Evolent Clinical Guideline 2068 for Brain and Neck Computed Tomography Angiography (CTA)

<table>
<tr><td>Guideline Number:
Evolent_CG_2068</td><td colspan="2"><u>Applicable Codes</u></td></tr>
<tr><td colspan="3">"Evolent" refers to Evolent Health LLC and Evolent Specialty Services, Inc.
© 2026 Evolent. All rights Reserved.</td></tr>
<tr><td>Original Date:
January 2026</td><td>Last Revised Date:
November 2025</td><td>Implementation Date:
January 2026</td></tr>
</table>

TABLE OF CONTENTS

STATEMENT 3
General Information 3
Purpose 3
INDICATIONS FOR BRAIN AND NECK CT ANGIOGRAPHY 3
PREOPERATIVE OR POSTOPERATIVE ASSESSMENT 4
FURTHER EVALUATION OF INDETERMINATE FINDINGS 4
IMAGING IN KNOWN GENETIC CONDITIONS 5
Combination Studies for Known Genetic Conditions 5
Brain/Neck/Chest/Abdomen/Pelvis CTA *5*
OTHER COMBINATION STUDIES WITH BRAIN AND NECK CTA 5
Brain CT and Brain and Neck CTA 5
Brain and Neck/Chest CTA 6
Brain and Neck/Chest/Abdomen/Pelvis CTA 6
CODING AND STANDARDS 6
Codes 6
Applicable Lines of Business 6
BACKGROUND 7
Pulsatile tinnitus *7*
CTA and Dissection *7*
Contraindications and Preferred Studies *7*
SUMMARY OF EVIDENCE 7
ANALYSIS OF EVIDENCE 9
POLICY HISTORY 9
LEGAL AND COMPLIANCE 9
Guideline Approval 9
Committee *9*
Disclaimer 9

REFERENCES..11

STATEMENT

General Information

- *It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.*
- *Where a specific clinical indication is not directly addressed in this guideline, medical necessity determination will be made based on widely accepted standard of care criteria. These criteria are supported by evidence-based or peer-reviewed sources such as medical literature, societal guidelines and state/national recommendations.*
- *The guideline criteria in the following sections were developed utilizing evidence-based and peer-reviewed resources from medical publications and societal organization guidelines as well as from widely accepted standard of care, best practice recommendations.*

Purpose

Computed tomography angiography (CTA) generates images of vessels that can be evaluated for evidence of stenosis, occlusion, or aneurysms. CTA uses ionizing radiation and requires the administration of iodinated contrast agent, which is a potential hazard in patients with impaired renal function. This study examines blood vessels in the brain, neck and cervical regions when medical necessity has been met for both brain and neck vascular imaging.

NOTE: Authorizations for CT Angiography cover both arterial and venous imaging. The term *angiography* refers to both arteriography and venography.

INDICATIONS FOR BRAIN AND NECK CT ANGIOGRAPHY

- Recent ischemic stroke or transient ischemic attack [1,2]
  - **Note:** For remote strokes with no prior vascular imaging, imaging can be considered based on location/type of stroke and documented potential to change management
- Known or suspected vertebrobasilar insufficiency (VBI) in patients with symptoms such as dizziness, vertigo, headaches, diplopia, blindness, vomiting, ataxia, weakness in both sides of the body, or abnormal speech [3–6]
- Suspected carotid [7] or vertebral [8] artery dissection (secondary to trauma [9] or spontaneous) [2,10,11]
- Follow-up of known carotid or vertebral artery dissection with any **ONE** of the following [2,12,13]:

  - At 3-6 months post dissection (for evaluation of recanalization or to guide anticoagulation treatment)
  - When documentation is provided that the results will be used to guide anticoagulation treatment
  - When there is recurrent pain, headache or new neurologic deficits that suggest progression
- Giant cell arteritis with suspected intracranial and extracranial involvement [14]
- Asymptomatic patients with an abnormal ultrasound of the neck or carotid duplex imaging (e.g., carotid stenosis ≥ 70%, technically limited study, aberrant direction of flow in the carotid or vertebral arteries) and patient is surgery or angioplasty candidate [2,15]
- Symptomatic patients with an abnormal ultrasound of the neck or carotid duplex imaging (e.g., carotid stenosis ≥ 50%, technically limited study, aberrant direction of flow in the carotid or vertebral arteries) and the patient is surgery or angioplasty candidate [2,15]
- Pulsatile tinnitus to identify a suspected arterial vascular etiology [16,17]

PREOPERATIVE OR POSTOPERATIVE ASSESSMENT

When not otherwise specified in the guideline:

Preoperative Evaluation [1]:

- Imaging of the area requested is needed to develop a surgical plan

Postoperative Evaluation:

- Known or suspected complications
- A clinical reason is provided how imaging may change management

Note: This section applies only within the first few months following surgery

FURTHER EVALUATION OF INDETERMINATE FINDINGS

Unless follow up is otherwise specified within the guideline:

- For initial evaluation of an inconclusive finding on a prior imaging report (i.e., x-ray, ultrasound or CT) that requires further clarification
- One follow-up exam of a prior indeterminate MR/CT finding to ensure no suspicious interval change has occurred. (No further surveillance unless specified as highly suspicious or change was found on last follow-up exam.)

IMAGING IN KNOWN GENETIC CONDITIONS

- Loeys-Dietz [18]:
  - Every two years (including at diagnosis) **OR**
  - More frequently if abnormalities are found
- Vascular Ehlers-Danlos syndrome (vEDS) [19]:
  - Every 18 months (including at diagnosis) **OR**
  - As clinically indicated to follow known vascular abnormalities

Combination Studies for Known Genetic Conditions

NOTE: When medical necessity is met for an individual study **AND** conscious sedation is required (such as for young pediatric patients or patients with significant developmental delay), the entire combination is indicated)

Brain/Neck/Chest/Abdomen/Pelvis CTA

- Loeys-Dietz [18]:
  - Every two years (including at diagnosis) **OR**
  - More frequently if abnormalities are found
- Vascular Ehlers-Danlos syndrome (vEDS) [19]:
  - Every 18 months (including at diagnosis) **OR**
  - As clinically indicated to follow known vascular abnormalities

OTHER COMBINATION STUDIES WITH BRAIN AND NECK CTA

NOTE: When medical necessity is met for an individual study **AND** conscious sedation is required (such as for young pediatric patients or patients with significant developmental delay), the entire combination is indicated)

Brain CT and Brain and Neck CTA [2,20]

- Recent ischemic stroke
- Recent transient ischemic attack (TIA) when MRI is contraindicated or cannot be performed [1,2]
- History of stroke and **ONE** of the following:
  - No prior workup when MRI is contraindicated or can't be performed
  - New neurologic signs or symptoms

- Suspected or known carotid or vertebral artery dissection with focal or lateralizing neurological deficits

Note: MRA and CTA are generally comparable noninvasive imaging alternatives each with their own advantages and disadvantages. Brain MRI can alternatively be combined with Brain CTA/Neck CTA.

Brain and Neck/Chest CTA

- Non central Horner's syndrome (secondary/preganglionic or tertiary/post-ganglionic) for evaluation of underlying vascular source (such as dissection, aneurysm, arteritis) [21,22]

Brain and Neck/Chest/Abdomen/Pelvis CTA

- For patients with fibromuscular dysplasia (FMD), a one-time vascular study from brain to pelvis is indicated [23,24]
- For assessment in patients with spontaneous coronary artery dissection (SCAD), SCAD is a common initial diagnostic event for underlying fibromuscular dysplasia (FMD) [25]
    - **NOTE**: Body vascular imaging for SCAD can be done at time of coronary angiography
- Takayasu's Arteritis [26]:
    - At initial diagnosis
    - Every 6 months for the first 2 years while on therapy
    - Annually after the first 2 years

CODING AND STANDARDS

Codes

70471, +07472

Applicable Lines of Business

☒	CHIP (Children's Health Insurance Program)
☒	Commercial
☒	Exchange/Marketplace
☒	Medicaid
☒	Medicare Advantage

BACKGROUND

Pulsatile tinnitus

Pulsatile tinnitus has many etiologies, and the choice of study should be based on accompanying signs and symptoms. For general screening MRI brain with IAC/MRA brain and neck is approvable. If IIH is suspected (typically with headache and vision changes in a younger woman with a high BMI), MRI/MRV brain is indicated. If there is concern for vascular etiology, CTA or MRA brain/neck is indicated. If there is associated hearing loss and neurological signs/symptoms, MRI brain with IAC is indicated. If the temporal bone is suspected to be involved and/or retrotympanic lesion seen on otoscopy, CT temporal bone/IAC is indicated. If there is concurrent concern for both bony and vascular issues, CTA of the head and neck can be used to evaluate both.

CTA and Dissection

Craniocervical dissections can be spontaneous or traumatic. Spontaneous dissection presents with headache, neck pain with neurological signs or symptoms. There is often minor trauma or precipitating factor (i.e., exercise, neck manipulation). Dissection of the extracranial vessels can extend intracranially and/or lead to thrombus which can migrate into the intracranial circulation causing ischemia. Therefore, vascular imaging of the head and neck is warranted. [10,27]

Contraindications and Preferred Studies

- Contraindications and reasons why a CT/CTA cannot be performed may include: impaired renal function, significant allergy to IV contrast, pregnancy (depending on trimester).
- Contraindications and reasons why an MRI/MRA cannot be performed may include: impaired renal function, claustrophobia, non-MRI compatible devices (such as non-compatible defibrillator or pacemaker), metallic fragments in a high-risk location, patient exceeds weight limit/dimensions of MRI machine.

SUMMARY OF EVIDENCE

ACR Appropriateness Criteria® Cerebrovascular Diseases-Stroke and Stroke-Related Conditions [2]

Study Design: The document is a guideline developed by the American College of Radiology (ACR) Appropriateness Criteria Expert Panel on Neurological Imaging. It is based on a systematic analysis of medical literature from peer-reviewed journals and follows established methodology principles such as the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) and the RAND/UCLA Appropriateness Method.

Target Population: The guidelines are intended for use by radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment for patients with cerebrovascular diseases, including stroke and stroke-related conditions.

Key Factors:

- **Conditions Covered**: The guidelines encompass a wide range of cerebrovascular diseases, including carotid stenosis, carotid dissection, intracranial large vessel occlusion, and cerebral venous sinus thrombosis. They also address complications such as intraparenchymal hemorrhage and completed ischemic strokes.
- **Imaging Recommendations**: The document provides evidence-based guidelines for appropriate imaging examinations for diagnosis and treatment of specified medical conditions. It includes recommendations for various imaging modalities such as CT, MRI, MRA, and ultrasound.
- **Clinical Scenarios**: The guidelines cover different clinical scenarios, including transient ischemic attack (TIA), acute ischemic stroke, recent ischemic infarct, and known intraparenchymal hemorrhage, among others.
- **Methodology**: The guideline development and revision process involves a multidisciplinary expert panel and supports the systematic analysis of medical literature. In instances where peer-reviewed literature is lacking or equivocal, expert opinions are used to formulate recommendations.

Society for Vascular Surgery clinical practice guidelines for management of extracranial cerebrovascular disease [15]

Study Design: This document presents clinical practice guidelines for the management of extracranial cerebrovascular disease, specifically carotid bifurcation stenosis in stroke prevention. The guidelines are based on extensive investigations, including multiple randomized controlled trials (RCTs) and systematic reviews.

Target Population: The guidelines focus on patients with carotid bifurcation disease, including both symptomatic and asymptomatic patients with varying degrees of carotid artery stenosis.

Key Factors:

- **Carotid Endarterectomy (CEA) vs. Medical Therapy**: CEA is recommended over maximal medical therapy for low-risk patients with asymptomatic carotid bifurcation atherosclerosis and stenosis of >70%.
- **CEA vs. Transfemoral Carotid Artery Stenting (TF-CAS)**: CEA is recommended over TF-CAS for low surgical risk patients with symptomatic carotid artery stenosis of >50%.
- **Timing of Carotid Intervention**: Carotid revascularization is recommended for symptomatic patients with >50% stenosis to be performed as soon as the patient is neurologically stable after 48 hours but definitely before 14 days after symptom onset.
- **Screening for Carotid Artery Stenosis**: Routine screening for asymptomatic carotid artery stenosis in individuals without cerebrovascular symptoms or significant risk factors is not recommended.

Optimal Sequence for Intervention: For patients with symptomatic carotid stenosis of 50% to 99% who require both CEA and coronary artery bypass grafting (CABG), CEA before or concomitant with CABG is suggested.

ANALYSIS OF EVIDENCE

Shared Findings [2,15]:

- **Use of CTA for Stroke and Vascular Conditions**: The articles agree on the importance of CTA in diagnosing and managing various cerebrovascular conditions, including stroke, carotid stenosis, and vascular malformations.
- **Preference for Non-Invasive Imaging**: Both AbuRahma et al 2022 and Pannell et al 2024 highlight the preference for non-invasive imaging modalities, such as duplex ultrasound, for initial screening of carotid artery stenosis in asymptomatic patients.
- **Importance of Timing**: The timing of carotid intervention is emphasized in both AbuRahma et al 2022 and Pannell et al 2024, with a focus on performing revascularization as soon as the patient is stable.

Conclusion [2,15]

In summary, while all three articles recognize the value of CTA in managing cerebrovascular conditions, they differ in their specific recommendations and focus areas. AbuRahma et al 2022 emphasizes the preference for CEA over TF-CAS and the use of duplex ultrasound for screening and Pannell et al 2024 provides a comprehensive overview of imaging recommendations for various cerebrovascular conditions.

POLICY HISTORY

Date	Summary
November 2025	• New Guideline

LEGAL AND COMPLIANCE

Guideline Approval

Committee

Reviewed / Approved by Evolent Specialty Services Clinical Guideline Review Committee

Disclaimer

Evolent Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment, and medical advice. Evolent uses Clinical Guidelines in accordance with its contractual obligations to provide utilization management. Coverage for services varies for individual members according to the terms of their health care coverage or government program. Individual members' health care coverage may not utilize some Evolent Clinical Guidelines. Evolent clinical guidelines contain guidance that requires prior authorization and service limitations. A list of procedure codes, services or

drugs may not be all inclusive and does not imply that a service or drug is a covered or non-covered service or drug. Evolent reserves the right to review and update this Clinical Guideline in its sole discretion. Notice of any changes shall be provided as required by applicable provider agreements and laws or regulations. Members should contact their Plan customer service representative for specific coverage information.

Evolent Clinical Guidelines are comprehensive and inclusive of various procedural applications for each service type. Our guidelines may be used to supplement Medicare criteria when such criteria is not fully established. When Medicare criteria is determined to not be fully established, we only reference the relevant portion of the corresponding Evolent Clinical Guideline that is applicable to the specific service or item requested in order to determine medical necessity.

evolent

REFERENCES

1. Kleindorfer DO, Towfighi A, Chaturvedi S, et al. 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*. 2021;52(7):e364-e467. doi:10.1161/STR.0000000000000375
2. Pannell JS, Corey AS, Shih RY, et al. ACR Appropriateness Criteria® Cerebrovascular Diseases-Stroke and Stroke-Related Conditions. *Journal of the American College of Radiology*. 2024;21(6):S21-S64. doi:10.1016/j.jacr.2024.02.015
3. Lima Neto A, Bittar R, Gattas G, et al. Pathophysiology and Diagnosis of Vertebrobasilar Insufficiency: A Review of the Literature. *Int Arch Otorhinolaryngol*. 2017;21(03):302-307. doi:10.1055/s-0036-1593448
4. Pirau L, Lui F. Vertebrobasilar Insufficiency. *StatPearls*. Published online July 17, 2023. https://www.ncbi.nlm.nih.gov/books/NBK482259/
5. Searls DE, Pazdera L, Korbel E, Vysata O, Caplan LR. Symptoms and Signs of Posterior Circulation Ischemia in the New England Medical Center Posterior Circulation Registry. *Arch Neurol*. 2012;69(3):346-351. doi:10.1001/archneurol.2011.2083
6. Wang LL, Thompson TA, Shih RY, et al. ACR Appropriateness Criteria® Dizziness and Ataxia: 2023 Update. *Journal of the American College of Radiology*. 2024;21(6):S100-S125. doi:10.1016/j.jacr.2024.02.018
7. Goodfriend SD, Tadi P, Koury R. Carotid Artery Dissection. *StatPearls*. Published online December 19, 2022. https://www.ncbi.nlm.nih.gov/books/NBK430835/
8. Britt TB, Agarwal S. Vertebral Artery Dissection. *StatPearls*. Published online March 20, 2023. https://www.ncbi.nlm.nih.gov/books/NBK441827/
9. Harrigan MR. Ischemic Stroke due to Blunt Traumatic Cerebrovascular Injury. *Stroke*. 2020;51(1):353-360. doi:10.1161/STROKEAHA.119.026810
10. Shakir HJ, Davies JM, Shallwani H, Siddiqui AH, Levy EI. Carotid and Vertebral Dissection Imaging. *Curr Pain Headache Rep*. 2016;20(12):68. doi:10.1007/s11916-016-0593-5
11. Shih RY, Burns J, Ajam AA, et al. ACR Appropriateness Criteria® Head Trauma: 2021 Update. *Journal of the American College of Radiology*. 2021;18(5):S13-S36. doi:10.1016/j.jacr.2021.01.006
12. Patel SD, Haynes R, Staff I, Tunguturi A, Elmoursi S, Nouh A. Recanalization of cervicocephalic artery dissection. *Brain Circ*. 2020;6(3):175-180. doi:10.4103/bc.bc_19_20
13. Larsson SC, King A, Madigan J, Levi C, Norris JW, Markus HS. Prognosis of carotid dissecting aneurysms. *Neurology*. 2017;88(7):646-652. doi:10.1212/WNL.0000000000003617
14. Maz M, Chung SA, Abril A, et al. 2021 American College of Rheumatology/Vasculitis Foundation Guideline for the Management of Giant Cell Arteritis and Takayasu Arteritis. *Arthritis & Rheumatology*. 2021;73(8):1349-1365. doi:10.1002/art.41774

evolent

15. AbuRahma AF, Avgerinos ED, Chang RW, et al. Society for Vascular Surgery clinical practice guidelines for management of extracranial cerebrovascular disease. *J Vasc Surg*. 2022;75(1):4S-22S. doi:10.1016/j.jvs.2021.04.073
16. Hofmann E, Behr R, Neumann-Haefelin T, Schwager K. Pulsatile Tinnitus: imaging and differential diagnosis. *Dtsch Arztebl Int*. 2013;110(26):451-458. doi:10.3238/arztebl.2013.0451
17. Pegge SAH, Steens SCA, Kunst HPM, Meijer FJA. Pulsatile Tinnitus: Differential Diagnosis and Radiological Work-Up. *Curr Radiol Rep*. 2017;5(1):5. doi:10.1007/s40134-017-0199-7
18. Loeys BL, Dietz HC. Loeys-Dietz Syndrome. *GeneReviews®*. Published online September 12, 2024. https://www.ncbi.nlm.nih.gov/books/NBK1133/
19. Byers PH. Vascular Ehlers-Danlos Syndrome. *GeneReviews®*. Published online April 10, 2025. https://www.ncbi.nlm.nih.gov/books/NBK1494/
20. Robertson RL, Palasis S, Rivkin MJ, et al. ACR Appropriateness Criteria® Cerebrovascular Disease-Child. *Journal of the American College of Radiology*. 2020;17(5):S36-S54. doi:10.1016/j.jacr.2020.01.036
21. Davagnanam I, Fraser CL, Miszkiel K, Daniel CS, Plant GT. Adult Horner's syndrome: a combined clinical, pharmacological, and imaging algorithm. *Eye*. 2013;27(3):291-298. doi:10.1038/eye.2012.281
22. Maamouri R, Ferchichi M, Houmane Y, Gharbi Z, Cheour M. Neuro-Ophthalmological Manifestations of Horner's Syndrome: Current Perspectives. *Eye Brain*. 2023;Volume 15:91-100. doi:10.2147/EB.S389630
23. Gornik HL, Persu A, Adlam D, et al. First International Consensus on the diagnosis and management of fibromuscular dysplasia. *Vascular Medicine*. 2019;24(2):164-189. doi:10.1177/1358863X18821816
24. Kesav P, Manesh Raj D, John S. Cerebrovascular Fibromuscular Dysplasia – A Practical Review. *Vasc Health Risk Manag*. 2023;Volume 19:543-556. doi:10.2147/VHRM.S388257
25. Teruzzi G, Santagostino Baldi G, Gili S, Guarnieri G, Montorsi P, Trabattoni D. Spontaneous Coronary Artery Dissections: A Systematic Review. *J Clin Med*. 2021;10(24):5925. doi:10.3390/jcm10245925
26. Joseph G, Goel R, Thomson VS, Joseph E, Danda D. Takayasu Arteritis. *J Am Coll Cardiol*. 2023;81(2):172-186. doi:10.1016/j.jacc.2022.09.051
27. Nash M, Rafay MF. Craniocervical Arterial Dissection in Children: Pathophysiology and Management. *Pediatr Neurol*. 2019;95:9-18. doi:10.1016/j.pediatrneurol.2019.01.020