would not be ethical. Clearly, EMS has a role in giving early treatment, be it oral, IV or IO delivery. Patients, wherever they may be, should have access to this critical, simple antidote for a life-threatening condition. The intent of this measure is to determine if treatment is being administered to EMS patients who are experiencing hypoglycemia.

The denominator, or initial population included in this measure is EMS encounters for patients who have a clinical condition associated with hypoglycemia. After much debate and discussion, it was decided that the initial population could be captured in one of two ways— encounters for patients with a documented primary or secondary impression of *Altered Mental Status* and a blood sugar less than 60 ug/mL (The TEP decided on this number because it is the most specific/lowest and captures the sickest patients), OR, encounters for patients with a primary impression of *Hypoglycemia* with a documented GCS of <15 or an AVPU score of V, P or U. The TEP believes that this denominator will offer the best opportunity to identify the patients affected by this condition.

Because the definition of and treatment for hypoglycemia in the newly born (< 24 hours old) has different parameters this population of patients has been excluded from the denominator for Hypoglycemia-01. Any EMS responses for this population of patients who meet the inclusion criteria should be removed from the denominator.

The numerator consists of EMS responses for patients who receive the care expected (and was documented!)— in this case, these are the number of patients from the denominator who receive sugar in one way or another. Many medication codes correlate to the NEMSIS capture of this treatment including IV/IO and oral formulations of dextrose and glucose; however, there is no existing treatment code for “food” We understand that some of our EMS treated patients will get this care but not be recorded for electronic specification. NEMSQA anticipates this may lower overall treatment percentages for any given EMS agency – this is likely to affect EMS agencies throughout the country. NEMSQA also hopes that NEMSIS and ePCR vendors will consider adding this code in the next round of updates so that agencies can get credit for this treatment.

Different EMS systems will allow different treatment for hypoglycemia at different levels – some BLS may be able to use a glucometer to find this condition but if the patient cannot take oral glucose, their only option is to transport without ALS backup - in this type of system, there may be a lower rate of EMS treatment of hypoglycemia compared to other similar systems. This low number might therefore incentivize the system to

adapt, add resources to EMS or look for mutual aid to improve the rates of improvement for their patients suffering from hypoglycemia.

Pediatrics-01: Pediatric Respiratory Assessment

This measure also does not have direct evidence to support its validity. However, it is known that providers often express discomfort with assessment of children and that respiratory distress is one of the most common serious conditions encountered by EMS providers in pediatric patients. The TEP agreed this measure is clinically important and there is value to measuring it. The medical community agrees that, if a pediatric patient is experiencing respiratory distress, a respiratory assessment should be conducted. Performing the respiratory assessment on the patient is the first step to determining if additional clinical interventions are necessary, and it is important that this process in care be measured. The intent of this measure is to determine if pediatric patients experiencing respiratory distress are receiving respiratory assessments.

The denominator, or initial population, for this measure includes EMS encounters for patients less than 18 years of age with a primary or secondary impression of respiratory distress. Those who are familiar with the original EMS Compass candidate measure may recognize the changes in the denominator for the re-specified measure. The inclusion criteria have been expanded from less than 15 years of age to less than 18 years of age and has been expanded to include a general impression of respiratory distress, which could include many different respiratory conditions. These changes mirror what is found in current published guidelines and literature for pediatric respiratory distress and assessments.

The numerator for the re-specified measure has not changed. While the TEP discussed potentially adding additional elements of a respiratory assessment, such as auscultation of the lung, it was ultimately decided to limit the numerator to SPO2 and respiratory rate measurements, due to feasibility concerns. While there are other elements to a respiratory assessment, Pediatrics-01 focuses on the completion and documentation of these two elements.

To the experienced EMS Professional, Pediatrics-01 appears to state the obvious – Every patient should have an assessment of their respiratory status. However, documentation of this fundamental element of care is often not completed. This may be simply a documentation omission but may also represent an incomplete clinical assessment or perhaps because providers are less comfortable assessing children than adults. An agency or system can use this measure to identify gaps in standard care or documentation of that care and target areas for improvement. This will drive recognition for the importance of this measure.

Pediatrics-02: Administration of Beta Agonist for Pediatric Asthma

Asthma is a common disease among both children and adults, and a common reason for EMS calls. With EMS being utilized so often for pediatric asthma exacerbation, the TEP felt strongly about continuing to include this measure in the measure set. There is strong evidence demonstrating the benefits of albuterol administration to patients with an acute asthma exacerbation in the Emergency Department setting based on patient centered outcomes. There is also evidence to support that it can be administered safely and effectively by EMS. There are also national guidelines that support this measure. The intent of this measure is to determine if pediatric patients experiencing asthma exacerbation are receiving a beta agonist.

The denominator for Pediatrics-02 includes EMS responses for patients 2-18 years of age with a primary or secondary impression of asthma. The reason why patients less than 2 years of age are not part of the inclusion criteria The rationale for this exclusion is to exclude patients with wheezing from other etiologies such as bronchiolitis in which the evidence does not support routine use of beta- agonists. The inclusion criteria for age has also been changed to include patients up to 18 years of age, as the evidence continues to support administering beta agonist medications to this age group. The TEP felt it important to include the entire pediatric population in the measure, rather than creating an upper limit of 15 years of age in the inclusion criteria.

Two substantive changes were made to the numerator of Pediatrics-02 during the measure re-specification process. In order to meet quality standards for the measure, not only does a beta agonist have to be administered, but it must be an **aerosolized** beta agonist; and the beta agonist must be **administered by an EMS professional**. There was meaningful discussion among the members of the TEP in order to get to these changes. TEP members felt requiring that beta agonist medication be administered by an EMS professional makes Pediatrics-02 a true quality measure, as improvement can be driven by the EMS providers themselves.

Every State and Region will have variation with regard to availability of Advanced Life Support, Basic Life Support and First Responders as well as protocols for care of pediatric patients with asthma. In considering this measure, the TEP envisioned a patient-centric stance – in other words – it doesn't matter who is responding, or, if BLS cannot administer albuterol in a particular state or region, if the patient is not receiving this important, possibly life-saving medication in the course of their EMS care, there might be an opportunity to make system changes to address this lack of care.

Pediatrics-03: Documentation of Estimated Weight in Kilograms

Pediatrics-03 is classified as a pediatrics measure in the EMS Compass 2.0 Measure Set, but its intent is deeply rooted in safety. There is significant published literature that attributes pediatric medication errors to errors in converting pounds to kilograms while dosing a medication. With pounds and kilograms commonly being confused, leading to pediatric medication errors, Pediatrics-03 is important for measuring a clinical documentation process that can lead to better patient outcomes. The intent of Pediatrics-03 is to determine if the weight of EMS pediatric patients is being documented in kilograms.

The denominator for Pediatrics-03 includes EMS responses for patients less than 18 years of age who receive a weight-based medication during the EMS response. The TEP discussed this inclusion criteria at great length, even considering developing a measure that would assess documentation of weight in kilograms for all pediatric patients, regardless if a weight-based medication was administered. However, after much discussion, it was determined to leave weight-based medication in the inclusion criteria so the true intent of the measure, which is to reduce medication errors, will not get lost. During the re-specification project, the inclusion criteria was also expanded so EMS responses for patients up to 18 years of age are measured, rather than limiting it to patients less than 15 years of age. The decision to expand the age range of the inclusion criteria was made to ensure the process of documenting weight in kilograms is encouraged for all pediatric patients.

The numerator for Pediatrics-03 was not changed during the measure re-specification project. EMS professionals can meet the performance for Pediatrics-03 in one of two ways – documenting the patient weight in kilograms or documenting a length-based weight.

Pediatric patients make up approximately 5-10% of patients taken care of by EMS. Critical pediatric patients make up < 1 percent of these patients. The accurate dosing of many medications to pediatric patients requires calculation based on the patient's weight in kilograms. In these rare high stress situations, the likelihood of making a medication error on a pediatric patient is high even when the weight is measured and documented appropriately. Measuring this specific population will drive regions/systems to consider how they are performing this critical task and how they can improve. This will, in turn, lead to an EMS system that will have higher likelihood of providing the correct dose to a patient thereby improving the safety of medication administration.

Seizure-02: Patient with Status Epilepticus Receiving Intervention

EMS is commonly faced with caring for patients with status epilepticus. The published rationale and guidelines support this measure – patients experiencing status epilepticus utilize EMS for care and the efficacy of treatments (e.g., benzodiazepines) is evident. There is also strong evidence that earlier treatment of status epilepticus results in improved patient outcomes. With the current evidence and guidelines, Seizure-02 remains in the EMS Compass 2.0 Measure Set, with the intent of measuring whether or not patients with status epilepticus are receiving benzodiazepines.

During the re-specification project, no substantive changes were made to the denominator of Seizure-02. The denominator remains EMS response for patients with a primary or secondary impression of status epilepticus. However, the TEP did remove the definition of status epilepticus from the measure denominator. After much discussion, the TEP decided that limiting the condition of “status epilepticus” to a specific definition would incidentally exclude a large number of patients who meet the intent of the measure. The intent being treatment of patient with active seizures while in the care of the EMS professional. The final decision was to remove the measure definition and to allow each EMS provider (or agency) to determine if the patient they are treating is experiencing status epilepticus, either by following their own agency’s guidelines or using their own assessment skills.

The specifications for the numerator for Seizure-02 have been narrowed down to include only benzodiazepines as an intervention at terminating a patient’s status seizure. This does not change the intent of the original EMS Compass candidate measure, but rather makes the measure more specific, focusing on one, evidence-based clinical process, rather than leaving it open-ended for interpretation.

EMS systems have the opportunity to provide well evidenced benefit to patients by initiating prehospital treatment of status epilepticus. EMS agencies and systems can use this measure to establish how often they are providing this potentially lifesaving therapy. If variability in care or areas for improvement are identified quality improvement efforts can be targeted for this group of patients.

Stroke-01: Suspected Stroke Receiving Prehospital Stroke Assessment

Because stroke is such a significant public health problem, and timing of treatment is so important to achieve better patient outcomes, the TEP felt strongly that Stroke-01 has value to the EMS Community. While the direction of published evidence can vary for prehospital stroke scales, it is widely understood that stroke assessments are helpful tools in helping identify patients with stroke and determining which facilities are most appropriate for their transport. The intent of this measure is to determine how many suspected stroke patients are receiving prehospital stroke assessments (and having the assessment documented), on scene during the EMS encounter.

No changes were made to the denominator of Stroke-01 during the re-specification project. The TEP determined that the denominator used in the original candidate measure is appropriate. However, a denominator exclusion was added to the measure – patients who are unresponsive and unable to participate in the assessment. For the purposes of this measure, patients who are unresponsive will be excluded and not be counted in the measure calculation, since they are not able to participate in the stroke assessment.

The numerator for this measure includes EMS responses for patients who had a stroke assessment performed on scene during the EMS response. The addition of *on scene* to the numerator ensures that the stroke assessment was conducted during the EMS response and by the EMS professional, which protects the intent of the measure. During the project, the TEP discussed limiting the stroke assessments to certain types, such as CPSS or LAMS; however, the experts decided against limiting to specific assessment types, as the intent of the measure is to determine if any stroke assessment was performed.

As Stroke Systems of Care become more robust across the country and EMS becomes an increasingly important partner in identifying stroke, this measure will support a key task of prehospital providers in the care of stroke patients – making the diagnosis and key transport decisions.

Trauma-01: Pain Assessment of Injured Patients

EMS has a role in assisting with pain management and it is important that pain is assessed and documented. There is evidence of variability in how often pain is assessed and treated by EM professionals. The intent of this measure is to determine if pain is assessed (and documented) for injured patients who are transported by EMS.

The most substantive change made to the denominator during the re-specification process was the change from EMS responses to EMS **transports**. This change was made to ensure the accurate population of patients is being measured. During the measure testing phase, when documented pain scale scores were measured for EMS responses, the measure scores were significantly lower than anticipated. However, when the inclusion criteria were changed to transports, the scores were more in line with expectations. The rationale behind this change is many injured patients involved in motor vehicle crashes refuse transport or care by EMS. Since these patients are still part of the inclusion criteria for EMS responses for injured patients, the measure score was being driven down. The change to transports will allow the EMS community to better understand their individual and agency performance for this measure. Additionally, the TEP decided to limit the denominator to patients with a **GCS of 15** or an **A on the AVPU scale**, to ensure only patients who are fully alert and conscious are being included in the denominator.

The numerator for Trauma-01 includes patients with any pain scale value documented during the EMS encounter. This numerator mirrors that of the original EMS Compass candidate measure of Trauma-01.

Assessment and treatment of pain in the prehospital environment is an opportunity for EMS to impact an outcome that is highly valued by patients (relief of pain). Published evidence demonstrates that there is wide variability and opportunities for improvement in this area. EMS systems or agencies can use this measure to assess how they are performing and identify areas for quality improvement efforts.

Trauma-03: Effectiveness of Pain Management for Injured Patients

Trauma-03, an outcome measure, measures the effectiveness of pain management for injured patients who are transported by EMS. The published evidence supporting this measure is similar to that of Trauma-01, as EMS often treats patients with pain and there are many clinical indicators for pain management. The intent of this measure is to determine if pain is being reduced for EMS patients during the EMS encounter. However, for this measure, the TEP feels it is important to note that there are alternative pain management methods to the administration of drugs, and drug administration should be used judiciously. The true intent of this measure is to determine if EMS providers are helping their injured patients feel better, not if they are administering opioids to their patients.

Similar to Trauma-01, the initial inclusion criteria for Trauma-03 was changed to EMS **transports** rather than EMS responses, to ensure the accurate initial population is being captured to protect the true intent of the measure – which is to measure how well EMS is helping injured patients who are in pain feel better. As for the threshold for the initial pain scale score, it remains at **greater than zero**. Much discussion took place among TEP members when it came to decide upon this initial pain score value. However, in the end, the experts decided that the initial value should be any score greater than zero, because, again, the intent of the measure is to measure how well EMS is helping injured patients who are in pain feel better, not to measure the effectiveness of opioid administration or other medication-related outcomes.

While the intent of the numerator for Trauma-03 has not been changed, the language has been revised for clarity. The numerator for this measure includes EMS transports for patients with two or more documented pain scores and a final pain score value less than the first documented pain score. In order to determine if the clinical outcome for this measure has been met, a calculation must be completed.

Trauma-04: Trauma Patients Transported to the Trauma Center

Trauma-04 was designed using CDC guidelines for Field Triage of Trauma Patients. Along with the CDC guidelines, published literature clearly supports this measure, as patients who receive appropriate trauma care often have better outcomes. As this measure was being re-specified, the TEP discussed many concerns with the pragmatic implementation of this measure – including the availability of trauma centers in rural communities and whether the measure should focus on transporting patients to the appropriate level of trauma center. While there are many possible variations and stratifications of this measure, the TEP ultimately decided to stay with the intent of the original EMS Compass candidate measure, which is measuring if patients with trauma are being transported to a trauma center.

During the re-specification process, the TEP closely reviewed the CDC Guidelines for Field Triage, which were used to build the denominator for this measure. Originally, in the EMS Compass candidate measures, Step 1, 2, and 3 criteria were part of the denominator inclusion criteria. But, after reviewing the guidelines again, the TEP decided to remove Step 3 from the denominator for the re-specified measure, as Steps 1 and 2 identify the most seriously injured patients. The experts determined that limiting the denominator to **Steps 1 and 2** will satisfy the intent of the measure without running the risk of over transporting patients to trauma centers who may not need the care of such a facility.

As stated above, much discussion was had about the numerator of Trauma-04. While everyone on the TEP agreed that transporting a trauma center is the best course of treatment for certain patients, it was noted that trauma centers are not always available or well-defined. The TEP discussed many different options for the numerator for Trauma-04, including transporting patient with trauma to the nearest hospital and transporting patients to a specific level of trauma center. However, the final measure has been specified to require the patient to be transported to a trauma center.

The TEP understands concerns about limited access to trauma centers in certain communities and concerns that some hospitals labeled as trauma centers may not be as equipped as others. But, as measurement is used to drive change, the TEP hopes data collected from Trauma-04 will help drive change in the availability and standards of trauma centers across the nation.

Safety-01 – Safety-02: Use of Lights and Sirens During Response/Transport

Safety-01 Safety-02 focus on the judicious use of lights and sirens during response to scene (Safety-01) and during patient transport (Safety-02). These measures may have the strongest evidence any measure in the EMS Compass 2.0 Measure Set. There are strong guidelines and published studies that support the limited use of lights and sirens to protect not only the public but also EMS providers and patients from potential danger, as a consequence of lights and sirens use. The intent of these two measures is to determine how often EMS professionals are not using lights and sirens during response and transport.

The denominator for these measures is the total number of EMS responses/transports originating from a 911 request. The TEP decided not to add denominator exclusions to these measures, as even though there may be times where an EMS provider is responding to a high-risk emergency or transporting a high-acuity patient, the principle this measure was built upon is, *Above All Do No Harm*, and in order to uphold this principle and the intent of the measures, lights and sirens usage on all EMS responses and transports will be measured.

The numerator for both Safety-01 and Safety-02 was changed during the measure re-specification process. The original measures released as part of the candidate EMS Compass measure set were inverse measures, meaning lower measure scores indicated better quality. However, to eliminate confusion of the measure score interpretation, the TEP decided to change the measures to standard scoring, where higher scores will indicate better quality. This means the numerator for both Safety-01 and Safety-02 measure the process in which lights and sirens were **not** used.

The TEP understands the use of lights and sirens is often governed by state or local agency protocols. However, quality measures are built upon published guidance and



rationale and the intent is to drive change. While individual EMS providers may still have to follow written protocols, NEMSQA and the TEP hopes that these quality measures will help drive change at the state and local levels, so protocols that are more in-line with the guidelines and evidence for lights and sirens use can be developed.