Cohere Medicare Advantage Policy - Computed Tomography (CT), Brain

Clinical Guidelines for Medical Necessity Review

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Important Notices

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Guideline Information:

Specialty Area: Diagnostic Imaging
Guideline Name: Cohere Medicare Advantage Policy - Computed Tomography (CT), Brain

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Medical Necessity Criteria

Service: Computed Tomography (CT), Brain

Benefit Category

Diagnostic Services in Outpatient Hospital
Diagnostic Tests (other)

Please Note: This may not be an exhaustive list of all applicable Medicare benefit categories for this item or service.

Related CMS Documents

Please refer to the CMS Medicare Coverage Database for the most current applicable CMS National Coverage.[1-4]

- National Coverage Determination (NCD). Computed Tomography (220.1)
- Local Coverage Determination (LCD). CT of the Head (L34417)
- Local Coverage Determination (LCD). MRI and CT Scans of the Head and Neck (L37373)
- 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 (A57204)
- Billing and Coding: MRI and CT Scans of the Head and Neck (A57215)

Recommended Clinical Approach

Computed tomography (CT) of the brain is often appropriate when MRI is unavailable or contraindicated. The clinical request form for a CT Head should be initiated by the referring physician or any appropriate allied healthcare professional familiar with the patient's clinical problem or question and consistent with the state scope of practice requirements. CT Head will often be the initial screening examination to evaluate for acute, life-threatening conditions but will be commonly supplemented by MRI evaluation subsequently.[5]

Evaluation of Clinical Harms and Benefits

Cohere Health uses the criteria below to ensure consistency in reviewing the conditions to be met for coverage of computed tomography (CT), brain. This process helps to prevent both incorrect denials and inappropriate approvals of medically necessary services. Specifically, limiting incorrect approvals reduces the risks associated with unnecessary procedures, such as complications from surgery, infections, and prolonged recovery times.

The potential clinical harms of using these criteria 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.[6-10]
- 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.[9] Fetal risk includes fetal demise, intrauterine growth restriction, microcephaly, delayed intellectual development, risk of childhood cancer, and fetal thyroid injury.[10]
- Compared to adults, children are more sensitive to radiation. CT exposure among children may increase their risk of leukemia and brain cancer.[11]
- Increased healthcare costs and complications from the inappropriate use of additional interventions.[12]

The clinical benefits of using these criteria include:

- Compared to other neuroimaging modalities, CT is widely available and can be performed quickly and at relatively low cost.[13]
- Computed tomography can be particularly useful in the evaluation of patients unable to tolerate magnetic resonance imaging (MRI).[14]
- 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.[14]
- Enhanced overall patient satisfaction and healthcare experience.

This policy includes provisions for expedited reviews and flexibility in urgent cases to mitigate risks of delayed access. Evidence-based criteria are employed to prevent inappropriate denials and ensure that patients receive medically necessary care. The criteria aim to balance the need for effective treatment with the minimization of potential harms, providing numerous clinical benefits in helping avoid unnecessary complications from inappropriate care.

In addition, the use of these criteria is likely to decrease inappropriate denials by creating a consistent set of review criteria, thereby supporting optimal patient outcomes and efficient healthcare utilization.

Medical Necessity Criteria

Indications

- ➔ **Computed tomography (CT), brain** is considered appropriate if **ANY** of the following is **TRUE**:
  - ◆ **ALL** of the following are **TRUE**:
    - MRI is contraindicated or cannot be performed; **AND**
    - **ANY** of the following:
      - Syncope with clinical concern for seizure or associated neurological signs and symptoms; **OR**
      - For evaluation of cranial nerve abnormalities; **OR**
      - For evaluation of visual abnormalities; **OR**
      - Mental status change, including but not limited to cognitive impairment[15-16]; **OR**
      - Developmental delay in a child less than 18 years of age[15]; **OR**
      - Pediatric population with persistent headaches for **ANY** of the following:
        - ◆ Occipital location; **OR**
        - ◆ Severe headache in a child with an underlying disease that predisposes them to intracranial pathology, including but not limited to immune deficiency, sickle cell disease, neurofibromatosis, hypertension; **OR**
        - ◆ Focal abnormality present[3-4]; **OR**
        - ◆ The patient has experienced a significant change in symptoms[3-4]; **OR**

    - Movement disorders including **ANY** of the following neurodegenerative diseases[4]:
        - Acute onset of a movement disorder with concern for stroke or hemorrhage; **OR**
        - Evaluation of Parkinson's disease with atypical features or other movement disorders, including but not limited to suspected Huntington's disease, chorea, hemiballismus, and atypical dystonia, to exclude an underlying structural lesion; **OR**
    - Acute neurologic deficit, including but not limited to ataxia or cranial nerve dysfunction[15,18]; **OR**
    - Vertigo, acute or recurrent with **ANY** of the following[19-20]:
        - Signs and symptoms suggestive of a central nervous system lesion; **OR**
        - Progressive unilateral hearing loss; **OR**
        - Risk factors for cerebrovascular disease with concern for stroke; **OR**
        - After a full neurological examination and vestibular testing with concern for central vertigo; **OR**
- Congenital skull and brain lesions, including but not limited to craniosynostosis, macrocephaly, and microcephaly[15]; **OR**
- Patients whose condition requires the visualization of fine bone detail or calcification; **OR**
- The patient has **ANY** of the following:
    - Acute central nervous system hemorrhage[3-4]; **OR**
    - Cerebrovascular accident or encephalomalacia[2-4]; **OR**
    - New onset seizures, including but not limited to focal onset seizures[3-4]; **OR**
    - Headache or dizziness and **ANY** of the following[3,15]:
        - Focal abnormality on neurologic exam[3-4]; **OR**
        - A significant change in symptoms[3-4]; **OR**
        - Head injury and intracranial bleeding is suspected[3-4,15]; **OR**
        - Duration of headache is greater than 2 weeks and unresponsive to medical therapy[3-4]; **OR**

        - Sudden onset of severe headache with concern for aneurysm, bleeding, or arteriovenous malformation[3-4]; **OR**
        - With features of intracranial hypertension, including but not limited to papilledema, pulsatile tinnitus, visual symptoms worse on Valsalva); **OR**
        - Fever; **OR**
        - History of cancer or immunocompromised; **OR**
        - Increasing frequency or severity (during a course of physician-directed treatment); **OR**
        - Related to activity or event (including, but not limited to, sexual activity, exertion, Valsalva, positional) with new or progressively worsening symptoms; **OR**
        - Older age (over 50 years) at onset; **OR**
        - Sudden onset of the worst headache of life; **OR**
    - Intractable vomiting; **OR**
- Neoplastic conditions for **ANY** of the following is **TRUE:**[15-18,21]
    - Initial staging; **OR**
    - Treatment planning; **OR**
    - Surveillance and **ANY** of the following is **TRUE:**[15-18,21]
        - The patient is assumed to have either no known disease or 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**
- Preoperative, postoperative, or pretreatment or post-treatment evaluation; **OR**
- Congenital conditions (e.g., hydrocephalus), and **ANY** of the following is **TRUE:**[15,22-23]:
    - Perioperatively if indicated based on the underlying disease and preoperative radiographic findings; **OR**
    - 6-12 months after placement of ventriculoperitoneal shunt; **OR**

        - With neurologic symptoms that suggest shunt malfunction; **OR**
    - Repeat imaging (defined as repeat request following recent imaging of the same anatomic region with the same modality), in the absence of established guidelines, will be considered reasonable and necessary if **ANY** of the following is **TRUE**:
        - New or worsening symptoms, such that repeat imaging would influence treatment; **OR**
        - 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**[24]:
    - Absence of symptoms of brain involvement, and **ANY** of the following is **TRUE**:
        - Esophagus cancer; **OR**
        - Oropharynx cancer; **OR**
        - Prostate cancer; **OR**
        - Non-melanoma skin cancer; **OR**
    - History of anaphylactic allergic reaction to iodinated contrast media.[25]

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

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.[26-27]

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.[26-27]

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.[26-27]

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.[26-27]

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: G, S, I, and N Codes are non-covered per CMS guidelines due to their experimental or investigational nature.

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 (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.[13]

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.[11]

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.[14]

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