

National EMS Quality Alliance

2021 Asthma-01 Measure Package

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National EMS Quality Alliance

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 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 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:¹</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

NEMESIS 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	((Situation.11 Provider’s Primary Impression matches /^(J45) (J98.01\$)/ ("Asthma..." or "Acute Bronchospasm") or Situation.12 Provider’s Secondary Impressions matches /^(J45) (J98.01\$)/ ("Asthma..." or "Acute Bronchospasm")) and eResponse.05 Type of Service Requested is (2205001 ("Emergency Response (Primary Response Area)"), 22205003 ("Emergency Response (Intercept)"), 2205009 ("Emergency Response (Mutual Aid)")))
Denominator	Population 1: Equals Initial Population Population 2: (Initial Population and (ePatient.15 Age is greater than or equal to 18 and ePatient.16 Age Units is 2516009 ("Years"))) 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 (

	<p>ePatient.15 Age is greater than or equal to 24 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 (435 ("Albuterol"), 7688 ("metaproterenol"), 214199 ("Albuterol/Ipratropium"), 237159 ("Levalbuterol"), 487066 ("levalbuterol tartrate"), 1154062 ("Albuterol Inhalant Product"), 1163444 ("Levalbuterol Inhalant Product"), 1649559 ("Albuterol Dry Powder Inhaler"), 1165719 ("metaproterenol Inhalant Product"), 2108209 ("Levalbuterol Inhalation Solution"), 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 Emrg 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.