

04-70450-05

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Reviewed: 03/28/24

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Subject: Computed Tomography Angiography (CTA) Brain (Head)

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DESCRIPTION:

Computed tomography angiography (CTA) is an imaging procedure performed for characterizing vascular anatomy, diagnosing vascular diseases, planning treatment for vascular disease and assessing the effectiveness of vascular treatment. CTA may be performed with or without contrast material.

Summary and Analysis of Evidence: Cervicocerebral computed tomography angiography (CTA) is a proven and useful procedure for the detection and characterization of vascular diseases and of vascular anatomy relevant to the treatment of extravascular disorders. CTA may be used as the primary modality for detecting disease or as an adjunctive tool for characterizing known disease or assessing changes over time. CTA is primarily performed to assess the heart, arteries, or veins (ASNR-SPR, 2020). Non-invasive cross-sectional imaging techniques play a crucial role in the assessment of the vascular disease processes. Computed tomography angiography (CTA) is an imaging method of choice for a wide range of vascular diseases that span across different vascular territories (Baliyan, et al., 2019).

POSITION STATEMENT:

Documentation Requirements

Documentation containing the medical necessity of the computed tomography angiography (CTA) of the brain (head) and imaging results (e.g., images, clinical reports) should be maintained in the member's medical record. Documentation may be requested as part of the review process.

Computed tomography angiography (CTA) of the brain (head) **meets the definition of medical necessity** for the following:

Evaluation of suspected intracranial vascular disease

Aneurysm screening

- Screening for suspected intracranial aneurysm in member whose parent, brother, sister, or child has history of intracranial aneurysm

Note: Repeat study is recommended every 5 years.

- Screening for aneurysm in polycystic kidney disease (after age 30), Loeys-Dietz syndrome, fibromuscular dysplasia, spontaneous coronary arteries dissection (SCAD), or known aortic coarctation.

Note: Imaging for Loeys-Dietz syndrome may be repeated at least every two years.

Vascular abnormalities

- Suspected vascular malformation (arteriovenous malformation (AVM) or dural arteriovenous fistula) in patient with previous or indeterminate imaging study
- Thunderclap headache with continued concern for underlying vascular abnormality after initial negative work-up
 - Negative brain CT and negative lumbar puncture; **OR**
 - Negative brain MRI
- Headache associated with exercise or sexual activity
- Isolated third nerve palsy (oculomotor) with pupil involvement for evaluation of aneurysm
- Pulsatile tinnitus to identify a vascular etiology.

Cerebrovascular disease

Ischemic

- Recent ischemic stroke or transient ischemic attack
- Known or suspected vertebrobasilar insufficiency (VBI) in members with symptoms (e.g., dizziness, vertigo, headaches, diplopia, blindness, vomiting, ataxia, weakness in both sides of the body, abnormal speech).

Hemorrhagic

- Known subarachnoid hemorrhage (SAH)
- Known cerebral intraparenchymal hemorrhage with concern for underlying vascular abnormality.

Venous and magnetic resonance venography (MRV) is contraindicated or cannot be performed

- Suspected venous thrombosis (dural sinus thrombosis)
- Distinguishing benign intracranial hypertension (pseudotumor cerebri) from dural sinus thrombosis.

Sickle cell disease (ischemic and/or hemorrhagic) and magnetic resonance venography (MRV) is contraindicated or cannot be performed

- Neurological signs or symptoms in sickle cell disease
- Stroke risk in sickle cell patients (2-16 years of age) with a transcranial doppler velocity > 200.

Vasculitis with initial laboratory workup (such as erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), plasma viscosity)

- Suspected secondary CNS vasculitis based on neurological sign or symptoms in the setting of an underlying systemic disease with abnormal inflammatory markers or autoimmune antibodies
- Suspected primary CNS vasculitis based on neurological signs and symptoms with completed infectious/inflammatory lab work-up.

Other intracranial vascular disease

- Suspected Moyomoya disease
- Suspected reversible cerebral vasoconstriction syndrome
- Giant cell arteritis with suspected intracranial involvement.

Evaluation of known intracranial vascular disease

- Known intracranial aneurysm or vascular malformation (e.g., AVM or dural arteriovenous fistula)
- Vascular abnormality visualized on previous brain imaging that is equivocal or needs further evaluation
- Known vertebrobasilar insufficiency (VBI) with new or worsening signs or symptoms
- Known vasculitis, reversible cerebral vasoconstriction syndrome or Moyomoya disease.

Pre-operative/procedural evaluation for brain/skull surgery

- Pre-operative evaluation for a planned surgery or procedure.

Post-operative/procedural evaluation

- A follow-up study may be needed to help evaluate a member's progress after treatment, procedure, intervention or surgery. Documentation requires a medical reason that clearly indicates why additional imaging is needed for the type and area(s) requested.

Indications for brain CTA/neck CTA combination studies

- Recent ischemic stroke or transient ischemic attack (TIA)
- Known or suspected vertebrobasilar insufficiency (VBI) in members with symptoms such as dizziness, vertigo, headaches, diplopia, blindness, vomiting, ataxia and weakness in both sides of the body, or abnormal speech
- Suspected carotid or vertebral artery dissection; due to trauma or spontaneous due to weakness of vessel wall

- Asymptomatic patients with an abnormal ultrasound of the neck or carotid duplex imaging (e.g., carotid stenosis \geq 70%, technically limited study, aberrant direction of flow in the carotid or vertebral arteries) and member is a candidate for surgery or angioplasty
- Symptomatic members with an abnormal ultrasound of the neck or carotid duplex imaging (e.g., carotid stenosis \geq 50%, technically limited study, aberrant direction of flow in the carotid or vertebral arteries) and member is a candidate for surgery or angioplasty
- Pulsatile tinnitus (to identify vascular etiology).

Indications for brain CT/brain CTA combination studies

- Recent ischemic stroke or transient ischemic attack (TIA)
- Acute, sudden onset of headache with personal history of a vascular abnormality or first-degree family history of aneurysm
- Headache associated with exercise or sexual activity when MRI is contraindicated or cannot be performed
- Suspected venous thrombosis (dural sinus thrombosis) (CT venogram (CTV) and MRI is contraindicated or cannot be performed).

Indications for brain CT/brain CTA/neck CTA combination studies

- Recent ischemic stroke or transient ischemic attack (TIA)
- Approved indications as noted above and being performed in high risk populations (in whom MRI is contraindicated or cannot be performed) and anesthesia is needed for the procedure and there is a suspicion of concurrent intracranial pathology.

BILLING/CODING INFORMATION:

CPT Coding:

70496	Computed tomographic angiography, head, with contrast material(s), including noncontrast images, if performed, and image postprocessing
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REIMBURSEMENT INFORMATION:

Refer to section entitled [POSITION STATEMENT](#).

Re-imaging or additional imaging due to poor contrast enhanced exam or technically limited exam is the responsibility of the imaging provider.

LOINC Codes:

The following information may be required documentation to support medical necessity: physician history and physical, physician progress notes, plan of treatment and reason for computed tomography angiography (CTA) of the brain (head).

Documentation Table	LOINC Codes	LOINC Time Frame Modifier Code	LOINC Time Frame Modifier Codes Narrative

Physician history and physical	28626-0	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Attending physician progress note	18741-9	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Plan of treatment	18776-5	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology reason for study	18785-6	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology comparison study-date and time	18779-9	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology comparison study observation	18834-2	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology-study observation	18782-3	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology-impression	19005-8	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology study-recommendation (narrative)	18783-1	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim

PROGRAM EXCEPTIONS:

Federal Employee Plan (FEP): Follow FEP guidelines.

Medicare Advantage products:

No Local Coverage Determination (LCD) were found at the time of the last guideline reviewed date.

The following National Coverage Determination (NCD) was reviewed on the last guideline reviewed date: Computed Tomography (220.1), located at [cms.gov](https://www.cms.gov).

If this Medical Coverage Guideline contains a step therapy requirement, in compliance with Florida law 627.42393, members or providers may request a step therapy protocol exemption to this requirement if based on medical necessity. The process for requesting a protocol exemption can be found at [Coverage Protocol Exemption Request](#).

DEFINITIONS:

No guideline specific definitions apply.

RELATED GUIDELINES:

[Computed Tomography Angiography \(CTA\) Abdomen and Pelvis, 04-70450-04](#)

[Computed Tomography Angiography \(CTA\) Neck, 04-70450-06](#)

[Computed Tomography Angiography \(CTA\) Chest \(non coronary\), 04-70450-07](#)

[Computed Tomography Angiography \(CTA\) Upper Extremity, 04-70450-08](#)

[Computed Tomography Angiography \(CTA\) Lower Extremity, 04-70450-09](#)

OTHER:

None applicable.

REFERENCES:

1. ACR–ASNR–SPR Practice Parameter for the Performance and Interpretation of Cervicocerebral Computed Tomography Angiography (CTA), 2020.
2. ACR-NASCI-SIR-SPR Practice Parameter for the Performance and Interpretation of Body Computed Tomography Angiography (CTA), Revised 2021.
3. American College of Radiology ACR Appropriateness Criteria®: Ataxia, 2018.
4. American College of Radiology ACR Appropriateness Criteria®: Cerebrovascular Disease, 2016.
5. American College of Radiology ACR Appropriateness Criteria®: Focal Neurological Deficit, 2012.
6. American College of Radiology ACR Appropriateness Criteria®: Headache, Revised 2019.
7. American College of Radiology ACR Appropriateness Criteria®: Head Trauma, 2012.
8. American College of Radiology ACR Appropriateness Criteria® Suspected Spine Trauma, Revised 2018.
9. Baliyan V, Shaqdan K, Hedgire S, et al. Vascular computed tomography angiography technique and indications. *Cardiovasc Diagn Ther*. 2019 Aug;9(Suppl 1):S14-S27.
10. Chalouhi N, Chitale R, Jabbour P et al. The case for family screening for intracranial aneurysms. *Neurosurg Focus*. 2011; 31(6): E8.
11. Chen X, Liu Y, Tong H et al. Meta-analysis of computed tomography angiography versus magnetic resonance angiography for intracranial aneurysm. *Medicine (Baltimore)*. 2018 May;97(20):e10771.

12. Coutinho JM. Cerebral venous thrombosis. J Thromb Haemost 2015; 13 Suppl 1: S238-S244.
13. Godasi R, Pang G, Chauhan S et al. Primary central nervous system vasculitis. 2020 Sep 22. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan.
14. National Imaging Associates, Inc. Brain (Head) CTA Clinical Guidelines, 2022.
15. Pegge SAH, Steens SCA, Kunst HPM et al. Pulsatile tinnitus: differential diagnosis and radiological work-Up. Curr Radiol Rep. 2017;5(1):5.
16. Pirau L, Lui F. Vertebrobasilar insufficiency. 2020 Jul 21. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan.
17. Simon LV, Nassar AK, Mohseni M. Vertebral artery injury. 2020 Jul 21. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan.

COMMITTEE APPROVAL:

This Medical Coverage Guideline (MCG) was approved by the Florida Blue Medical Policy and Coverage Committee on 03/28/24.

GUIDELINE UPDATE INFORMATION:

11/15/13	New Medical Coverage Guideline.
05/15/15	Annual review. No change in position statement. Updated references.
06/15/15	Updated related guidelines.
04/15/18	Revision; revised position statement. Updated references.
03/15/21	Review/revision. Revised and expanded indications and criteria for suspected and known intravascular disease. Revised criteria for venous thrombosis. Added sickle cell disease and criteria. Revised and expand criteria and indications for vascular disease. Revised pre-operative evaluation. Revised criteria for combination studies: brain CTA/neck CTA. Added indications and criteria for combination studies: brain CT/brain CTA and brain CT/brain CTA/neck CTA. Updated references.
05/15/22	Review/revision. Revised criteria for: aneurysm screening, venous and magnetic resonance venography (MRV), brain CTA/neck CTA combination studies and brain CT/brain CTA/neck CTA combination studies. Revised and expanded criteria for vascular abnormalities. Expanded criteria for: other intracranial vascular disease, evaluation of known intracranial vascular disease, pre-operative/procedural evaluation for brain/skull surgery and brain CT/brain CTA/ neck CTA combination studies. Updated references.
07/01/22	Revision to Program Exceptions section.
08/21/23	Update to Program Exceptions section.
04/15/24	Review; maintain position statements. Updated program exception and references.

