

**Measure #419: Overuse Of Neuroimaging For Patients With Primary Headache And A Normal Neurological Examination – National Quality Strategy Domain: Efficiency and Cost Reduction**

**2017 OPTIONS FOR INDIVIDUAL MEASURES:**  
**CLAIMS ONLY**

**MEASURE TYPE:**  
Efficiency

**DESCRIPTION:**  
Percentage of patients with a diagnosis of primary headache disorder whom advanced brain imaging was not ordered

**INSTRUCTIONS:**  
This measure is to be reported at **each denominator eligible visit** for patients with a diagnosis of primary headache during the **performance period**. This measure may be reported by eligible clinicians who perform the quality actions described in the measure based on the services provided and the measure-specific denominator coding.

**Measure Reporting:**  
The listed denominator criteria is used to identify the intended patient population. The numerator quality-data codes included in this specification are used to submit the quality actions allowed by the measure. All measure-specific coding should be reported on the claim(s) representing the eligible encounter.

**DENOMINATOR:**  
All patients with a diagnosis of primary headache

**Denominator Criteria (Eligible Cases):**

All patients, regardless of age

**AND**

**Diagnosis for Primary Headache (ICD-10-CM):** G43.001, G43.009, G43.011, G43.019, G43.101, G43.109, G43.111, G43.119, G43.401, G43.409, G43.411, G43.419, G43.501, G43.509, G43.511, G43.519, G43.701, G43.709, G43.711, G43.B0, G43.B1, G43.C0, G43.C1, G43.801, G43.809, G43.811, G43.819, G43.901, G43.909, G43.911, G43.919, G44.001, G44.009, G44.011, G44.019, G44.021, G44.029, G44.031, G44.039, G44.041, G44.049, G44.051, G44.059, G44.091, G44.099, G44.1, G44.201, G44.209, G44.211, G44.219, G44.221, G44.229, G44.51, G44.52, G44.53, G44.59, G44.81, G44.83, G44.84, G44.85, G44.89

**AND**

**Patient encounter during the performance period (CPT):** 99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215, 99281, 99282, 99283, 99284, 99285, 99304, 99305, 99306, 99307, 99308, 99309, 99310, 99324, 99325, 99326, 99327, 99328, 99334, 99335, 99336, 99337, 99341, 99342, 99343, 99344, 99345, 99347, 99348, 99349, 99350

**WITHOUT**

Telehealth Modifier: GQ, GT

**NUMERATOR:**  
Patients with a normal neurological examination for whom advanced brain imaging Computed Tomography Angiography (CTA), Computed Tomography (CT), Magnetic Resonance Angiography (MRA), or Magnetic Resonance Imaging (MRI) was NOT ordered

**Definition:**

**Normal Neurological Examination** - Absence of signs of increased intracranial pressure (e.g., papilledema, absent venous pulsations on funduscopic examination, altered cognition), focal neurologic deficits, ataxia, pathologic neurologic reflexes (e.g., Babinski sign, clonus), signs of meningeal irritation

**Numerator Quality-Data Coding Options:**

**Patients with Primary Headache diagnosis and Advanced Brain Imaging not Performed**

*(Two G-codes [G9534 & G9535] are required on the claim form to submit this numerator option)*

**Performance Met: G9534:**

Advanced brain imaging (CTA, CT, MRA or MRI) was NOT ordered

**AND**

**G9535:**

Patients with a normal neurological examination

**OR**

**Patients with Primary Headache diagnosis and Advanced Brain Imaging Performed for Medical Reasons**

*(One G-code [G9536] is required on the claim form to submit this numerator option)*

**Denominator Exception: G9536:**

Documentation of Medical reason(s) for ordering an advanced brain imaging study (i.e., patient has an abnormal neurological examination; patient has the coexistence of seizures, or both; recent onset of severe headache; change in the type of headache; signs of increased intracranial pressure (e.g., papilledema, absent venous pulsations on funduscopic examination, altered mental status, focal neurologic deficits, signs of meningeal irritation); HIV-positive patients with a new type of headache; immunocompromised patient with unexplained headache symptoms; patient on coagulopathy/anti-coagulation or anti-platelet therapy; very young patients with unexplained headache symptoms)

**OR**

**Patients with Primary Headache diagnosis and Advanced Brain Imaging Performed for System Reasons**

*(One G-code [G9537] is required on the claim form to submit this numerator option)*

**Denominator Exception: G9537:**

Documentation of System reason(s) for ordering an advanced brain imaging study (i.e., needed as part of a clinical trial; other clinician ordered the study)

**OR**

**Patients with Primary Headache diagnosis and Advanced Brain Imaging Performed, Reason not given**

*(Two G-codes [G9538 & G9535] are required on the claim form to submit this numerator option)*

**Performance Not Met: G9538:**

Advanced brain imaging (CTA, CT, MRA or MRI) was ordered

**AND**

**G9535:**

Patients with a normal neurological examination

**RATIONALE:**

Imaging headache patients absent specific risk factors for structural disease is not likely to change management or improve outcome. Those patients with a significant likelihood of structural disease requiring immediate attention are detected by clinical screens that have been validated in many settings. Many studies and clinical practice guidelines concur. Also, incidental findings lead to additional medical procedures and expense that do not improve patient well-being.

Overuse of neuroimaging in pediatric patients was reported over a 13-year study period ranging from 41-47%<sup>2</sup> in a study by Graf, et al. Combining the results of the previous eight studies performed in children with recurrent headaches (7 in clinic-based population, 1 in children referred for neuroimaging), neuroimaging was undertaken in 38.1% of the study populations (1,072/2,815; range 17.5–100%).

You, et al. determined the indications for CT and MRI in Ontario. They studied 11,824 CT and 11,867 MRI scans from a

random sample of 40 hospitals in Ontario. Hospital sampling was stratified by region and hospital teaching status. The publication reports that of the 11,824 CT scans completed, 3,930 (33%) were of the head and 1,055 (26.8%) of these were for the indication of headache. Because the CT scans were done for more than one indication the actual proportion of CT scans done solely for the purpose of headache was 16%. Similarly, 4,038 (34%) of all MRI scans were head scans of which 523 (13%) were for the indication of headache. However, similar to CT scans, the MRI scans were requested for multiple indications and the actual proportion of MRI scans done solely for the purpose of headache was estimated to be 4%. (Unpublished data, personal communication with author, April 29, 2010)

Information concerning the workup of headache in the ambulatory setting is limited. In actual practice, only about 3% of patients who present with a new headache in the office setting have neuroimaging ordered.<sup>6</sup> When neuroimaging is performed, about 4% of CT scans find a significant and treatable lesion (in one sample of 293 CT scans, there were 12 true-positive scans and 2 false-positive scans).<sup>7</sup> Expert guidelines regarding headaches among ambulatory patients recommend neuroimaging for migraine patients only in the presence of persistent focal abnormal neurological findings.

### **Opportunity for Improvement**

There is a marked need to reduce the unnecessary use of neuroimaging for atraumatic primary headache disorders. This measure is intended to reduce the use of these unnecessary tests, reduce treatment costs, and improve patient safety by reducing the exposure to unnecessary radiation and testing.

### **CLINICAL RECOMMENDATION STATEMENTS:**

Neuroimaging recurrent headache: Obtaining a neuroimaging study on a routine basis is not indicated in children with recurrent headaches and a normal neurologic examination. (Level B)

Neuroimaging is not usually warranted for patients with migraine and normal neurological examination. (Level B)

Neuroimaging is not indicated in patients with a clear history of migraine, without red flag features for potential secondary headache, and a normal neurological examination. (Level D)\* Only included because it supports neuroimaging overuse in normal exam patients with migraine. But low level evidence; \*deemed by guideline group to be one of the most clinically important recommendation.

Do not refer people diagnosed with TTH, migraine, CH or medication overuse headache (MOH) for neuroimaging solely for reassurance.

In adult and pediatric patients with migraine, with no recent change in pattern, no history of seizures, and no other focal neurological signs or symptoms, the routine use of neuroimaging is not warranted. (Grade B)

ACR Appropriateness Criteria (2009): MRA head with or without contrast (2-Usually NOT appropriate for chronic headache-No New Features); CTA with contrast (Usually not appropriate for chronic headache, No New Features)

Don't do imaging for uncomplicated headache.

The US Headache Consortium identified three consensus-based (not evidence-based) general principles of management for making decisions regarding neuroimaging in patients with headache: 1) testing should be avoided if it will not lead to a change in management; 2) testing is not recommended if the patient is not significantly more likely than anyone else in the general population to have a significant abnormality; and 3) testing that normally may not be recommended as a population policy may make sense at an individual level, resources notwithstanding.

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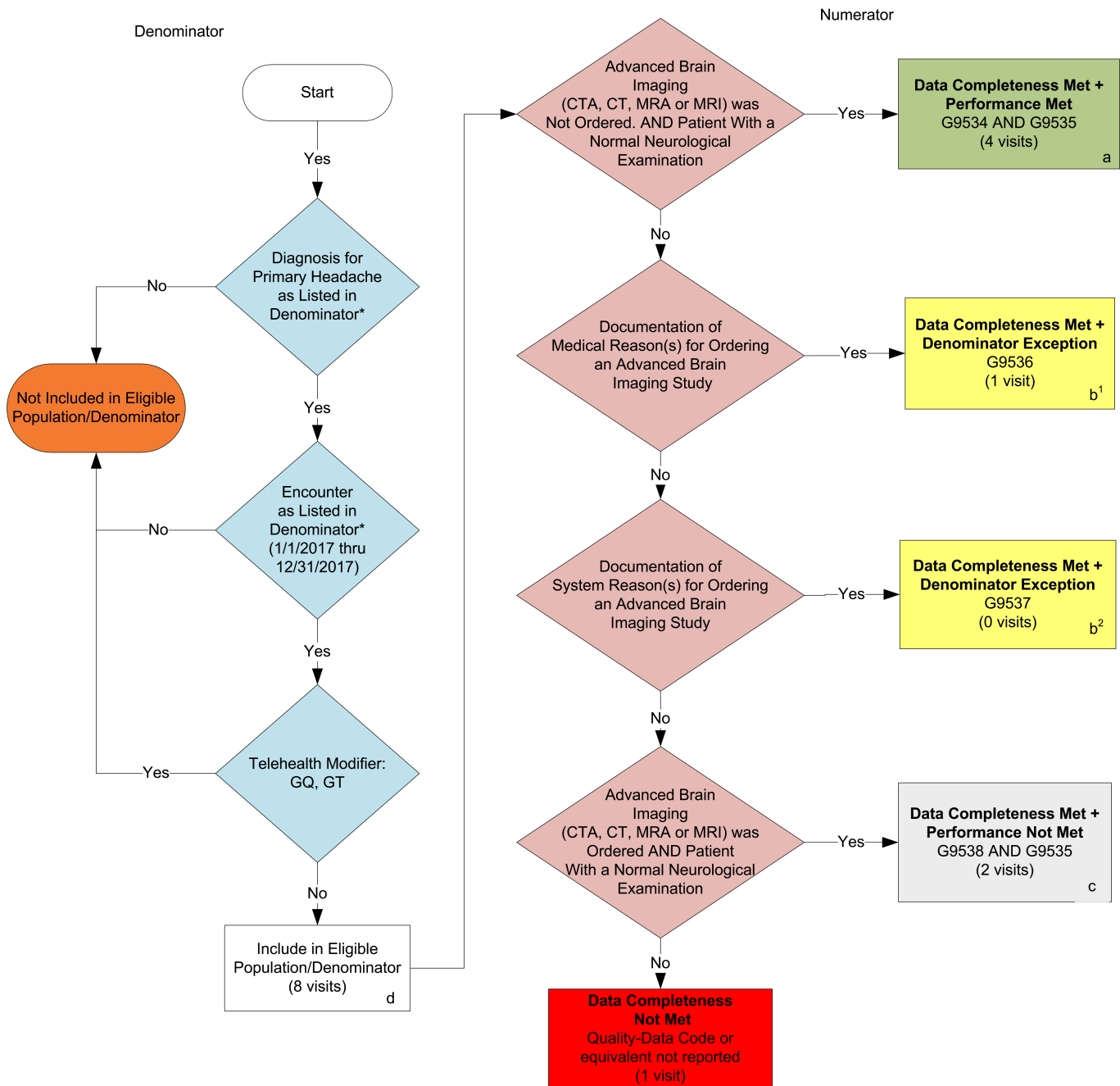
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## 2017 Claims Individual Measure Flow

### #419: Overuse Of Neuroimaging For Patients With Primary Headache And A Normal Neurological Examination



#### SAMPLE CALCULATIONS:

##### Data Completeness=

Performance Met (a=4 visits) + Denominator Exception (b¹+b²=1 visit) + Performance Not Met (c=2 visits) = 7 visits = 87.50%  
 Eligible Population / Denominator (d=8 visits) = 8 visits

##### Performance Rate=

Performance Met (a=4 visits) = 4 visits = 66.67%  
 Data Completeness Numerator (7 visits) – Denominator Exception (b¹+b²=1 visit) = 6 visits

\*See the posted Measure Specification for specific coding and instructions to report this measure.

NOTE: Reporting Frequency: Visit

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 The measure diagrams were developed by CMS as a supplemental resource to be used in conjunction with the measure specifications. They should not be used alone or as a substitution for the measure specification.

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## 2017 Claims Individual Measure Flow

### #419: Overuse Of Neuroimaging For Patients With Primary Headache And A Normal Neurological Examination

Please refer to the specific section of the Measure Specification to identify the denominator and numerator information for use in reporting this Individual Measure.

1. Start with Denominator
2. Check Patient Diagnosis:
  - a. If Diagnosis for Primary Headache as Listed in the Denominator equals No, do not include in Eligible Patient Population. Stop Processing.
  - b. If Diagnosis for Primary Headache as Listed in the Denominator equals Yes, proceed to check Current Encounter Performed.
3. Check Encounter Performed:
  - a. If Encounter as Listed in the Denominator equals No, do not include in Eligible Patient Population. Stop Processing.
  - b. If Encounter as Listed in the Denominator equals Yes, proceed to check Telehealth Modifier.
4. Check Telehealth Modifier:
  - a. If Telehealth Modifier equals Yes, do not include in Eligible Patient Population. Stop Processing.
  - b. If Telehealth Modifier equals No, include in the Eligible Population.
5. Denominator Population:
  - a. Denominator population is all Eligible Patients in the denominator. Denominator is represented as Denominator in the Sample Calculation listed at the end of this document. Letter d equals 8 visits in the sample calculation.
6. Start Numerator
7. Check Advanced Brain Imaging (CTA, CT, MRA or MRI) was Not Ordered AND Patient With a Normal Neurological Examination AND Patient With a Normal Neurological Examination:
  - a. If Advanced Brain Imaging (CTA, CT, MRA or MRI) was Not Ordered AND Patient With a Normal Neurological Examination equals Yes, include in Data Completeness Met and Performance Met.
  - b. Data Completeness Met and Performance Met is represented in the Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter a equals 4 visits in Sample Calculation.
  - c. If Advanced Brain Imaging (CTA, CT, MRA or MRI) was Not Ordered AND Patient With a Normal Neurological Examination equals No, proceed to Documentation of Medical Reason(s) for Ordering an Advanced Brain Imaging Study.
8. Check Documentation of Medical Reason(s) for Ordering an Advanced Brain Imaging Study:

- a. If Documentation of Medical Reason(s) for Ordering an Advanced Brain Imaging Study equals Yes, include in Data Completeness Met and Denominator Exception.
  - b. Data Completeness Met and Denominator Exception is represented in the Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter b1 equals 1 visit in the Sample Calculation.
  - c. If Documentation of Medical Reason(s) for Ordering an Advanced Brain Imaging Study equals No, proceed to Documentation of System Reason(s) for Ordering an Advanced Brain Imaging Study.
9. Check Documentation of System Reason(s) for Ordering an Advanced Brain Imaging Study:
- a. If Documentation of System Reason(s) for Ordering an Advanced Brain Imaging Study equals Yes, include in Data Completeness Met and Denominator Exception.
  - b. Data Completeness Met and Denominator Exception is represented in the Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter b2 equals 0 visits in the Sample Calculation.
  - c. If Documentation of System Reason(s) for Ordering an Advanced Brain Imaging Study equals No, proceed to Advanced Brain Imaging (CTA, CT, MRA or MRI) was Ordered AND Patient With a Normal Neurological Examination.
10. Check Advanced Brain Imaging (CTA, CT, MRA or MRI) was Ordered AND Patient With a Normal Neurological Examination:
- a. If Advanced Brain Imaging (CTA, CT, MRA or MRI) was Ordered AND Patient With a Normal Neurological Examination equals Yes, include in Data Completeness Met and Performance Not Met.
  - b. Data Completeness Met and Performance Not Met is represented in the Data Completeness in the Sample Calculation listed at the end of this document. Letter c equals 2 visits in the Sample Calculation.
  - c. If Advanced Brain Imaging (CTA, CT, MRA or MRI) was Ordered AND Patient With a Normal Neurological Examination equals No, proceed to Data Completeness Not Met.
11. Check Data Completeness Not Met
- a. If Data Completeness Not Met equals No, Quality Data Code or equivalent not reported. 1 visit has been subtracted from the data completeness numerator in sample calculation.

#### **SAMPLE CALCULATIONS:**

##### **Data Completeness=**

$$\frac{\text{Performance Met (a=4 visits)} + \text{Denominator Exception (b}^1\text{+b}^2\text{=1 visit)} + \text{Performance Not Met (c=2 visits)}}{\text{Eligible Population / Denominator (d=8 visits)}} = \frac{7 \text{ visits}}{8 \text{ visits}} = 87.50\%$$

##### **Performance Rate=**

$$\frac{\text{Performance Met (a=4 visits)}}{\text{Data Completeness Numerator (7 visits) – Denominator Exception (b}^1\text{+b}^2\text{=1 visit)}} = \frac{4 \text{ visits}}{6 \text{ visits}} = 66.67\%$$