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2025 Carotid Revascularization: Carotid Artery Stenting and Carotid Endarterectomy (CAS) & (CEA)

Cardiology

SURG-CAROTID-BCBSSC

Last Review Date: 05/08/2025
Previous Review Date: 09/23/2024
Guideline Initiated: 06/30/2019

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Table of Contents

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BlueCross and BlueShield of South Carolina

IMPORTANT
To locate the appropriate updated Clinical Policies for BlueCross and BlueShield of South Carolina, please go to: https://www.southcarolinablues.com/web/public/brands/sc/providers/policies-and-authorizations/medical-policies/

TIP
A National Coverage Determination (NCD) or Local Coverage Determination (LCD) may be necessary to review for Medicare participants. Please go to: https://www.cms.gov/medicare-coverage-database/search.aspx for the latest coverage determination information.

Internal Use Only

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Carotid Revascularization: Carotid Artery Stenting and Endarterectomy Contraindications

Carotid Artery Stenting (CAS) Contraindications

Carotid artery stenting is contraindicated for **ANY** of the following: [7]

1. Chronic total occlusion of targeted carotid artery.
2. Infection is active.
3. Thrombosis is visible at lesion level.

Carotid Endarterectomy (CEA) Contraindications

Carotid endarterectomy is contraindicated for **ANY** of the following: [7]

1. Chronic total occlusion of targeted carotid artery

2. Coronary artery disease or pulmonary disease is severe.
3. Myocardial infarction (MI) was recent (within the last 6 months).

Carotid Revascularization, Carotid Artery Stenting (CAS)

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

Carotid Revascularization, Carotid Artery Stenting (CAS) Related National Coverage Determination (NCD)/Local Coverage Determination (LCD)

Please refer to https://www.cms.gov/medicare-coverage-database/search.aspx if applicable to the individual's health plan membership.

Type/ID Number	Title
NCD 20.7	Percutaneous Transluminal Angioplasty (PTA)
LCD 34761	Percutaneous Coronary Interventions

Clinical Judgment

These medical policies are designed to provide clinical guidance and do not supplant a provider's independent professional judgment. Physicians retain full and independent authority to determine appropriate care based on each patient's individual clinical circumstances. Although services may be subject to documentation requirements, medical necessity review, or coverage limitations, nothing in this policy is intended to restrict or interfere with a physician's independent medical judgment.
(*NOTE: CAS is **NOT** typically indicated for pediatric individuals [age is 21 years or younger])

CAS Guideline

Carotid artery stenting (CAS) (with or **WITHOUT** angioplasty) is considered medically appropriate when the documentation demonstrates **ALL** of the following: [4] [3] [6]
(*__NOTE__: *Carotid revascularization is **NOT** recommended when atherosclerosis narrows the lumen by less than 50%*.)

1. Age is less than 70 years.
2. Anatomy is **NOT** suitable for arterial surgery. [5]
3. Carotid endarterectomy (CEA) surgery is high-risk for anatomic or medical reasons.[1]

4. Clinical situation is **ANY** of the following:
    a. Asymptomatic and **ALL** of the following: [2]
        i. Carotid artery stenosis is 60% or more.
        ii. Life expectancy is more than 5 years.
        iii. Peri-operative stroke/death rate is less than 6%.
        iv. Stroke risk is increased despite optimal medical therapy.
    b. Symptomatic and **ALL** of the following: [4]
        i. Carotid artery stenosis is 70% or more.
        ii. Surgery risk is increased due to anatomic or medical conditions (eg, radiation-induced stenosis or restenosis after CEA)

Transcarotid Artery Revascularization (TCAR) Guideline

A transcarotid artery revascularization (TCAR) is considered medically appropriate when the documentation demonstrates **ALL** of the following: [4]

1. The role of this therapy is uncertain/unclear in the current evidence. Requests for this therapy require review by a physician reviewer, medical director and/or the individual's healthplan.

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
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

[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%.

CODE	DESCRIPTION
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)

(*NOTE: CEA is **NOT** typically indicated for pediatric individuals [age is 21 years or younger])

Clinical Judgment

These medical policies are designed to provide clinical guidance and do not supplant a provider's independent professional judgment. Physicians retain full and independent authority to determine appropriate care based on each patient's individual clinical circumstances. Although services may be subject to documentation requirements, medical necessity review, or coverage limitations, nothing in this policy is intended to restrict or interfere with a physician's independent medical judgment.

CEA Guideline

A carotid endarterectomy (CEA) is considered medically appropriate when the documentation demonstrates **ALL** of the following: [1] [4]

1. Clinical situation is **ANY** of the following:
    a. Asymptomatic and **ALL** of the following: [2]
        i. Carotid stenosis is 60% or more.
        ii. Optimal medical therapy is in place.[2].
        iii. Stroke risks is increased (eg, hypertension, atrial fibrillation, obesity, cardiovascular disease).

[2]Optimal medical therapy 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

b. Symptomatic (eg, signs of a transient ischemic attack [TIA]) and **EITHER** of the following: [4]

i. 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.

ii. **ALL** of the following:

A. Carotid stenosis is 50% or more and ipsilateral.

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

C. Symptomatic event (non-disabling stroke or transient cerebral ischemic symptoms) has occurred within the last 6 months. [2]

2. Neck anatomy is suitable for CEA.

3. Revascularization is planned within 1 to 2 weeks of index event.

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 2024 to 2025 had the following version changes:

- Added the following to keep in line with current evidence
- Changed the following to keep in line with current evidence
- Removed as current evidence no longer supports the indication.
  - "Computed tomography angiography (CTA), duplex ultrasound or magnetic resonance angiography (MRA) is recently performed (within the past 6 months)."
  - Under CAS:
    - "Symptomatic event" as it is redundant
  - TCAR guideline per 2b classification rating in AHA/ASA Guideline: 2021 Guideline for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack.
- Updated Contraindications

Carotid Revascularization Definitions

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.
Atrial fibrillation (AF) is a cardiac rhythm disorder characterized by uncontrolled atrial activation without effective atrial contraction. On the electrocardiogram (ECG), P waves are absent. AF is characterized by rapid oscillations or fibrillatory waves that vary in amplitude, shape and timing associated with an irregular ventricular response.

- **Paroxysmal AF** terminates spontaneously or with intervention within 7 days of onset. Episodes typically convert back to sinus rhythm within 48 hours.
- **Persistent AF** is continuous AF sustained beyond 7 days.

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.
Contralateral carotid occlusion (CCO) is a condition where the internal carotid artery on the opposite side of the body is completely blocked. It's associated with an increased risk of stroke.
Heart failure (HF) (also known as **congestive heart failure [CHF]**) is a condition that develops when the heart is unable to pump enough blood for the body's needs. HF occurs when the heart cannot fill with enough blood or is too weak to pump properly. Decompensated heart failure is sudden worsening (exacerbation) of heart failure symptoms (eg, difficulty breathing, lower extremity edema, fatigue) to where the heart can no longer continue to compensate for its full function.
Ipsilateral refers to the same side of the body as another structure or a given point.
Left ventricular ejection fraction (LVEF), also known as ejection fraction (EF), is defined as the percentage of blood ejected from the left ventricle during each contraction.

Myocardial infarction (MI), also called a heart attack, occurs when the blood flow that brings oxygen to the heart muscle is severely reduced or cut off completely. The coronary arteries that supply the heart muscle with blood flow can become narrowed from a buildup of fat, cholesterol and other substances that together are called plaque. This process is known as atherosclerosis. When plaque within a coronary artery breaks, a blood clot forms around the plaque and can block the flow of blood through the artery to the heart muscle. Ischemia results when there is an inadequate blood supply to the heart muscle causing damage or death of part of the heart muscle, resulting in an MI.

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 (Moder-ate)	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 with-out discomfort.

Optimal medical therapy (OMT) refers to the comprehensive use of medications and lifestyle modifications to manage a disease effectively, aiming to reduce symptoms, prevent complications, and improve quality of life.

Perioperative stroke is a stroke that occurs during or within 30 days of surgery. It can be caused by an embolic, thrombotic, or hemorrhagic event.

Radiation-induced stenosis is a medical condition that occurs when radiation damages blood vessels, causing them to narrow. It can affect the carotid arteries or the aortic valve.

Revascularization is a medical procedure that restores blood flow to an organ or body part that has been ischemic, or without enough blood. It can be used to treat existing blood flow problems, such as heart attacks, or to prevent similar problems from occurring in the future.

Stenosis refers to the abnormal narrowing of a bodily passage or vessel, which can occur in various anatomical locations and lead to different clinical implications depending on the site affected.

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.

Unstable angina is defined as angina that is new in onset, occurs at rest, or presents with increasing frequency, duration, or severity, and is not associated with elevated cardiac biomarkers.

Carotid Revascularization References

[1] AbuRahma, A.F., Avgerinos, E.D., . . . Zhou, W. (2022). Society for Vascular Surgery clinical practice guidelines for management of extracranial cerebrovascular disease. *Journal of Vascular Surgery, 75*(1S), 4S-22S.

[2] Bonati, L.H., Kakkos, S., . . . Eckstein, H. (2021). European Stroke Organisation guideline on endarterectomy and stenting for carotid artery stenosis. *European Stroke Journal, 6*(2), I-XLVII.

[3] Brott, T.G., Halperin, J.L., . . . Taylor, A.J. (2011). 2011 ASA/ACCF/AHA/AANN/AANS/ACR/ASNR/CNS/SAIP/SCAI/SIR/SNIS/SVM/SVS Guideline on the Management of Patients with Extracranial Carotid and Vertebral Artery Disease. *Journal of the American College of Cardiology, 57*(8), e19-e94.

[4] Kleindorfer, D.O., Towfighi, A., . . . Williams, L.S. (2021). 2021 2021 Guideline for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack: A Guideline From the American Heart Association/American Stroke Association. *Stroke, 52*(7), e364-e467.

[5] Messas, E., Goudot, G., . . . Aboyans, V. (2020). Management of carotid stenosis for primary and secondary prevention of stroke: state-of-the-art 2020: a critical review. *European Heart Journal Supplements, 22*(Supplement M), M35-M42.

[6] Naylor, A.R., Ricco, J.B., . . . Venermo, M. (2018). 2017 Management of Atherosclerosis Carotid and Vertebral Artery Disease: 2017 Clinical Practice Guidelines of the European Society for Vascular Surgery. *European Journal of Vascular and Endovascular Surgery, 55*(1), 3-81.

[7] Nelson, P. & Bustillo, M. (2021). Anesthesia for Carotid Endarterectomy, Angioplasty, and Stent. *Anesthesiology Clinics, 39*(1#), 37-51.

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

The use of these clinical guidelines does not provide authorization, certification, explanation of benefits, or guarantee of payment; nor do the guidelines substitute for, or constitute, medical advice. Federal and State law, as well as member benefit contract language (including definitions and specific contract provisions/exclusions) take precedence over clinical guidelines and must be considered first when determining eligibility for coverage. All final determinations on coverage and payment are the responsibility of the health plan. Nothing contained within this document can be interpreted to mean otherwise.

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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.

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