

Overuse of Imaging

Measure 9: Overuse of Computed Tomography Scans for the Evaluation of Children with a First Generalized Afebrile, Atraumatic Seizure

Description

This measure assesses the percentage of children, 1 through 17 years old, for whom computed tomography (CT) imaging of the head is obtained for the evaluation of a first generalized afebrile, atraumatic seizure without indication for CT imaging, including status epilepticus, signs of increased intracranial pressure, notably different mental state compared with prior exams, or an abnormal neurologic exam. A lower percentage indicates better performance, as reflected by avoiding CT imaging when it is not indicated.

Calculation

This measure requires administrative and medical record data and is calculated as follows:

The percentage of eligible children ages 1 through 17 years old for whom CT imaging of the head is obtained for the evaluation of a first generalized afebrile, atraumatic seizure without indication for CT imaging.

Eligible Population

The determination of the eligible population for this measure requires administrative and medical record data.

Ages	Children at least 1 year old on January 1 of the measurement year but younger than 18 years on December 31 of the measurement year.
Enrollment	Continuous enrollment during both the measurement year and the year prior to the measurement year. Children younger than 2 years old during the measurement year must be continuously enrolled from birth through the end of the measurement year.
Event/Diagnosis	CT imaging study of the head (IMG1) for generalized seizure or convulsions (IMG2) occurring on the day of or up to 30 days prior to imaging, in the absence of a fever (ICD-9 code 780.6x or temperature greater than 100.4 degrees Fahrenheit) or trauma (IMG9 and E-codes). (Note, IMG tables begin on page 51.)

Specification

Denominator	The number of eligible children for whom CT imaging of the head is obtained for the evaluation of a first generalized afebrile, atraumatic seizure.
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Numerator

The number of eligible children for whom CT imaging of the head is obtained for the evaluation of a first generalized afebrile, atraumatic seizure without indication for CT imaging.

Exclusions

- **Denominator Exclusions**

- Exclusions based on ICD-9-CM codes captured in administrative claims data:
 - Partial seizure (IMG2) on the day of or within the 365 days before imaging was obtained
 - Fever (by ICD-9 codes 780.6x) on the day of or day before imaging was obtained
 - Complex febrile seizure (IMG2) on the day of or within the 365 days before the first generalized afebrile, atraumatic seizure in the measurement year
 - Post-traumatic seizure (ICD-9 code 780.33 in IMG2) on the day of or day before imaging was obtained
 - Suspected abuse and neglect or other head trauma (IMG9 or the presence of an E-code in claims data) on the day of or within 7 days before imaging was obtained
 - ICD-9 codes 783.40 (lack of expected normal physiological development) or 783.42 (delayed milestones) on the day of or within the 365 days before the first generalized afebrile, atraumatic seizure in the measurement year
 - Other pre-existing conditions that would warrant imaging (IMG5-IMG8) on the day of or within 365 days before imaging was obtained
 - Infections that would warrant imaging on the day of or within the 365 days before the atraumatic seizure (IMG4)
 - Lumbar puncture (IMG10) on the day of or day after imaging was obtained
 - Imaging study obtained on the day of or within the 180 days following neurosurgical intervention (IMG10)
- Exclusions based on clinical documentation:
 - Partial seizures
 - Fever
 - Complex febrile seizures
 - Post-traumatic seizure
 - Trauma such as skull fracture, concussion, intracranial hemorrhage and suspected abuse
 - Developmental delay, lack of expected normal physiological development or delayed milestone
 - Pre-existing conditions that would warrant imaging, such as neoplasm and blood disorder, hydrocephalus and CNS anomalies, hemangioma, phlebitis/thrombophlebitis, occlusion of cerebral arteries, moyamoya disease, tumor, hemorrhage, or tuberous sclerosis
 - Infection such as meningitis, brain abscess, HIV, and encephalitis

- Lumbar puncture
- Imaging as part of surgical evaluation for seizure management (pre-operative or post-operative) on the day of or within the 30 days prior to the generalized afebrile, atraumatic seizure
- Neurological surgery

- **Numerator Exclusions**

- Exclusions based on clinical documentation:
 - Status epilepticus
 - Signs or symptoms of increased intracranial pressure
 - Notably different mental state when compared with the child's own prior exams (Key words and phrases that might be mentioned in the medical record during the visit [same date/up to 30 days prior] where imaging was obtained include 'not as attentive,' 'more easily distracted,' 'slower to respond,' 'glassy-eyed,' etc. Note that children should be compared with their own baseline and not to appropriate norms based on age and sex.)
 - An abnormal neurologic exam between the time of diagnosis and the time of imaging (Indications of an abnormal neurologic exam include references to alertness, facial and extremity muscle movements, sensation, etc.).