Local Coverage Determination (LCD):
Non-invasive Extracranial Arterial Studies (L33695)

Revision Number 4 missing from the Revision History table. Revision Number 4 provided in full context below:

Revision Number: 4
Publication: December 2016 Connection
LCR A/B2017-001

Explanation of Revision: Based on CR9752 (Annual 2017 HCPCS Update), the LCD was revised to delete CPT code 93965 in the “Indications and Limitations of Coverage and/or Medical Necessity” section under the subtitle "Limitations" and in the "Documentation Requirements" section of the LCD. The effective date of this revision is based on date of service.

Contractor Information

<table>
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<tr>
<th>Contractor Name</th>
<th>Contract Type</th>
<th>Contract Number</th>
<th>Jurisdiction</th>
<th>State(s)</th>
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LCD Information

Document Information

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<td>Non-invasive Extracranial Arterial Studies</td>
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Non-invasive tests for cerebrovascular arterial function document the nature, location, extent and severity of disease in extracranial and intracranial vessels including the carotid and vertebral arteries.

Non-invasive extracranial arterial studies involve the use of direct and occasionally indirect methods of ultrasound. The direct tests examine the anatomy and physiology of the carotid artery, while the indirect tests examine hemodynamic changes in the distal beds of the carotid artery (the orbital and cerebral circulations). It is important to note that the names of these tests are not standardized. Examples of acceptable tests include:

**Direct Tests:**
- Carotid Phonoangiography
- Direct Bruit Analysis
- Spectral Bruit Analysis
- Doppler Flow Velocity
- Ultrasound Imaging including Real Time
- B-Scan and Doppler Devices
Indirect Tests:

- **Periorbital directional Doppler ultrasonography**
- **Oculoplethysmography**
- **Ophthalmodynamometry**

Doppler ultrasonography is used to evaluate hemodynamic parameters, specifically the velocity of blood flow and the pattern or characteristics of flow. The doppler ultrasound involves the evaluation of the supraorbital, common carotid, external carotid, internal carotid, and the vertebral arteries in the extracranial cerebrovascular assessment.

The second key component of vascular diagnostic ultrasound is the B-mode, or brightness-mode image. This real-time imaging technique provides a two-dimensional gray-scale image of the soft tissues and vessels based on the acoustic properties of the tissues.

Duplex ultrasonography combines the direct visualization capabilities of B-mode ultrasonography and the blood-flow velocity measurements of doppler ultrasonography.

**Definitions:**

- A physiologic study implies functional measurement procedures including Doppler ultrasound studies, blood pressure measurements, transcutaneous oxygen tension measurements or plethysmography. A complete study includes pressure measurements and an additional physiologic technique (eg, Doppler waveforms or plethysmography).
- Plethysmography implies volume measurement procedures including air, impedance, or strain gauge methods.
- A duplex scan implies an ultrasonic scanning procedure with display of both two-dimensional structure and motion with time and Doppler ultrasonic signal documentation with spectral analysis and/or color flow velocity mapping or imaging.

**Indications:**

Non-invasive extracranial arterial studies will be considered medically reasonable and necessary under the following circumstances:

- To initially evaluate a patient presenting with an asymptomatic carotid bruit identified on physical examination. However, repeatedly using this test for a patient with an asymptomatic carotid bruit with no evidence of carotid stenosis is routine monitoring. As such, it is considered screening and is noncovered.
- To evaluate a symptomatic patient with a carotid bruit(s).
- To monitor a patient with known carotid stenosis. Patients demonstrating a diameter reduction of 30-50% are normally followed on an annual basis, whereas patients with a diameter reduction of greater than 50% are normally followed every six months. It is not necessary to monitor patients with a diameter reduction of less than 30%.
- To initially evaluate a patient who has had a recent stroke (recent is defined as less than six months) to determine the cause of the stroke.
- To evaluate a patient with focal cerebral or ocular transient ischemic symptoms (including, but not limited to, localizing symptoms, weakness of one side of the face, slurred speech, weakness of limb, ocular microembolism, arterial occlusions on retinal examination (branch or central), ischemic optic neuropathy, suspected dural or carotid cavernous fistulae). Ocular transient ischemic attacks are defined as retinal or visual field deficits and not temporarily blurred vision.
- To evaluate a patient with syncope that is strongly suggestive of vertebrobasilar or bilateral carotid artery disease in etiology, as suggested by medical history.
- To evaluate a patient with retinal arterial emboli (Hollenhorst plaques)
- To evaluate a patient with transient monocular blindness (amaurosis fugax).
- To evaluate a patient with signs/symptoms of subclavian steal syndrome. The symptoms usually associated with subclavian steal syndrome are a bruit in the supraclavicular fossa, unequal radial pulses, arm claudication following minimal exercise, and a difference of 20mmHg or more between the systolic blood pressures in the arms.
- To evaluate a patient with proven carotid disease on medical management in whom cerebrovascular symptoms become recurrent.
- To evaluate a patient presenting with an injury to the carotid artery or blunt neck trauma.
- To evaluate a patient with vasculitis involving the extracranial carotid arteries.
• To evaluate a patient with a suspected aneurysm of the carotid artery. This is suspected in patients with swelling of the neck particularly if occurring post carotid endarterectomy.
• To evaluate a patient with suspected dissection.
• To evaluate pulsatile neck masses.
• To monitor patients who are post carotid endarterectomy. These patients are normally followed with duplex ultrasonography on the affected side at 6 weeks, 6 months, 1 year, and annually thereafter.
• To preoperatively validate the degree of carotid stenosis of a patient whose previous duplex scan revealed a greater than 70% diameter reduction. The duplex is only covered when the surgeon questions the validity of the previous study and the repeat test is being performed in lieu of a carotid arteriogram.
• Preoperative evaluation of patients scheduled for major cardiovascular surgical procedures when there is evidence of systemic atherosclerosis.

Non-invasive vascular studies are medically necessary only if the outcome will potentially impact the clinical management of the patient. Services are deemed medically necessary when all of the following conditions are met:

1) Significant signs/symptoms of ischemia are present;

2) The information is necessary for appropriate medical and/or surgical management; and

3) The test is not redundant of other diagnostic procedures that must be performed.

Limitations:

• Dizziness is not a typical indication unless associated with other localizing signs or symptoms. However, episodic dizziness with symptom characteristics typical of transient ischemic attacks may indicate medical necessity, especially when other more common sources (eg, postural hypotension, arrhythmia or transiently decreased cardiac output as demonstrated by cardiac events monitoring) have been previously excluded.
• When reporting syncope as an indication for this service, it is necessary to document that other, more common causes have been ruled out.
• When an uninterpretable study results in performing another type of study, only the successful study should be billed.
• Non-invasive studies are reasonable and necessary only if the outcome will potentially impact the clinical course of the patient. For example, the studies are unnecessary when the patient is (or is not) proceeding on to other diagnostic and/or therapeutic procedures regardless of the outcome of the non-invasive studies. If it is obvious from the findings of the history and physical examination that the patient is going to proceed to angiography, then non-invasive vascular studies are not medically necessary.
• Performance of both non-invasive extracranial arterial studies (CPT codes 93880 or 93882) and non-invasive evaluation of extremity veins (CPT codes 93970 or 93971) during the same encounter is not appropriate as a general practice or standing protocol, and therefore, would not generally be expected (American College of Radiology, 2010). Consequently, documentation must clearly support the medical necessity if both procedures are performed during the same encounter, and be available upon request.

Methods Not Acceptable For Reimbursement:

• Pulse delay oculoplethysmography
• Carotid phonoangiography and other forms of bruit analysis are covered services, but are included in the reimbursement for the office visit
• Periorbital photoplethysmography
• Thermography
• Light reflection rheography
• Photoelectric plethysmograph,
• Mechanical oscillometry
• Inductance plethysmography
• Capitance plethysmography

The use of a simple hand-held or other Doppler device that does not produce hard copy output, or that produces a record that does not permit analysis of bidirectional vascular flow, is considered part of the physical examination of the vascular system and is not separately reported (CPT 2010). The appropriate assignment of a specific ultrasound CPT code is not solely determined by the weight, size, or portability of the equipment, but rather by the extent, quality, and documentation of the procedure. If an examination is performed with hand-carried equipment, the quality of the exam, printout, and report must be in keeping with accepted national standards. Since, the standard for the above indications is a color-duplex scan, portable equipment must be able
to produce combined anatomic and spectral flow measurements.

**TRAINING REQUIREMENTS:**

The accuracy of non-invasive vascular diagnostic studies depends on the knowledge, skill and experience of the technologist and the physician performing the interpretation of the study. Consequently, the technologist and the physician must maintain proof of training and experience.

All non-invasive vascular diagnostic studies must be: (1) performed by a qualified physician, or (2) performed under the general supervision of a qualified physician by a technologist who has demonstrated minimum entry level competency by being credentialed in vascular technology, and/or (3) performed in a laboratory accredited in vascular technology.

A qualified physician for this service is defined as follows: 1) A physician who has staff privileges to interpret vascular laboratory studies in a hospital that participates in the Medicare program in the state of Florida and the U.S. territories of Puerto Rico and the U.S. Virgin Islands (as applicable) or; 2) A physician who works in a certified vascular laboratory or; 3) A physician who has the RVT or the RPVI (Registered Physician in Vascular interpretation – provided by the ARDMS) certificate or ASN: Neuroimaging Subspecialty Certification; 4) Physicians who are not covered by one of these criteria will have until 2008 to comply.

Examples of certification in vascular technology for non-physician personnel include:

- Registered Vascular Technologist (RVT) credential
- Registered Vascular Specialist (RVS) credential
- Registered Technologist in Vascular Sonography (R.T. (VS))

These credentials must be provided by nationally recognized credentialing organizations such as:

- The American Registry of Diagnostic Medical Sonographers (ARDMS) which provides RDMS and RVT credentials
- The Cardiovascular Credentialing International (CCI) which provides RVS credential
- The American Registry of Radiologic Technologists (ARRT)

Appropriate nationally recognized laboratory accreditation bodies include:

- Intersocietal Commission for the Accreditation of Vascular Laboratories (ICAVL)
- American College of Radiology (ACR)

However, if the facility has a documented process for grand-fathering experienced technicians who have performed the services referenced in this LCD (a process addressing years of service and experience with number of supervised cases), this documentation should be available upon request; otherwise the provider must have documentation available upon request which indicates that the technician meets the credentialing requirements as stated above or is in the process of obtaining this credentialing.

*General Supervision means the procedure is furnished under the physician’s overall direction and control, but the physician’s presence is not required during the performance of the procedure. Under general supervision, the training of the nonphysician personnel who actually performs the diagnostic procedure and the maintenance of the necessary equipment and supplies are the continuing responsibility of the physician.*

**Summary of Evidence**

N/A

**Analysis of Evidence**

*(Rationale for Determination)*

N/A
Coding Information

Bill Type Codes:

Contractors may specify Bill Types to help providers identify those Bill Types typically used to report this service. Absence of a Bill Type does not guarantee that the policy does not apply to that Bill Type. Complete absence of all Bill Types indicates that coverage is not influenced by Bill Type and the policy should be assumed to apply equally to all claims.

012x  Hospital Inpatient (Medicare Part B only)
013x  Hospital Outpatient
014x  Hospital - Laboratory Services Provided to Non-patients
021x  Skilled Nursing - Inpatient (Including Medicare Part A)
022x  Skilled Nursing - Inpatient (Medicare Part B only)
023x  Skilled Nursing - Outpatient
071x  Clinic - Rural Health
085x  Critical Access Hospital

Revenue Codes:

Contractors may specify Revenue Codes to help providers identify those Revenue Codes typically used to report this service. In most instances Revenue Codes are purely advisory. Unless specified in the policy, services reported under other Revenue Codes are equally subject to this coverage determination. Complete absence of all Revenue Codes indicates that coverage is not influenced by Revenue Code and the policy should be assumed to apply equally to all Revenue Codes.

030X  Laboratory - General Classification
0920  Other Diagnostic Services - General Classification
0921  Other Diagnostic Services - Peripheral Vascular Lab
0929  Other Diagnostic Services - Other Diagnostic Service

CPT/HCPCS Codes

Group 1 Paragraph: N/A

Group 1 Codes:

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<th>CPT Code</th>
<th>Description</th>
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<td>93880</td>
<td>DUPLEX SCAN OF EXTRACRANIAL ARTERIES; COMPLETE BILATERAL STUDY</td>
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<tr>
<td>93882</td>
<td>DUPLEX SCAN OF EXTRACRANIAL ARTERIES; UNILATERAL OR LIMITED STUDY</td>
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ICD-10 Codes that Support Medical Necessity

Group 1 Paragraph: N/A

Group 1 Codes:

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<th>DESCRIPTION</th>
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<td>G45.0</td>
<td>Vertebro-basilar artery syndrome</td>
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<tr>
<td>G45.1</td>
<td>Carotid artery syndrome (hemispheric)</td>
</tr>
<tr>
<td>G45.2</td>
<td>Multiple and bilateral precerebral artery syndromes</td>
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<tr>
<td>G45.3</td>
<td>Amaurosis fugax</td>
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<tr>
<td>G45.8</td>
<td>Other transient cerebral ischemic attacks and related syndromes</td>
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<tr>
<td>G45.9</td>
<td>Transient cerebral ischemic attack, unspecified</td>
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<td>G46.0 - G46.2</td>
<td>Middle cerebral artery syndrome - Posterior cerebral artery syndrome</td>
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<td>H34.00 - H34.239</td>
<td>Transient retinal artery occlusion, unspecified eye - Retinal artery branch occlusion, unspecified eye</td>
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<td>H34.9</td>
<td>Unspecified retinal vascular occlusion</td>
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<td>H53.121 - H53.139</td>
<td>Transient visual loss, right eye - Sudden visual loss, unspecified eye</td>
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<td>I63.031 - I63.039</td>
<td>Cerebral infarction due to thrombosis of right carotid artery - Cerebral infarction due to thrombosis of unspecified carotid artery</td>
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| I63.131 - I63.139 | Cerebral infarction due to embolism of right carotid artery - Cerebral infarction due to
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<td>I63.231 - I63.239</td>
<td>Cerebral infarction due to unspecified occlusion or stenosis of right carotid arteries - Cerebral infarction due to unspecified occlusion or stenosis of unspecified carotid arteries</td>
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<td>I63.30 - I63.9</td>
<td>Cerebral infarction due to thrombosis of unspecified cerebral artery - Cerebral infarction, unspecified</td>
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<td>I65.21 - I65.29</td>
<td>Occlusion and stenosis of right carotid artery - Occlusion and stenosis of unspecified carotid artery</td>
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<td>I65.8</td>
<td>Occlusion and stenosis of other precerebral arteries</td>
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<td>I66.01 - I66.9</td>
<td>Occlusion and stenosis of right middle cerebral artery - Occlusion and stenosis of unspecified cerebral artery</td>
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<td>I67.841</td>
<td>Reversible cerebrovascular vasoconstriction syndrome</td>
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<td>I67.848</td>
<td>Other cerebrovascular vasospasm and vasoconstriction</td>
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<td>Other cerebrovascular disease</td>
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<td>I72.0</td>
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<td>I72.5</td>
<td>Aneurysm of other precerebral arteries</td>
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<td>I72.6</td>
<td>Aneurysm of vertebral artery</td>
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<td>Dissection of carotid artery</td>
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<td>I77.74</td>
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<td>I77.75</td>
<td>Dissection of other precerebral arteries</td>
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<td>M31.5</td>
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<td>R09.89</td>
<td>Other specified symptoms and signs involving the circulatory and respiratory systems</td>
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<td>R22.0*</td>
<td>Localized swelling, mass and lump, head</td>
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<td>R22.1*</td>
<td>Localized swelling, mass and lump, neck</td>
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<td>R55</td>
<td>Syncope and collapse</td>
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<td>S15.001A - S15.099S</td>
<td>Unspecified injury of right carotid artery, initial encounter - Other specified injury of unspecified carotid artery, sequela</td>
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<td>Z01.810</td>
<td>Encounter for preprocedural cardiovascular examination</td>
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<td>Z01.818</td>
<td>Encounter for other preprocedural examination</td>
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<tr>
<td>Z09</td>
<td>Encounter for follow-up examination after completed treatment for conditions other than malignant neoplasm</td>
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**Group 1 Medical Necessity ICD-10 Codes Asterisk Explanation:** * Use this code to report pulsatile neck mass.

**ICD-10 Codes that DO NOT Support Medical Necessity**

**ICD-10 Additional Information**

N/A

**General Information**

**Associated Information**

**Documentation Requirements**

Medical record documentation maintained by the ordering/referring physician/nonphysician practitioner must clearly indicate the medical necessity of the services being billed. In addition, documentation that the service was performed must be included in the patient's medical record. This information is normally found in the office/progress notes, hospital notes, and/or test results. A hard copy, or a soft copy convertible to a hard copy provides a permanent record of the study performed and must be of a quality that meets accepted radiologic/ultrasonographic standards.

If the provider of the service is other than the ordering/referring physician/nonphysician practitioner, that provider must maintain a copy of the test results and interpretation, along with copies of the ordering/referring physician/nonphysician practitioner’s order for the studies. The physician/nonphysician practitioner must state the clinical indication/medical necessity for the study in his/her order for the test.

The provider is responsible for ensuring the medical necessity of procedures and maintaining the medical record, which must be available upon request. Non-invasive vascular studies are medically reasonable and necessary only if the outcome will potentially impact the diagnosis or clinical course of the patient. Billing providers are
encouraged to obtain additional information from referring providers and/or patients or medical records to
determine the medical necessity of studies performed. Referring physicians are required to provide appropriate
diagnostic information to the performing provider.

Performance of both non-invasive extracranial arterial studies (CPT codes 93880 or 93882) and non-invasive
evaluation of extremity veins (CPT codes 93970 or 93971) during the same encounter is not appropriate as a
general practice or standing protocol, and therefore, would not generally be expected (American College of
Radiology, 2010). Consequently, documentation must clearly support the medical necessity if both procedures
are performed during the same encounter, and be available upon request.

Per 42 CFR §410.32, all diagnostic tests must be ordered by the physician/nonphysician practitioner who is
treating the patient, that is, the physician/nonphysician practitioner who furnishes a consultation or treats a
patient for a specific medical problem and who uses the results in the management of the patient’s specific
medical problem. Tests not ordered by the physician/nonphysician practitioner who is treating the patient are not
reasonable and necessary.

- When reporting syncope as an indication for this service, it is necessary to document that other, more
  common causes have been ruled out.
- Documentation must support the criteria for coverage as set forth in the ‘Indications and Limitations of
  Coverage and/or Medical Necessity’ section of this LCD and should reflect how the results of this test will
  be used in the patient’s plan of care.

**Utilization Guidelines**

It is expected that these services would be performed as indicated by current medical literature and/or standards
of practice. When services are performed in excess of established parameters, they may be subject to review for
medical necessity.

Generally, it is not expected that these services would be performed more than once in a year, excluding
inpatient hospital (21) and emergency room (23) places of service.

**Sources of Information**

First Coast Service Options Inc. reference LCD number(s) – L28958, L29235, L29321


December 27, 2005.

on September 9, 2005.


Hill, M., Foss., Tu., Feasby, T. (2004). *Factors influencing the decision to perform carotid endarterectomy*


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<th>Revision History Number</th>
<th>Revision History Explanation</th>
<th>Reason(s) for Change</th>
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| 10/01/2016            | R2                      | Revision Number: 2
Publication: October 2016 Connection
LCR A/B2016-097

Explanation of Revision: Based on CR 9677 (Annual 2017 ICD-10-CM Update) the LCD was revised. Added ICD-10-CM diagnosis codes I72.5, I72.6, and I77.75 to “ICD-10 Codes that Support Medical Necessity” section of LCD. In addition, the range H34.00 – H34.9 in the “ICD-10 Codes that Support Medical Necessity” section of LCD was revised to read H34.00 – H34.239 and H34.9. Deleted ICD-10-CM diagnosis code ranges H34.811-H34.819, H34.821-H34.829, and H34.831-H34.839 in the “ICD-10 Codes that Support Medical Necessity” section of LCD. The effective date of this revision is based on date of service. | • Revisions Due To ICD-10-CM Code Changes |
| 01/12/2016            | R1                      | Revision Number: 1
Publication: January 2016 Connection
LCR A/B2016-026

Explanation of Revision: This LCD is being revised to replace CPT code 93881 with CPT code 93882 in the “Limitations” and “Documentation Requirements” sections of the LCD. The effective date of this revision is based on process date. | • Other |

**Related Local Coverage Documents**

**Related National Coverage Documents**

**Keywords**

N/A