Cohere Medicare Advantage 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 Medicare Advantage Policy - Computed Tomography (CT), Brain
Type: [**X**] Adult (18+ yo) | [**X**] Pediatric (0-17 yo)

Table of Contents

Medical Necessity Criteria

Service: Computed Tomography (CT), Brain

Related CMS Documents

Please refer to the CMS Medicare Coverage Database for the most current applicable CMS National Coverage.[1-9]

- National Coverage Determination (NCD). Computed Tomography (220.1)
- Local Coverage Determination (LCD). CT of the Head (L34417)
  - Billing and Coding: CT of the Head (A56612)
- Local Coverage Determination (LCD). MRI and CT Scans of the Head and Neck (L37373)
  - Billing and Coding: MRI and CT Scans of the Head and Neck (A57204)
- Local Coverage Determination (LCD). MRI and CT Scans of the Head and Neck (L35175)
  - Billing and Coding: MRI and CT Scans of the Head and Neck (A57215)
- Local Coverage Determination (LCD). Multiple Imaging in Oncology (L35391)
  - Billing and Coding: Multiple Imaging in Oncology (A56848)

Description

Computed tomography (CT) of the brain is often used when magnetic resonance imaging (MRI) is unavailable or contraindicated. CT of the brain will often be the initial screening examination to evaluate for acute, life-threatening conditions, but it will commonly be supplemented by MRI evaluation.[10]

Medical Necessity Criteria

Indications

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

- Neoplastic conditions for **ANY** of the following[8]:
  - Initial staging; **OR**
  - For staging of known lung cancer, breast cancer, and lymphomas which are likely to metastasize early to the brain[2]; **OR**
  - Response assessment; **OR**
  - Treatment planning; **OR**
  - Surveillance, and **ANY** of the following[11-13]:
    - The patient is assumed to have either no known disease or a disease that is stable or clinically insignificant (every 6-12 months for an overall duration [e.g., 5 years]); **OR**
    - Suspected recurrence/progression; **OR**
    - Evaluation of response to treatment when a change in therapy is contemplated (no more often than after 2 cycles of chemotherapy and/or 6-8 weeks since the prior imaging evaluation); **OR**
- Characterization of a specific lesion[2] 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)[10]; **OR**
- Intracranial lesions large enough to cause increased intracranial pressure[4,6]; **OR**
- New onset seizures, particularly if a focal component is present[4,6]; **OR**
- Detection of defects in blood/brain barrier (e.g., infarcts, tumors, infection, vasculitis)[2,4,6]; **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 pressure[10]; **OR**
- Histiocytic neoplasms (e.g., Langerhans cell histiocystosis, 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 following[10]:
  - 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[10,14,15]:
  - Head trauma, acute; **OR**
  - Nonaccidental trauma (e.g., abuse); **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 following[16]:
    - 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 suspected[17]; **OR**
  - Intracranial hemorrhage, known or suspected, including follow-up[10]; **OR**
  - Ischemic infarct, known or suspected[17]; **OR**
  - Other acute CNS hemorrhage[4,6]; **OR**
  - Encephalomalacia[4,6]; **OR**
  - Cerebrovascular accident (i.e., stroke or transient ischemic attack [TIA]), suspected[2,17]; **OR**
  - Venous sinus thrombosis, known or suspected[17]; **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)[10]; **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 following[18-20]:
        - Montreal cognitive assessment (MoCA) less than 26; **OR**
        - Mini-mental state examination (MMSE) score less than 23[20]; **OR**
        - Saint Louis University mental status (SLUMS) score less than 19[21]; **OR**,
        - Informant questionnaire on cognitive decline in the elderly (IQCODE) score greater than or equal to 3.4[22]; **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**
    - For the evaluation of a headache, with **ANY** of the following conditions[4,6]:
        - Vision problems; **OR**
        - After a head injury to rule out intracranial bleeding; **OR**
        - Unusual duration (greater than two weeks) not responding to medical therapy to rule out the possibility of a tumor; **OR**
        - Sudden and severe onset to rule out the possibility of an aneurysm, bleeding, and/or arteriovenous malformation; **OR**
    - New onset headache in an adult patient (18 years of age or older) with **ALL** of the following[11]:
        - MRI is contraindicated or cannot be performed; **AND**
        - **ANY** of the following:
            - 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 that wakes 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**
    - For the evaluation of headaches in a pediatric patient with **ALL** of the following[11]:
        - MRI is contraindicated or cannot be performed; **AND**
        - **ANY** of the following:
            - 5 years of age or younger; **OR**
            - Headaches awaken the patient from sleep or are 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 a 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 hypertensio,n or altered mental status; **OR**

○ Movement disorders with **ALL** of the following[19]:
- 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 following[10,17]:
- MRI is contraindicated or cannot be performed; **AND**
- **ANY** of the following:
  - Brain structural abnormality identified or suspected on prior imaging; **OR**
  - 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 ataxia[23]; **OR**
        - Pathology involving the cranial nerve[24]; **OR**
    - Vertigo, unexplained by history or physical examination, with **ANY** of the following[25]:
        - 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 performed[1]; **OR**
- Preoperative, postoperative, or pretreatment evaluation for **ANY** of the following[10]:
    - 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**[10,26,27]:

    - 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 is not considered appropriate if **ANY** of the following is **TRUE**:

- The patient has undergone advanced imaging of the same body part within 3 months without undergoing treatment or developing new or worsening symptoms[28]; **OR**
- The imaging is for cancer staging in the absence of signs or symptoms suggesting brain involvement, with **ANY** of the following cancer types [4,6]:
    - Esophageal cancer; **OR**
    - Oropharynx cancer; **OR**
    - Prostate cancer; **OR**
    - Non-melanoma skin cancer.

*For malignancies that commonly metastasize to the brain, staging in the absence of neurological findings may be appropriate.
**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 Populations

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.[29,30]

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.[29,30]

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.[29,30]

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.[29,30]

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

Disclaimer: S Codes are non-covered per CMS guidelines due to their experimental or investigational nature.

Evaluation of Clinical Harms and Benefits

Clinical determinations for Medicare Advantage beneficiaries are made in accordance with 42 CFR 422.101 guidance outlining CMS's required approach to decision hierarchy in the setting of NCDs/LCDs identified as being "not fully established". When clinical coverage criteria are "not fully established" Medicare Advantage organizations are instructed to create publicly accessible clinical coverage criteria based on widely-accepted clinical guidelines and/or scientific studies backed by a robust clinical evidence base. Clinical coverage criteria provided by Cohere Health in this manner include coverage rationale and risk/benefit analysis.

The potential clinical harms of using these criteria for CT, brain may include:

- The inherent risk of the procedure: There are inherent risks of imaging, including cumulative radiation exposure, contrast, allergy, nephrotoxicity, and contrast extravasation into surrounding tissues.[31-34]
- Potential danger to pregnancy: CT imaging completed during pregnancy confers a dose of ionizing radiation to the fetus and is generally only utilized when the potential benefits of this specific imaging modality outweigh the risks to the pregnancy.[33] Fetal risk includes fetal demise, intrauterine growth restriction, microcephaly, delayed intellectual development, risk of childhood cancer, and fetal thyroid injury.[34]
- Compared to adults, children are more sensitive to radiation. CT exposure among children may increase their risk of leukemia and brain cancer.[35]
- Adverse effects from delayed or denied treatment, such as subarachnoid hemorrhage, intracranial aneurysm, stroke, and other major health concerns.[36-38]
- Increased healthcare costs and complications from the inappropriate use of additional interventions.[39]

The clinical benefits of using these criteria for CT, brain include:

- Compared to other neuroimaging modalities, CT is widely available and can be performed quickly and at relatively low cost.[40]
- Computed tomography can be particularly useful in the evaluation of patients unable to tolerate magnetic resonance imaging (MRI).[41]

- Compared to MRI, CT can provide clearer depictions of calcification, a particularly salient advantage in evaluations of populations at risk for calcified lesions or vascular or cavernous malfunctions.[41]
- Appropriate allocation of healthcare resources at the individual beneficiary and population levels.

Medical Evidence

Bedernik et al. (2022) conducted a randomized controlled 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 (ED) 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.[40]

Smith-Bindman et al. (2020) performed an RCT to study the efficacy of interventions to lower the amount of radiation patients are exposed to. The RCT included 864,080 adults at 100 facilities who underwent a CT scan, including CT 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. Outcomes were assessed concerning the impact of the interventions and outcomes post-intervention. Data were contrasted with pre-intervention 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.[35]

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 non-acute circumstances.[41]

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Policy Revision History/Information

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Review History		
Version 2	10/23/2025	Annual review. Added indications for neoplastic conditions in alignment with L35391. Added indications for intracranial lesions, new onset seizures, blood/brain barrier defects, other acute CNS hemorrhage, encephalomalacia, and cerebrovascular accident in alignment with L37373 and L35175. Edited indications for headache evaluation in alignment with L37373 and L35175. Added non-indication for imaging of the same body part within 3 months without treatment or new/worsening symptoms. Updated Harms & Benefits section.