### Carotid Imaging Measure

<table>
<thead>
<tr>
<th><strong>Measure Description</strong></th>
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<tbody>
<tr>
<td>Percentage of patients aged 18 years and older with symptoms or a diagnosis of transient ischemic attack (TIA) or non-disabling ischemic stroke* receiving timely vascular imaging and carotid re-vascularization referral if appropriate.</td>
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<tr>
<th><strong>Measure Components</strong></th>
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<tr>
<td><strong>Numerator Statement</strong></td>
<td>Patients aged 18 years and older with symptoms or a diagnosis of transient ischemic attack (TIA) or non-disabling ischemic stroke* for whom cross sectional imaging of the cervical cerebral vasculature, which at a minimum includes imaging** of the carotid artery, was performed for patients within 24 hours of inpatient admission or for patients attending an outpatient visit within 2 days. For those patients identified as having symptomatic stenosis between &gt;=70% and &lt;100% based on the NASCET method, order for referral to carotid re-vascularization practice within 24 hours of imaging result availability. If stenosis is less than 70%, documentation of degree of stenosis fulfills this measure.</td>
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<tr>
<td><strong>Denominator Statement</strong></td>
<td>All patients aged 18 years and older with symptoms or a diagnosis of TIA or non-disabling ischemic stroke*</td>
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| **Denominator Exceptions** | • Documentation of posterior fossa localization  
• Patient not a surgical or interventional candidate  
• Patient has unstable medical condition or contraindication that prevents imaging (e.g., renal failure)  
• Patient declined/Left AMA |
| **Exception Justification** | Exceptions were needed to address patient populations that are inappropriate for surgical and interventional procedures, reducing the likelihood that unnecessary procedures would be performed. Additionally, exceptions were needed to address individuals who could not undergo imaging procedures or declined to undergo treatment. |
| **Supporting Guideline & Other References** | The following clinical recommendation statements are quoted verbatim from the referenced clinical guidelines and represent the evidence base for the measure: |
|  | • “Recommendations for Patients With Cerebral Ischemic Symptoms That Have Resolved:  
1. Noninvasive imaging of the cervical vessels should be performed routinely as part of the evaluation of patients with suspected TIAs (Class I; Level of Evidence A). (Unchanged from the 2009 TIA scientific statement)  
2. Noninvasive imaging by means of CTA or MRA of the intracranial vasculature is recommended to exclude the presence of proximal intracranial stenosis and/or occlusion (Class I; Level of Evidence A) and should be obtained when knowledge of intracranial stenoocclusive disease will alter management. Reliable diagnosis of the presence and degree of intracranial...
stenosis requires the performance of catheter angiography to confirm abnormalities detected with noninvasive testing. (Revised from the 2009 TIA scientific statement)

3. Patients with transient ischemic neurological symptoms should undergo neuroimaging evaluation within 24 hours of symptom onset or as soon as possible in patients with delayed presentations. MRI, including DWI, is the preferred brain diagnostic imaging modality. If MRI is not available, head CT should be performed (Class I; Level of Evidence B).”(1)

Relationship to Desired Outcome

Acute carotid revascularization for symptomatic stenosis greater than 70% is safe and effective and should be performed within 2 weeks of the patient’s last symptoms.(2) This modifiable risk factor for stroke predicts high frequency of adverse events soon after initial presentation. Evaluation and prompt referral encourages prompt effective treatment.

Opportunity for Improvement

About half of all recurrent strokes during the 7 days after a TIA occur in the first 24 hours and require emergency assessment including testing for pharmacological and interventional strategies.(3-5) Delays often occur due to lack of perceived urgency. System factors that impede early imaging and referral contribute, as well.(6)

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

Not Applicable

Measure Purpose (Check all that apply)

☒ 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)

☒ Emergency Departments
☒ Inpatient
☒ Outpatient
☐ Post-Acute Care

Data Source (Check all that apply)

☒ Electronic health record (EHR) data
☐ Administrative Data/Claims
☒ Chart Review
**Definitions for Carotid Imaging Measure**


*TIA or ischemic stroke – acute onset within 7 calendar days

**Imaging is defined as CTA, MRA or Duplex Doppler ultrasonography. This measure requires that the estimate of stenosis included in the report of the imaging study employ a method such as the North American Symptomatic Carotid Endarterectomy Trial (NASCET) method for calculating the degree of stenosis. The NASCET method calculates the degree of stenosis with reference to the lumen of the carotid artery distal to the stenosis.

For duplex imaging studies the reference is indirect, since the degree of stenosis is inferred from velocity parameters and cross referenced to published or self-generated correlations among velocity parameters and results of angiography or other imaging studies which serve as the gold standard. In Doppler ultrasound, the degree of stenosis can be estimated using Doppler parameter of the peak systolic velocity (PSV) of the internal carotid artery (ICA), with concordance of the degree of narrowing of the ICA lumen. Additional Doppler parameters of ICA-to-common carotid artery (CCA) PSV ratio and ICA end-diastolic velocity (EDV) can be used when degree of stenosis is uncertain from ICA PSV. Reference (Grant et al, Society of Radiologists in Ultrasound, 2003).

A short note can be made in the final report, such as:

- “Severe left ICA stenosis of 70-80% by NASCET criteria” or
- “Severe left ICA stenosis of 70-80% by criteria similar to NASCET” or
- “70% stenosis derived by comparing the narrowest segment with the distal luminal diameter as related to the reported measure of arterial narrowing” or

“Severe stenosis of 70-80% — validated velocity measurements with angiographic measurements, velocity criteria are extrapolated from diameter data as defined by the Society of Radiologists in Ultrasound Consensus Conference Radiology 2003; 229;340-346.”

**References**


