



Cohere Medical Policy - Computed Tomography (CT), Brain

Clinical Policy for Medical Necessity Review

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Important Notices

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Policy Information:

Specialty Area: Diagnostic Imaging

Policy Name: Cohere Medical Policy - Computed Tomography (CT), Brain

Type: Adult (18+ yo) | Pediatric (0-17 yo)

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Medical Necessity Criteria

Service: Computed Tomography (CT), Brain

Cohere Health takes an evidence-based approach to reviewing imaging and procedure requests, meaning that sufficient clinical information must be provided at the time of submission to determine medical necessity.

Documentation must include a recent and detailed history, physical examination related to the onset or change in symptoms, relevant lab results, prior imaging, and details of previous treatments. Advanced imaging or procedures should be requested after a clinical evaluation by the treating provider, which may include a referral to a specialist.

- When a specific clinical indication is not explicitly addressed in the Cohere Health medical policy, medical necessity will be determined based on established clinical best practices, as supported by evidence-based literature, peer-reviewed sources, professional society guidelines, and state or national recommendations, unless otherwise directed by the health plan.
- Requests submitted without clinical documentation, or those that do not align with the provided clinical information—such as mismatched laterality, body part, or CPT code—may be denied for lack of medical necessity due to insufficient or inconsistent clinical information.
- Repeat diagnostic testing due to technical issues—such as patient motion, incomplete exams, or incorrect imaging sequences—may not be considered medically necessary, as it is the responsibility of the imaging center to deliver appropriate, high-quality studies as originally authorized. Similarly, repeat imaging requested at a different facility based solely on provider preference may not be approved for medical necessity.
- When there are multiple diagnostic or therapeutic procedures requested simultaneously or within the past three months, each will be reviewed independently. Clinical documentation must clearly justify all of the following:
 - The medical necessity of each individual request

- Why prior imaging or procedures were inconclusive or why additional/follow-up studies are needed
- How the results will impact patient management or treatment decisions
- Requests involving adjacent or contiguous body parts may be considered not medically necessary if the documentation demonstrates that the patient's primary symptoms can be adequately assessed with a single study or procedure.
- Cohere Health evaluates imaging exams based on medical necessity, regardless of contrast use. If an initial non-contrast study is completed and the radiologist later determines that contrast is needed to clarify a finding, the original authorization number may be used—provided the contrast-enhanced exam is performed at the same imaging center and within the original request's validity period, unless otherwise directed by the health plan.

Description

Computed tomography (CT) is a common noninvasive imaging modality that allows for the creation of detailed cross-sectional images of the brain. It allows for the evaluation of the morphology and pathology of brain structures, especially as related to diagnosing and monitoring cerebral trauma or hemorrhage. It can be performed both with and without contrast, depending on the structures being visualized.¹

Medical Necessity Criteria

Indications

Computed tomography (CT), brain is considered appropriate if **ANY** of the following is **TRUE**:

- For diagnosis, treatment, or staging of neoplastic conditions (including brain masses or mass-like lesions if magnetic resonance imaging [MRI] is contraindicated or cannot be performed)¹; **OR**
- Lesion with atypical features on prior imaging for further evaluation or follow-up; **OR**
- Bone tumor or abnormality of the skull; **OR**
- Known or suspected pituitary tumors or sella turcica tumor (MRI is contraindicated or cannot be performed); **OR**
- Skull lesion (e.g., fibrous dysplasia, Paget disease, histiocytosis, osteolytic lesion, skeletal tumors)¹; **OR**
- Suspected recurrence with prior history of central nervous system [CNS] cancer (either primary or secondary) based on neurological symptoms or examination findings (MRI is contraindicated or cannot be performed); **OR**
- Suspected elevated intracranial pressure¹; **OR**
- Histiocytic neoplasms (e.g., Langerhans cell histiocytosis, Erdheim-Chester disease, Rosai-Dorfman disease) to assess treatment response and surveillance of known brain/skull lesions when MRI is contraindicated or cannot be performed; **OR**
- Infection or an infectious disorder, known or suspected, with **ALL** of the following¹:
 - MRI is contraindicated or cannot be performed; **AND**
 - **ANY** of the following:
 - Suspected intracranial abscess or brain infection with altered mental status or abnormal lab findings; **OR**
 - Follow-up assessment during or after treatment completed; **OR**
 - Endocarditis with suspected septic emboli; **OR**
 - Suspected primary CNS vasculitis based on neurological signs and symptoms with completed infectious or inflammatory lab work-up; **OR**
- Trauma-related conditions as indicated by **ANY** of the following:
 - Head trauma, acute¹⁻³; **OR**
 - Nonaccidental trauma (e.g., abuse)¹⁻³; **OR**
 - Known coagulopathy or on anticoagulation; **OR**

- Repeat scan 24-hour post head trauma for anticoagulated or coagulopathic patients with a suspected diagnosis of delayed subdural hematoma; **OR**
- Postconcussive syndrome with **ALL** of the following⁴:
 - MRI is contraindicated or cannot be performed; **AND**
 - Symptoms are worsening or not improving; **AND**
 - Previous imaging has not been performed; **OR**
- Subacute or chronic traumatic brain injury with **ALL** of the following:
 - MRI is contraindicated or cannot be performed; **AND**
 - Unexplained cognitive and/or neurologic deficit; **OR**
- Known or suspected skull fracture by physical exam and/or prior imaging; **OR**
- Vascular conditions, known or suspected, including **ANY** of the following:
 - Intraparenchymal hemorrhage, known or suspected⁵; **OR**
 - Intracranial hemorrhage, known or suspected, including follow-up¹; **OR**
 - Ischemic infarct, known or suspected⁵; **OR**
 - Stroke or transient ischemic attack (TIA), suspected⁵; **OR**
 - Venous sinus thrombosis, known or suspected⁵; **OR**
- For evaluation of **ANY** of the following miscellaneous pathologies when prior testing has failed:
 - Syncope with clinical concern for seizure or associated neurological signs and symptoms when MRI is contraindicated or cannot be performed; **OR**
 - For evaluation of cranial nerve and visual abnormalities when MRI is contraindicated or cannot be performed; **OR**
 - Congenital skull and brain lesions (e.g., craniosynostosis, macrocephaly, and microcephaly)¹; **OR**
 - Established initial clinical diagnosis of dementia including **ALL** of the following:
 - MRI is contraindicated or cannot be performed; **AND**
 - **ANY** of the following:
 - Abnormal cognitive status testing according to objective screening tool including **ANY** of the following⁶⁻⁸:
 - Montreal cognitive assessment (MoCA) less than 26; **OR**
 - Mini-mental state examination (MMSE) score less than 23⁸; **OR**
 - Saint Louis University mental status (SLUMS) score less than 19⁹; **OR**,

- Informant questionnaire on cognitive decline in the elderly (IQCODE) score greater than or equal to 3.4¹⁰; **OR**
- Mini-cog score less than 3; **OR**
- Formal neuropsychological testing; **OR**
- Detailed history showing 6 months longer of cognitive decline, memory loss, or impairment of daily activities; **AND**
- Completed screen for depression; **AND**
- Completed metabolic workup (e.g., testing for anemia, thyroid function testing, liver and kidney function testing, complete blood count, electrolytes, diabetes mellitus, and B12 deficiency); **OR**
- The patient has, or is suspected to have, a seizure disorder and **ALL** of the following:
 - MRI is contraindicated or cannot be performed; **AND**
 - **ANY** of the following:
 - New onset of seizures or newly identified change in seizure activity/pattern; **OR**
 - Known seizure disorder without prior imaging; **OR**
 - Medically refractory epilepsy; **OR**
 - New neurologic deficit or no return to previous neurologic baseline; **OR**
 - Repeat testing for “Epilepsy Protocol” or preoperative or treatment planning; **OR**
- Headaches as indicated by **ANY** of the following¹¹:
 - New onset headache in an adult patient (18 years of age or older) with **ALL** of the following:
 - MRI is contraindicated or cannot be performed; **AND**
 - **ANY** of the following:
 - With optic disc edema; **OR**
 - Patient is aged 50 years or older; **OR**
 - History of head trauma; **OR**
 - Headache preceded by cough, sneeze, valsalva, physical exertion or sexual activity; **OR**
 - Pregnant or less than 3 months postpartum; **OR**
 - Cancer history or immunosuppression; **OR**
 - Headache awakens the patient from sleep; **OR**
 - Chronic headache with significant change in character, severity or frequency of headache; **OR**

- Primary trigeminal autonomic cephalalgias (e.g., cluster headache); **OR**
- Headache accompanied by seizures, vomiting, focal neurological symptoms, vision changes, altered mental status, or acute hypertension; **OR**
- Acute headache and **ANY** of the following are **TRUE**¹¹:
 - Sudden onset (worst, most severe headache ever experienced or thunderclap-type); **OR**
 - Aneurysm, suspected with a family history (brother, sister, parent, or child) of a brain aneurysm or arteriovenous malformation (AVM); **OR**
 - Bleeding, suspected (known coagulopathy or on anticoagulation) with a prior history of stroke or intracranial hemorrhage; **OR**
- Headaches in a pediatric patient with **ALL** of the following:
 - MRI is contraindicated or cannot be performed; **AND**
 - **ANY** of the following:
 - 5 years of age or younger; **OR**
 - Headaches awakening from sleep or always present upon waking; **OR**
 - Focal findings or symptoms on neurologic examination including diplopia; **OR**
 - Clumsiness (common description of gait or coordination problems in young children); **OR**
 - Headaches associated with morning nausea/vomiting; **OR**
 - Seizures; **OR**
 - Papilledema on physical exam; **OR**
 - Headache precipitated by coughing, sneezing, physical exertion or Valsalva; **OR**
 - Progressive worsening in headache frequency and severity without period of temporary improvement; **OR**
 - Systemic symptoms (e.g., persistent fever, weight loss, rash, or joint pain); **OR**
 - The patient is immunocompromised; **OR**
 - Known history of cancer of any type; **OR**
 - Known autoimmune or rheumatologic disease; **OR**
 - Known genetic disorder with predisposition to intracranial mass lesions; **OR**

- History of stable chronic headaches with recent significant change in frequency or severity; **OR**
- Focal neurological complaints including dizziness, visual change, acute hypertension or altered mental status; **OR**
- Thunderclap headache; **OR**
- Hypercoagulable state or bleeding disorder; **OR**
- Movement disorders with **ALL** of the following⁷:
 - MRI is contraindicated or cannot be performed; **AND**
 - **ANY** of the following neurodegenerative diseases:
 - Acute onset of a movement disorder with concern for stroke or hemorrhage; **OR**
 - For evaluation of Parkinson's disease with atypical features or other movement disorders (e.g., suspected Huntington's disease, chorea, hemiballismus, atypical dystonia) to exclude an underlying structural lesion; **OR**
- The patient has ataxia or other signs of focal neurological disease with **ALL** of the following¹⁵:
 - MRI is contraindicated or cannot be performed; **AND**
 - **ANY** of the following:
 - Acute, new, or fluctuating neurologic symptoms or deficits that suggest a localizing neurologic process, including **ANY** of the following:
 - Sensory deficits including ANY of the following:
 - Involvement of two limbs on the same side of the body; **OR**
 - Face and limb involvement; **OR**
 - Limb weakness including **ANY** of the following:
 - Involvement of two limbs on the same side of the body; **OR**
 - Face and limb involvement; **OR**
 - Abnormal reflexes (pathological, asymmetric, hyperreflexia); **OR**
 - Speech difficulties; **OR**
 - Lack of coordination or gait disturbance; **OR**
 - Mental status changes; **OR**
 - Babinski/Hoffman sign; **OR**
 - Increased tone in affected limb; **OR**
 - Bladder or bowel dysfunction; **OR**
 - Cranial nerve palsy, not otherwise explained (e.g., Bell's palsy or diabetic CN III palsy); **OR**

- Horner syndrome (unilateral miosis, ptosis, facial anhidrosis); **OR**
- Papilledema; **OR**
- New visual disturbance (e.g., diplopia, visual field defect, nystagmus, visual loss); **OR**
- Chronic disequilibrium with signs of cerebellar ataxia¹²; **OR**
- Pathology involving the cranial nerve¹³; **OR**
- Brain structural abnormality identified or suspected on prior imaging; **OR**
- Vertigo, unexplained by history or physical examination with **ANY** of the following:¹⁴
 - Worsening; **OR**
 - Affected daily function; **OR**
 - Associated hearing loss or other neurological deficits; **OR**
 - History of prior infection (e.g., otitis or meningitis); **OR**
 - History of prior trauma; **OR**
- With developmental delay in a child less than 18 years of age when MRI is contraindicated or cannot be performed¹; **OR**
- Preoperative, postoperative, or pretreatment evaluation for **ANY** of the following¹:
 - CT guidance and image integration for procedure or surgery; **OR**
 - Postoperative evaluation following intracranial surgery; **OR**
- Congenital conditions (e.g., hydrocephalus, including shunt malfunctions or shunt revision), and **ANY** of the following is **TRUE**^{1,15,16}:
 - Perioperatively if indicated based on the underlying disease and preoperative radiographic findings; **OR**
 - 6–12 months after placement; **OR**
 - With neurologic symptoms that suggest shunt malfunction; **OR**
 - Annual follow-up if the patient continues to exhibit symptoms (more frequent follow-up may be necessary if symptoms persist); **OR**
- Repeat imaging (defined as a repeat request following recent imaging of the same anatomic region with the same or similar modality) will be considered reasonable and necessary if **ALL** of the following are **TRUE**:
 - There are no established guidelines; **AND**
 - **ANY** of the following:
 - There are new or worsening symptoms not addressed in the guidelines, such that repeat imaging would influence treatment; **OR**
 - There is need for a one-time clarifying follow-up of a prior

- indeterminate finding; **OR**
- In the absence of change in symptoms, there is an established need for monitoring which would influence management.

Non-Indications

Computed tomography (CT), brain with contrast is not considered appropriate if **ANY** of the following is **TRUE**¹⁷:

- The patient has undergone advanced imaging of the same body part within 3 months without undergoing treatment or developing new or worsening symptoms¹⁸.

*NOTE: The referring professional and radiologist should discuss the risks and benefits of contrast media administration, including possible prophylaxis, in patients with chronic or worsening kidney disease or severe renal failure.

**NOTE: CT in pregnant patients should be requested at the discretion of the ordering provider and obstetric care provider.

***NOTE: CT in patients with claustrophobia should be requested at the discretion of the ordering provider.

Disclaimer on Radiation Exposure in Pediatric Population

Due to the heightened sensitivity of pediatric patients to ionizing radiation, minimizing exposure is paramount. At Cohere, we are dedicated to ensuring that every patient, including the pediatric population, has access to appropriate imaging following accepted guidelines. Radiation risk is dependent mainly on the patient's age at exposure, the organs exposed, and the patient's sex, though there are other variables. The following technical guidelines are provided to ensure safe and effective imaging practices:

Radiation Dose Optimization: Adhere to the lowest effective dose principle for pediatric imaging. Ensure that imaging protocols are specifically tailored for pediatric patients to limit radiation exposure.^{19,20}

Alternative Modalities: Prioritize non-ionizing imaging options such as ultrasound or MRI when clinically feasible, as they are less likely to expose the patient to ionizing radiation. For instance, MRI or ultrasound should be considered if they are more likely to provide an accurate diagnosis than CT, fluoroscopy, or radiography.^{19,20}

Cumulative Dose Monitoring: Implement systems to track cumulative radiation exposure in pediatric patients, particularly for those requiring multiple imaging studies. Regularly reassess the necessity of repeat imaging based on clinical evaluation. [19,20](#)

CT Imaging Considerations: When CT is deemed the best method for achieving a correct diagnosis, use the lowest possible radiation dose that still yields reliable diagnostic images. [19,20](#)

Cohere Imaging Gently Guideline

The purpose of this guideline is to act as a potential override when clinically indicated to adhere to Imaging Gently and Imaging Wisely guidelines and As Low As Reasonably Possible (ALARA) principles.

Level of Care Criteria

Inpatient or Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
70450	Computed tomography (CT), head or brain; without contrast material
70460	Computed tomography (CT), head or brain; with contrast material(s)
70470	Computed tomography (CT), head or brain; without contrast material, followed by contrast material(s) and further sections
76380	Computed tomography, limited or localized follow-up study

Medical Evidence

Bedernik et al. (2022) conducted a randomized control trial (RCT) to assess image quality by comparing single-energy computed tomography (SECT) with automated tube voltage adaptation (TVA) to dual-energy CT (DECT) weighted average images. A total of 80 patients underwent SECT or radiation dose-matched DECT. The effective radiation dose showed no significant difference between the SECT and DECT study groups. Compared to the SECT group, the DECT group exhibited significantly higher contrast-to-noise ratio differences (CNRD) for jugular veins relative to fatty tissue and muscle tissue relative to fatty tissue. However, the CNRD for jugular veins relative to muscle tissue was comparable between groups. Image artifacts were also less pronounced, and overall diagnostic acceptability was higher in the DECT group. Overall, DECT-weighted average images demonstrate superior objective and subjective image quality compared to SECT performed with TVA in head and neck imaging.²¹

Smith-Bindman et al. (2020) performed an RCT to study the efficacy of interventions to lower radiation doses in patients undergoing a CT scan. The RCT included 864,080 adults at 100 facilities who underwent a CT scan, including CT of the head (1,156,657 total scans). The study included two primary measures: the percentage of high-dose CT scans and the average effective dose administered at the facility level. The study's secondary measure included the doses received by specific organs. The authors examined the change in outcomes following interventions, contrasting the data with preintervention data, utilizing hierarchical generalized linear models that accounted for temporal patterns and patient attributes. In conclusion, data regarding CT radiation dosage and practical recommendations may improve quality, including significant dose reductions, especially for organ-specific doses.²²

Tranvinh et al. (2019) examined the evidence backing the utilization of neuroimaging in adult patients experiencing a new-onset seizure. In the acute setting, unenhanced CT serves as the primary imaging modality for adults encountering their first unprovoked seizure, prioritizing the exclusion of urgent or emergent conditions. An initial unenhanced head CT scan may rule out treatable intracranial abnormalities promptly. If the CT findings are

negative but clinical suspicion persists for a structural cause of the seizure, MRI should be considered, particularly in acute cases. MRI offers supplementary advantages and is helpful for patients with negative initial CT findings in acute scenarios and those experiencing new-onset seizures in nonacute circumstances.²³

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Policy Revision History/Information

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Review History		
Version 2	08/08/2024	Annual review and policy restructure.
Version 3	10/30/2024	Edited repeat imaging criteria language
Version 4	08/28/2025	Annual review Updated content layout to align with revised template, including repeat imaging criteria Added criteria for headaches for adult and pediatric patients, epilepsy, dementia screening and non-focal neurological signs to align with Brain MRI Removed CMS references and updated reference numbering accordingly