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2024 Carotid Revascularization: Carotid Artery Stenting (CAS) and Carotid Endarterectomy (CEA)

Cardiology

SURG-CAROTID-HH

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Carotid Revascularization: Carotid Artery Stenting and Endartectomy Contraindications and Exclusions

Carotid revascularization may be contraindicated or excluded for **ANY** of the following:

1. Atherosclerotic narrowing of the lumen is less than 50%.
2. Chronic total occlusion of targeted carotid artery
3. Disability is severe and caused by cerebral infarction that precludes preservation of function.
4. Stenosis extent is **NOT** considered and **ANY** of the following:
    a. Consciousness is altered.
    b. Disabling stroke
    c. Ipsilateral middle cerebral artery territory area of infarction is more than 30% of
    d. Modified Rankin scale score is 3 or more.

References: [1] [3]

Carotid Revascularization, Carotid Artery Stenting (CAS)

Carotid Artery Stenting (CAS) • Transcarotid Artery Revascularization (TCAR)

NCD 20.7
*__NOTE__: ***NO*** *clinical criteria*
See also, **NCD 20.7**: Percutaneous Transluminal Angioplasty (PTA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

CAS Guideline

Carotid artery stenting (CAS) (with or **WITHOUT** angioplasty) is considered medically appropriate when the documentation demonstrates **ALL** of the following: (*__NOTE__: *Carotid revascularization is* ***NOT*** *recommended when atherosclerosis narrows the lumen by less than 50%*.)

1. Computed tomography angiography (CTA), duplex ultrasound or magnetic resonance angiography (MRA) is recently performed (within the past 6 months).
   Reference: [1] [4] [3] [7]

2. Clinical situation is **ANY** of the following:
    a. Asymptomatic and **ALL** of the following:
        i. Carotid endarterectomy (CEA) is average or high risk (eg, anatomic or medical conditions that increase the risk for surgery).
        ii. Life expectancy is more than 5 years.
        iii. Peri-operative stroke/death rates are less than 3%. (***NOTE** *American College of Surgeons surgical risk calculator can be found at:* https://riskcalculator.facs.org/RiskCalculator/index.jsp)
        iv. Stenosis is 60% or greater of the internal carotid artery and increased risk of late ipsilateral stroke is suspected.
    b. Symptomatic (eg, amaurosis fugax or transient ischemic attack) and **ALL** of the following:
        i. Age is less than 70 years.
        ii. Anatomy is suitable for carotid artery stenting.
        iii. Carotid artery stenosis is 50% or more by catheter-based imaging or 70% or more by noninvasive imaging.
        iv. Carotid endarterectomy (CEA) surgery is high-risk[1] for anatomic or medical reasons.
        v. Peri-procedural myocardial infarction/stroke/death rate risk is less than 6%.
        vi. Symptomatic event (non-disabling stroke or transient cerebral ischemic symptoms) has occurred within the last 6 months.

References: [4] [3] [7] [2] [6]

Transcarotid Artery Revascularization (TCAR) Guideline

A transcarotid artery revascularization (TCAR) is considered medically appropriate when the documentation demonstrates **ALL** of the following:

1. Anatomy is appropriate for the procedure.
   References: [5] [1]
2. Carotid artery stenosis is in both carotid arteries or restenosis (stenosis that returns after surgery).

[1]**High-Risk CEA** is having significant comorbidities and/or anatomic risk factors including: previous CEA with recurrent stenosis, prior radiation treatment to neck, contralateral carotid occlusion, recent myocardial infarction, unstable angina, heart failure class III/IV and left ventricular ejection fraction less than 30%.

References: [5] [1]

3. Computed tomography angiography (CTA), duplex ultrasound or magnetic resonance angiography (MRA) is recently performed (within the past 6 months).
Reference: [1] [5]

4. Higher surgical complication risk due to **ANY** of the following:
    a. Age is 75 years or older.
    b. Diabetes is uncontrolled.
    c. Coronary history of heart failure New York Heart Association (NYHA) class III or IV, unstable angina or myocardial infarction (MI) in the past 6 weeks
    d. Head or neck surgery or irradiation history
    e. Pulmonary disease is severe.

    References: [5] [1]

5. Clinical situation is **ANY** of the following:
    a. Asymptomatic and **ALL** of the following:
        i. Life expectancy is greater than 5 years.
        ii. Peri-operative stroke/death rates are less than 3%.
        iii. Stenosis is 60% or greater in presence of clinical or imaging characteristics that may be associated with an increased risk of ipsilateral stroke.
    b. Stroke/transient ischemic attack (TIA) are known and **NO** contraindications to early revascularization. (*See **Contraindications** section*)
    c. Symptomatic (eg, amaurosis fugax or TIA) and **ALL** of the following:
        i. Carotid artery stenosis is 50% or more by catheter-based imaging or 70% or more by noninvasive imaging.
        ii. Peri-procedural stroke/death rate risk is less than 6%.

    References: [5] [1] [2]

CAS/TCAR Procedure Codes

Table 1. Carotid Revascularization, Carotid Stenting (CAS) Associated Procedure Codes

CODE	DESCRIPTION
37215	Transcatheter placement of intravascular stent(s), cervical carotid artery, open or percutaneous, including angioplasty, when performed, and radiological supervision and interpretation; with distal embolic protection

CODE	DESCRIPTION
37216	Transcatheter placement of intravascular stent(s), cervical carotid artery, open or percutaneous, including angioplasty, when performed, and radiological supervision and interpretation; without distal embolic protection
37217	Transcatheter placement of intravascular stent(s), intrathoracic common carotid artery or innominate artery by retrograde treatment, open ipsilateral cervical carotid artery exposure, including angioplasty, when performed, and radiological supervision and interpretation
37218	Transcatheter placement of intravascular stent(s), intrathoracic common carotid artery or innominate artery, open or percutaneous antegrade approach, including angioplasty, when performed, and radiological supervision and interpretation
C9601	Percutaneous transcatheter placement of drug-eluting intracoronary stent(s), with coronary angioplasty when performed; each additional branch of a major coronary artery (list separately in addition to code for primary procedure)
C9602	Percutaneous transluminal coronary atherectomy, with drug eluting intracoronary stent, with coronary angioplasty when performed; single major coronary artery or branch
C9603	Percutaneous transluminal coronary atherectomy, with drug-eluting intracoronary stent, with coronary angioplasty when performed; each additional branch of a major coronary artery (list separately in addition to code for primary procedure)

Carotid Revascularization, Carotid Endarterectomy (CEA)

CEA Guideline

A carotid endarterectomy (CEA) is considered medically appropriate when the documentation demonstrates **ALL** of the following:

1. Computed tomography angiography (CTA), duplex ultrasound or magnetic resonance angiography (MRA) recently performed (within the past 6 months)
   References: [1] [3] [4] [7]
2. Clinical situation is **ANY** of the following:
   a. Asymptomatic and **ALL** of the following:
      i. Carotid stenosis is 60% or more.
      ii. Life expectancy is 5 years or longer.
      iii. Maximum medical management is in place[2].
      iv. Neck anatomy is suitable for CEA.

[2]Maximum medical management including: anti-platelet medications, lifestyle modifications (diet, exercise, weight management), lipid management (eg, diet, exercise, medications), optimal blood pressure control (less than 140/90 or 130/80 for CKD/DM, controlled with medication) and smoking cessation counseling

v. Peri-operative risk of myocardial infarction, stroke and mortality are less than 3% (***NOTE:** *American College of Surgeons surgical risk calculator can be found at:* https://riskcalculator.facs.org/RiskCalculator/index.jsp).

b. Symptomatic (eg, signs of a transient ischemic attack [TIA]) and **ALL** of the following:

i. **EITHER** of the following:

A. Age is more than 70 years, carotid stenosis is 50% or more and symptomatic event (non-disabling stroke or transient cerebral ischemic symptoms) has occurred within the last 6 months

B. **ALL** of the following:

I. Carotid stenosis is 50% or more.

II. Peri-operative stroke/death risk are less than 6%.

III. Symptomatic event (non-disabling stroke or transient cerebral ischemic symptoms) has occurred within the last 6 months.

ii. Neck anatomy is suitable for CEA.

References: [1] [3] [4] [7] [2]

CEA Procedure Codes

Table 1. Carotid Endarterectomy (CEA) Associated Procedure Codes

CODE	DESCRIPTION
35301	Thromboendarterectomy, including patch graft, if performed; carotid, vertebral, subclavian, by neck incision

Carotid Revascularization Summary of Changes

Carotid Revascularization: (CEA) clinical guidelines from 2023 to 2024 had the following version changes:

- Added the following to keep in line with current evidence:
  - Carotid Artery Stenting:
    - "Endovascular complication risk" under "Symptomatic"
    - "Stenosis is 70% or greater under "Clinical situation"
    - "Symptomatic event" under "Symptomatic"

- Carotid Endartectomy:
  - "Neck anatomy" under "Clinical situation"
  - "Symptom onset" under "Symptomatic"
- Carotid Revascularization Contraindications and Exclusions
- Transcarotid Artery Revascularization (TCAR)
  - "Stroke/TIA are known" under "Symptomatic"

- Removed "maximum medical management" in CEA under "Symptomatic" per the current evidence.

Carotid Revascularization Definitions

Amarosis fugax (AF) is a temporary, partial or complete loss of sight in one eye that is caused by an abrupt reduction in blood flow (ischemia) to the retina. AF is also known as transient monocular blindness and is associated with carotid artery disease (CAD).
Angioplasty is a procedure to enlarge the opening in a blood vessel that has become narrowed or blocked by plaque (a buildup of fat and cholesterol on the inner wall of the blood vessel).
Atherosclerosis is plaque (fatty deposit) build-up in the arteries. The deposits are made up of cholesterol, fatty substances, cellular waste products, calcium and fibrin (a clotting material in the blood). As plaque builds up, the wall of the blood vessel thickens. This narrows the channel within the artery reducing blood flow and lessening the amount of oxygen and other nutrients reaching the body.
Carotid artery stenosis is the narrowing of the blood vessels in the neck that carry blood from the heart to the brain. Typically caused by cholesterol build-up in the carotid blood vessels (atherosclerosis).
Carotid artery stenting (CAS) is an endovascular procedure where a stent is deployed within a lumen into the carotid artery to compress and secure plaque, increase cerebral blood flow and prevent a stroke. CAS is used to treat narrowing of the carotid artery in high-risk patients when carotid endarterectomy is considered too risky.
Carotid endarterectomy (CEA) is a surgical procedure in which the surgeon makes an incision along the front of the neck to open the carotid artery and removes the atherosclerotic plaque that is restricting the flow of blood.
Computed tomography angiography (CTA) is a medical test that combines a computed tomography (CT) scan with an injection of a special dye to produce pictures of blood vessels and tissues in a part of the body.
Ipsilateral is on the same side of the body as another structure or given point.
Magnetic resonance angiogram (MRA) is a test that uses a magnetic field and pulses of radio wave energy to provide images of blood vessels inside the body, allowing for evaluation of blood

flow and blood vessel wall condition. MRA is used to look for aneurysms, clots, tears in the aorta, arteriovenous malformations and stenosis caused by plaque in the carotid arteries (neck) or blood vessels leading to the lungs, kidneys or legs.

Table 1. New York Heart Association (NYHA) Functional Classification for Heart Failure

CLASS	SYMPTOMS EXPERIENCED
Class I (Mild)	Cardiac disease, but no symptoms and no limitation in ordinary physical activity (eg, shortness of breath when walking, climbing stairs).
Class II (Mild)	Mild symptoms (eg, mild shortness of breath and/or angina) and slight limitation during ordinary activity.
Class III (Moderate)	Marked limitation in activity due to symptoms, even during less-than-ordinary activity, (eg, walking short distances [20–100 m]). Comfortable only at rest. Class IIIa: no dyspnea at rest. Class IIIb: recent dyspnea at rest.
Class IV (Severe)	Severe limitations. Experience symptoms while at rest. Unable to carry on any physical activity without discomfort.

Severe pulmonary disease is stage lll pulmonary disease. Symptoms may include getting colds more often, feeling tightness in the chest, swelling in the ankles and feet, trouble catching breath, and breathing issues on exertion.

Stent is a small, expandable, metal mesh tube used to keep open previously narrowed arteries after angioplasty has been performed. The stent surrounding the inserted balloon expands when the balloon is inflated, locking the stent into place against the plaque/arterial vessel wall. The stent stays inside the artery after the balloon is deflated and removed.

Transcarotid Artery Revascularization (TCAR) is minimally invasive procedure to treat carotid artery disease and help prevent future strokes. TCAR is unique in that blood flow is temporarily reversed during the procedure so that any bits of plaque that may break off are diverted away from the brain.

Transient ischemic attack (TIA) is a brief interruption of the blood supply to the brain that causes a temporary impairment of vision, speech or movement. The episode usually lasts for just a few moments but may be a warning sign of a full scale stroke.

Ultrasound is the diagnostic or therapeutic use of ultrasound and especially a noninvasive technique involving the formation of a two-dimensional image used for the examination and measurement of internal body structures and the detection of bodily abnormalities.

Uncontrolled diabetes is defined as having sustained high blood sugar levels (hyperglycemia) or frequent low blood sugars (hypoglycemia). For most adults with diabetes, uncontrolled diabetes is when your A1c is 7% or higher, according to the American Diabetes Association.

Carotid Revascularization References

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[5] Lal, B.K., Jordan, W., . . . Schermerhorn, M. (2020). Clinical competence statement of the Society for Vascular Surgery on training and credentialing for transcarotid artery revascularization. *Journal of Vascular Surgery, 72*(3), 779-789.

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Disclaimer section

Purpose

The purpose of the HealthHelp's clinical guidelines is to assist healthcare professionals in selecting the medical service that may be appropriate and supported by evidence to safely improve outcomes. Medical information is constantly evolving, and HealthHelp reserves the right to review and update these clinical guidelines periodically. HealthHelp reserves the right to include in these guidelines the clinical indications as appropriate for the organization's program objectives. Therefore the guidelines are not a list of all the clinical indications for a stated procedure, and associated Procedure Code Tables may not represent all codes available for that state procedure or that are managed by a specific client-organization.

Clinician Review

These clinical guidelines neither preempt clinical judgment of trained professionals nor advise anyone on how to practice medicine. Healthcare professionals using these clinical guidelines are responsible for all clinical decisions based on their assessment. All Clinical Reviewers are instructed to apply clinical indications based on individual patient assessment and documentation, within the scope of their clinical license.

Payment

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National and Local Coverage Determination (NCD and LCD)

NOTICE
To ensure appropriate review occurs to the most current NCD and/or LCD, always defer to https://www.cms.gov/medicare-coverage-database/search.aspx.

Background

National Coverage Determinations (NCD) and Local Coverage Determinations (LCD) are payment policy documents outlined by the Centers for Medicare and Medicaid Services (CMS) and the government's delegated Medicare Audit Contractors (MACs) that operate regionally in jurisdictions.

CMS introduced variation between different jurisdictions/Medicare Audit Contractors (MACs) and their associated covered code lists with the transition to ICD 10. The variation resulted in jurisdictions independently defining how codes are applied for exclusions, limitations, groupings, ranges, etc. for the medical necessity indications outlined in the NCD and LCD. Due to this variation, there is an inconsistent use/application of codes and coverage determinations across the United States between the different MACs.

In addition, **WITHOUT** notice, CMS can change the codes that indicate medical necessity and the format of the coverage determinations/associated documents (eg, Articles). This is an additional challenge for organizations to keep up with ongoing, unplanned changes in covered codes and medical necessity indications.

Medical Necessity Codes

Due to the variation in code application between jurisdictions/MACs and that updates can happen without notification, HealthHelp is not able to guarantee full accuracy of the codes listed for any Coverage Determination, and advises that prior to use, the associated Coverage Determination Articles are reviewed to ensure applicability to HealthHelp's programs and any associated NCDs and LCDs.

For Internal Use Only:

11248 11249 11253 11282 11325 11328 11333 11349 11350 11351 11352 11354 11355 11356 11358 11359 11360 11361 11362 11365 11366 11367 11368 11369 11370 11374 11375 11394 11395 11396 11565