### Rescue seizure therapy for children with epilepsy

<table>
<thead>
<tr>
<th>Measure Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of patients who received appropriate and correctly dosed rescue seizure therapy for children with epilepsy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measure Components</th>
<th></th>
</tr>
</thead>
</table>
| **Numerator** | Patients who receive or have received a prescription for an appropriately dosed* rescue seizure therapy (i.e., midazolam, diazepam) in the pre-hospital^ setting.  
  
  *Appropriate dose recommendations:1,2,3,4,5,6,7,8,9
  
  - Intranasal, buccal, or IM midazolam:  
    - all ages: 0.1 to 0.4 mg/kg/dose (maximum 10 mg)  
  
  - Rectal Diazepam:  
    - 6 months – 5 years: 0.5 mg/kg/dose;  
    - 6-11 years: 0.3 mg/kg/dose;  
    - > 12 years: 0.2 mg/kg/dose (maximum 20 mg)  
  
  ^Pre-hospital setting means outside of the emergency department (ED) and hospital (i.e. ambulance, home, school, etc.). Please note, currently no FDA approved treatment for prolonged seizures in the prehospital setting exist and recommendations are for clinical standard and accepted practice use. |  |
| **Denominator** | Patients aged 6 months and older with documented prolonged convulsive^ seizure ≥ 5 minutes  
  
  ^Convulsive is defined as: Tonic, clonic, tonic-clonic, myoclonic |  |
| **Denominator Exceptions** |  
  
  - Patient contraindication documented for all abortive medications  
  
  - Patient/caregiver refuse  
  
  - IV access established  
  
  - Undocumented seizure duration recorded  
  
  - Documentation that supports patients have self-resolving seizures that last more than five minutes |  |
| **Exception Justification** | If a patient has a contraindication, such as an allergy, then they should be excluded due to risk of harm. A patient or caregiver should be allowed to refuse a treatment. As IV access is an acceptable route, it can be utilized and the measure as written would not apply. For patients where the seizure duration is unknown, it would be difficult to assess when the abortive medication should be given. Certain patients will have prolonged seizures self-abort. The intent of an abortive medication is to stop a seizure that otherwise would not stop. Therefore, it may not be needed for all seizures greater than five minutes if it is documented that the patient has seizures that self-abort after five minutes. |  |
| **Supporting Guideline & Other References** | The following statements are quoted verbatim from the referenced supporting articles:  
  
  - [In the EMS setting] “We recommend that prehospital protocols for seizure management in children utilize alternative (non-IV) routes of drug  
  
  treatment.” |  |
administration as first-line therapy for treating children with status epilepticus”¹⁰

- [In the EMS setting] “We recommend buccal midazolam over rectal (PR) diazepam for prehospital seizure cessation and control”¹⁰
- [In the EMS setting] “We recommend IM midazolam over PR diazepam for prehospital seizure cessation and control”¹⁰
- [In the EMS setting] “We suggest intranasal (IN) midazolam over PR diazepam for prehospital seizure cessation and control”¹⁰
- [In the EMS setting] “We suggest that in children with convulsive status epilepticus requiring medication management in the prehospital setting, trained prehospital personnel should be allowed to administer medication without online medical direction”¹⁰
- “While most families have an emergency seizure rescue plan in place, knowledge gaps exist. Nearly half of responders provided could not correctly verbalize how to administer rescue medication and nearly half were not aware of respiratory depression as a side effect. A standardized training program by nursing, with regular reviews at clinic visits is needed to improve parental proficiency in the home management of acute seizures”¹¹
- “Of the 32 children who presented in the community, 19 (59%) had evidence that they had been given rescue medication prior to arrival at hospital. This confirms previous reports that appropriate and timely treatment is not being administered in many cases of prolonged seizure”¹²
- “Most existing guidelines do not provide practical recommendations to caregivers in out-of-hospital settings on the administration of rescue medication. Filling this gap is critical to ensure that children at risk of prolonged acute convulsive seizures receive their rescue medication quickly and safely regardless of where their seizure occurs, thereby avoiding unnecessary treatment delays, clinical sequelae and costly admission to hospital”¹³
- “Published data support the efficacy and safety of nonintravenous routes of administration for midazolam, when compared to diazepam administered via any route in treating patients with status epilepticus, in the doses studied. Midazolam has characteristics that may make it an optimal choice for the treatment of seizing patients”¹⁴
- “There is a perceived need for alternative administration methods that offer fast onset of effect and rapid and convenient administration for different populations with varying needs/preferences. Mounting evidence supports multiple safe and effective alternative routes of BDZ administration for rapid treatment of seizures in children with adults”¹⁵
- “Based on our results, many of the visits of patients to the ED or hospital could have been possibly prevented with appropriate doses of an emergency seizure medication”¹⁶

<table>
<thead>
<tr>
<th>Measure Importance</th>
<th>Relationship to Desired Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is anticipated that by increasing the number of patients who have abortive medications available when needed will decrease healthcare utilization and decrease episodes of treatment resistant seizures (status epilepticus).¹⁰,¹⁶</td>
<td></td>
</tr>
<tr>
<td>Opportunity for Improvement</td>
<td>A study of high utilizers of ED care for seizures had not been prescribed an abortive medication for prolonged convulsive seizures.17</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| National Quality Strategy Domains | ☐ Patient and Family Engagement  
☐ Patient Safety  
☐ Care Coordination  
☐ Population/Public Health  
☒ Efficient Use of Healthcare Resources  
☐ Clinical Process/Effectiveness |
| Harmonization with Existing Measures | N/A |
| Measure Designation | ☒ Quality improvement  
☒ Accountability |
| Type of Measure (Check all that apply) | ☒ Process  
☐ Outcome  
☐ Structure |
| Level of Measurement (Check all that apply) | ☒ Individual Provider  
☒ Practice  
☐ System |
| Care Setting (Check all that apply) | ☒ Outpatient  
☒ Inpatient  
☒ Emergency Departments and Urgent Care  
☒ Residential (i.e., nursing facility, domiciliary, home care) |
| Data Source (Check all that apply) | ☒ Electronic health record (EHR) data  
☑ Administrative Data/Claims  
☒ Patient Medical Record  
☒ Registry |
17. Patel A. Variables associated with emergency department and/or unplanned hospital utilization for children with epilepsy. Epilepsy & Behavior 2014; 31:172-175.

<table>
<thead>
<tr>
<th>Denominator (Eligible Population)</th>
<th>ICD-10 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R56.8 Seizures (otherwise unspecified)</td>
</tr>
<tr>
<td></td>
<td>G40.xx Epilepsy (otherwise unspecified)</td>
</tr>
</tbody>
</table>

AND

CPT E/M Service Code

- **99221, 99222, 99223** Initial hospital care 30, 50, or 70 minutes, per day, for the evaluation and management of a patient;
- **99231, 99232, 99233** Subsequent hospital care 15, 25, or 35 minutes, per day, for the evaluation and management of a patient

- **99201, 99202, 99203, 99204, 99205** Office or other outpatient visit 10, 20, 30, 45, or 60 minutes for the evaluation and management of a new patient;
- **99211, 99212, 99213, 99214, 99215** Office or other outpatient visit 5, 10, 15, 25, or 40 minutes for the evaluation and management of an established patient