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# 2025 Computed Tomography (CT) Brain and Head

## *Diagnostic Imaging*

CT-Brain-HH



**Last Review Date: 04/28/2025**
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Guideline Initiated: 06/30/2019

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# Table of Contents

# Computed Tomography (CT) Brain and Head

## CT Brain National Coverage Determination (NCD)/Local Coverage Determination (LCD)

Please refer to https://www.cms.gov/medicare-coverage-database/search.aspx if applicable to the individual's health plan membership.

| Type/ID Number | Title |
|---|---|
| NCD 220.1 | Computed Tomography |
| LCD 33417 | CT of the Head |
| LCD 35175 | MRI and CT Scans of the Head and Neck |
| LCD 35391 | Multiple Imaging in Oncology |
| LCD 37373 | MRI and CT Scans of the Head and Neck |

## Clinical Judgment

These medical policies are designed to provide clinical guidance and do not supplant a provider's independent professional judgment. Physicians retain full and independent authority to determine appropriate care based on each patient's individual clinical circumstances. Although services may be subject to documentation requirements, medical necessity review, or coverage limitations, nothing in this policy is intended to restrict or interfere with a physician's independent medical judgment.

## CT General Contraindications

Computed tomography (CT) is contraindicated (relative) for **ANY** of the following:

- Allergy/idiosyncratic reaction to contrast material (if intravascular contrast material is used)
- Pregnancy
- Renal impairment (glomerular filtration rate [GFR] is less than 30 ml/min/1.73 $m^2$.)
  ***References:*** [2]

## Preamble: Pediatric Diagnostic Imaging

HealthHelp's clinical guidelines for the Diagnostic Imaging program, are intended to apply to both adults and pediatrics (21 years of age or younger), unless otherwise specified within the criteria.

## CT Brain and Head Guideline

Computed tomography (CT) of the brain and head is considered medically appropriate when the documentation demonstrates **ANY** of the following:

1. Cancer of the brain, central nervous system (CNS) or meningioma is known for **ANY** of the following:
    a. Bone tumor or abnormality of the skull is known, X-ray is completed **AND** MRI is **contraindicated or unavailable**.
    b. Central nervous system (CNS) cancer, including low-grade tumor (eg, astrocytoma, glioma, meningioma) is known, for follow-up, **AND** MRI is **contraindicated or unavailable**.
    c. Extracranial cancer history is known **AND** MRI is **contraindicated or unavailable**.
    d. Histiocytic neoplasms (eg, Erdheim-Chester disease, Langerhans cell histiocytosis, Rosai-Dorfman disease) for treatment response and/or surveillance.
    e. Neurocutaneous tumors are known, for monitoring.
    f. Pituitary tumors are known **AND** MRI is **contraindicated or unavailable**.
    g. Recurrence or metastasis is suspected **AND** MRI is **contraindicated or unavailable**.
    h. Surveillance per the **National Comprehensive Cancer Network Surveillance guidelines** (*See **Surveillance** section*)

    ***References:*** [19] [3] [26] [11]
2. Cancer of the brain, central nervous system (CNS) or meningioma is suspected for **ANY** of the following:
    a. Cancer history and intracranial involvement is suspected based on symptoms (eg, dizziness, headache) or examination findings **AND** MRI is **contraindicated or unavailable**.
    b. Histiocytic neoplasms (eg, Erdheim-Chester disease, Langerhans cell histiocytosis, Rosai-Dorfman disease) for screening, with or **WITHOUT** neurological symptoms (eg, altered mental status, dizziness, tremors).
    c. Mass, tumor or lesion is suspected with new or changing symptoms **AND** MRI is **contraindicated or unavailable**.
    d. Pituitary tumors are suspected **AND** MRI is **contraindicated or unavailable**.

    ***References:*** [19] [11]
3. Central sleep apnea is diagnosed on polysomnogram, age is more than 1 year old, there is concern for central neurological cause (eg, Chiari malformation, infectious/inflammatory disease, tumor) **AND** MRI is **contraindicated or unavailable**. (***NOTE**: *Must be in the absence of chronic opioid use, heart failure, high altitude or treatment of emergent central sleep apnea*).

4. Cerebral spinal fluid (CSF) abnormality (eg, cranial arteriovenous malformation [AVM], hydrocephalus, infection, leak, shunt malfunction or spontaneous intracranial hypotension) is suspected or known and **ANY** of the following:
    a. Arnold chiari is suspected or known **AND** MRI is **contraindicated or unavailable**.
    b. CSF leak is suspected or known (*__NOTE__: *CSF fluid should always be confirmed with laboratory testing [Beta-2 transferrin assay]*)
    c. Hydrocephalus is known.
    d. Normal pressure hydrocephalus is suspected or known and symptomatic (eg, cognitive disturbance, gait difficulty, urinary incontinence).
    e. Shunt evaluation
    f. Syrinx or syringomyelia is known, for initial evaluation.

    ***References:*** [34] [30] [12] [25]

5. Congenital abnormalities are suspected or known and **ANY** of the following:
    a. Achondroplasia is known for evaluation of cervicomedullary junction **AND** MRI is **contraindicated or unavailable**.
    b. Cerebral palsy, if etiology is **NOT** established during neonatal period, MRI is **contraindicated or unavailable**. **AND** there is a change in development **OR** a progressive neurological disorder is suspected.
    c. Macrocephaly evaluation, in a pediatric individual, MRI is **contraindicated or unavailable** and **ANY** of the following:
        i. Anterior fontanelle is closed.
        ii. Increased intracranial pressure is suspected.
        iii. Neurodevelopmental exam is abnormal.
        iv. Ultrasound is abnormal, non-diagnostic or indeterminate.
    d. Microcephaly is known in a pediatric individual **AND** MRI is **contraindicated or unavailable**.
    e. Skull deformity is known (eg, craniosynostosis), for evaluation. (*__NOTE__: *CT is preferred imaging to assess bony structures; MRI imaging is preferred to assess intracranial soft tissue*.)

    ***References:*** [17] [24]

6. Global development delay (GDD) is known or developmental delay **AND** neurological exam is abnormal, in a pediatric individual, **AND** MRI is **contraindicated or unavailable**.

7. Infectious or inflammatory condition, with intracranial pathology, is suspected or known, MRI is **contraindicated or unavailable** and **ANY** of the following:
    a. Autoimmune disease or vasculitis is suspected or known, with positive inflammatory markers (eg, c-reactive protein [CRP]) **AND** CNS involvement.
    b. Encephalitis is suspected with headache **AND** altered mental status **OR** for follow-up.
    c. Endocarditis is known and intracranial septic emboli is suspected.
    d. Immunocompromise, with new or worsening symptoms
    e. Intracranial abscess or brain infection is suspected and **ANY** of the following:
        1. Laboratory findings are positive (eg, elevated white blood cells).
        2. Mental status is acutely altered **OR** neurological symptoms (eg, bowel/bladder dysfunction, dizziness, headache) are acute.
        3. Treatment is completed, for follow-up.
    f. Meningitis is suspected or known **AND** is symptomatic (eg, fever, headache, stiff neck) **OR** laboratory findings are positive (eg, elevated white blood cells or abnormal lumbar puncture).

    ***References:*** [6] [29] [4] [23]

8. Movement disorders (eg, Huntington's disease, Parkinson's disease), MRI is **contraindicated or unavailable** and **EITHER** of the following:
    a. Acute onset and cerebral hemorrhage or stroke is suspected.
    b. Parkinson's disease with atypical features or other movement disorder (eg, chorea, hemiballismus, Huntington's disease), for evaluation to exclude an underlying structural lesion

    ***References:*** [15] [18]

9. Neurocognitive disorders (eg, Alzheimer's disease, cognitive impairment, dementia, diffuse Lewy body) evaluation and **ALL** of the following:
    a. Basic metabolic workup (such as complete blood count, electrolytes and B12, liver function testing, thyroid function testing) is completed.
    b. Mental status score of **EITHER** the mini-mental state examination (MMSE) or Montreal cognitive assessment (MoCA) of less than 26 **OR** other similar mental status instruments/formal neuropsychological testing showing at least mild cognitive impairment
    c. MRI is **contraindicated or unavailable**.

10. Post-surgical assessments for evaluation of complications or disease recurrence
11. Seizure disorder/epilepsy is suspected or known and **EITHER** of the following:
    a. Changes in activity/pattern of seizures
    b. New onset of seizures

    ***References:*** [21] [36]
12. Soft-tissue mass of the head is known, prior imaging (eg, ultrasound, X-ray) is non-diagnostic or indeterminate **AND** MRI is **contraindicated or unavailable**.
    ***References:*** [9]
13. Stroke, transient ischemic attack (TIA) or vascular disease/event is suspected or known and **ANY** of the following: (*__NOTE:__ *MRI is preferred for chronic or subacute hemorrhage and ischemic stroke; CT is preferred for acute hemorrhagic stroke*.)
    a. Central venous thrombosis is suspected **AND** MRI is **contraindicated or unavailable**.
    b. Coagulopathy is known **OR** anticoagulant use is active.
    c. Hemorrhage, hematoma or vascular anomaly for follow-up evaluation [33]
    d. Sensory or motor deficits are acute, new or fluctuating.
    e. Sickle cell disease (hemorrhagic or ischemic), MRI is **contraindicated or unavailable** and **ANY** of the following:
        i. Neurological signs (eg, dizziness, numbness, pain)
        ii. Stroke risk is increased, in an individual aged 2 to 16 years, when transcranial doppler velocity is more than 200.
    f. Subarachnoid hemorrhage, acute, is suspected.
    g. TIA is suspected based on symptoms (eg, episodic neurologic symptoms such as limb weakness, sensory deficits, speech difficulties) **AND** MRI is **contraindicated or unavailable**.

    ***References:*** [27] [10]
14. Symptoms include **ANY** of the following:
    a. Headache with **ANY** of the following:
        i. Chronic headaches with change in pattern or intensity (eg, last longer, more frequent or severe).
        ii. Migraine (abdominal or head) and **EITHER** of the following:

A. Cyclical vomiting syndrome with neurological symptoms (eg, altered mental status, dizziness, tremors) **AND** MRI is **contraindicated or unavailable**.

B. Migraine is atypical (eg, aura without a headache, nasal congestion, vertigo).

iii. Neurological deficits (eg, altered mental status, dizziness, tremors) are new or worsening **AND** MRI is **contraindicated or unavailable**.

iv. New, acute sudden-onset headache and **ANY** of the following:

A. Age is 50 years or older **AND** MRI is **contraindicated or unavailable**.

B. Cancer history

C. Coagulopathy is known **OR** anticoagulant use is active.

D. Fever

E. Head trauma is subacute.

F. Immunocompromised **AND** MRI is **contraindicated or unavailable**.

G. Intracranial bleeding/stroke history

H. Related to activity or event (exertion, position, sexual activity, valsalva) **AND** MRI is **contraindicated or unavailable**.

I. Sentinel headache (eg, thunderclap, "worst headache of my life") occurs with rapid intensity and is 48 hours or less in duration.

v. Persistent headache, in a pediatric individual, and **ANY** of the following:

A. Age is less than 6 years old **AND** MRI is **contraindicated or unavailable**.

B. Increased intracranial pressure is suspected and symptomatic (eg, recurring headache after waking, with or **WITHOUT** nausea/ vomiting).

C. Occipital location **AND** MRI is **contraindicated or unavailable**.

D. Severe and intracranial pathology is suspected (eg, cancer history, coagulopathy, congenital heart disease, hypertension, immune deficiency, neurofibromatosis, sickle cell disease)

E. **NO** family history of headache **AND** MRI is **contraindicated or unavailable**.

vi. Postural headache and spontaneous intracranial hypotension is suspected.

vii. Symptoms persist or worsen despite adherence to physician-directed treatment **AND** MRI is **contraindicated or unavailable**.

viii. Trigeminal autonomic cephalalgia (TAC) (eg, cluster, hemicrania continua, paroxysmal hemicrania, short-lasting unilateral neuralgiform), for initial evaluation **AND** MRI is **contraindicated or unavailable**.

b. Lumbar puncture is planned and intracranial pressure is increased **OR** risk for herniation is suspected.

c. Neurologic symptoms or deficits (eg, abnormal reflexes, limb weakness, mental status change) are acute, new or fluctuating.

d. Psychological changes (eg, abnormal behaviors, emotions or thoughts) with neurological deficits on exam **OR** neurological cause is suspected, based on full neurological assessment **AND** MRI is **contraindicated or unavailable**.

e. Syncope and neurological deficits, seizures are suspected **AND** MRI is **contraindicated or unavailable**.

f. Vision or cranial nerve abnormalities (eg, anosmia, Horner's syndrome, nystagmus, ocular nerve palsies) are suspected, MRI is **contraindicated or unavailable** and **ANY** of the following:

i. Binocular diplopia is known and intracranial pathology is suspected.

ii. Bulbar or pseudobulbar symptoms (eg, difficulty chewing, dysarthria, dysphagia) are present.

iii. Cranial nerve palsy, neuropathy or neuralgia is known **AND** tumor, stroke or bony abnormality of the skull base is suspected.

iv. Eye exam findings are abnormal (eg, nystagmus, ocular nerve palsies, papilledema).

v. Horner's syndrome when a lesion localized to the central nervous system is suspected.

vi. Strabismus, in a pediatric individual and developmental delay **OR** fundoscopic exam is abnormal, to rule out intracranial abnormalities.

***References:*** [37] [8] [33] [22] [5] [16] [38] [18] [23] [31] [20] [21]

15. Trauma is suspected or known and **ANY** of the following:

a. Age is 65 years old or older.

b. Coagulopathy is known **OR** anticoagulant use is active.

c. Maltreatment, with physical injury, in a pediatric individual is suspected and **ANY** of the following:

   i. Apnea

   ii. Neurological deficits (altered mental status, bowel/bladder dysfunction, extremity weakness) are present

   iii. Skull fracture or other fractures are known.

d. Neurologic sign/symptoms (eg, amnesia, headache, mental status change, seizures, signs of increased intracranial pressure, vomiting) are acute, new or fluctuating.

e. Post concussive syndrome is known, **NO** prior imaging **AND** symptoms (blurred vision, headache, nausea) are persistent.

f. Skull fracture is suspected or known.

g. Subdural hematoma is suspected **AND** anticoagulation use: repeat scan 24 hours post head trauma.

h. Traumatic brain injury is subacute or chronic. there is a new cognitive and/or neurologic deficit **AND** MRI is **contraindicated or unavailable**.

***References:*** [34] [40]

16. Vertigo or dizziness, MRI is **contraindicated or unavailable**, and **ANY** of the following:

    a. CNS lesion is suspected based on symptoms (eg, ataxia, double vision, sensation changes, vision loss).

    b. Central vertigo is suspected when neurologic exam and vestibular testing (eg, electronystagmography [ENG], head thrust test, skew deviation, vertical gaze nystagmus, videonystagmography [VNG]) are completed.

    c. Cerebrovascular disease (eg, aneurysm, stenosis, stroke, vascular malformations) is suspected.

    d. Unilateral hearing loss is new or progressive.

    ***References:*** [14] [39] [32]

## Combination CT and MRI for Metastases Evaluation Guideline

Combination CT/MRI studies (5 or less concurrent studies, with a CT or MRI appropriate for cancer location: abdomen, brain, cervical spine, chest, lumbar spine, neck, pelvis and/or thoracic spine) for **ANY** of the following situations:

1. Staging evaluation, for baseline pre-therapy

2. Surveillance following the National Comprehensive Cancer Network (NCCN) Guidelines recommended schedule (*See **Surveillance** section*)

## Head and Neck Cancer Surveillance section

## Bone Cancer Surveillance

Bone cancer surveillance includes **ANY** of the following:

1. Chondrosarcoma surveillance for **ANY** of the following:
    a. Atypical cartilaginous tumor surveillance with cross-sectional imaging (CT + contrast, MRI ± contrast) every 6 to 12 months for 2 years, then annually as clinically indicated
    b. Low-grade, extracompartmental appendicular tumor, grade I axial tumors or high-grade (grade II or III, clear cell or extracompartmental) tumors surveillance with **ALL** of the following:
        i. Chest CT at least every 6 months for 5 years, then annually for at least 10 years, then if symptoms are new or progressing.
        ii. MRI (± contrast) or CT (+ contrast) if symptoms are new or progressing.
2. Chordoma surveillance with **ALL** of the following:
    a. Chest CT imaging every 6 months, annually for 5 years, then annually thereafter, then if symptoms are new or worsening.
    b. Imaging of primary site, timing and modality (eg, MRI ± CT [both + contrast]) if symptoms are new or progressing, up to 10 years
3. Ewing Sarcoma after primary treatment completed surveillance with **ALL** of the following:
    a. Chest CT: every 3 months
    b. Primary site imaging with MRI ± CT (both + contrast), increase intervals after 24 months and after 5 years, annually, then if symptoms are new or progressing (indefinitely) (*__NOTE__: *PET/CT [head-to-toe] is appropriate*)
4. Giant cell tumor of the bone surveillance with **ALL** of the following:
    a. Chest CT or MRI imaging every 6 to 12 months for 4 years, then annually thereafter, then if symptoms are new or progressing
    b. Surgical site imaging if symptoms are new or progressing (eg, CT and/or MRI, both with contrast)

5. Osteosarcoma surveillance with primary site and chest imaging (using same imaging that was done for initial work-up) for **ANY** of the following: (*__NOTE__: *PET/CT [head-to-toe] is appropriate*.)
    a. Image every 3 months for years 1 and 2
    b. Image every 4 months for year 3
    c. Image every 6 months for years 4 and 5
    d. Image annually for year 6 and thereafter, then if symptoms are new or progressing

***References:*** [2025 Bone Cancer Version 1.2026]

## Central Nervous System (CNS) Cancer Surveillance

Central nervous system (CNS) cancer surveillance includes **ANY** of the following:

1. Brain metastasis, limited **OR** extensive, image with brain magnetic resonance imaging (MRI) every 2 to 3 months for 1 to 2 years, then every 4 to 6 months indefinitely
2. Glioblastoma, *IDH* wild-type, magnetic resonance imaging with (MRI) of the brain and **ANY** of the following:
    a. Pre-operative and post-operative; within 48 hours
    b. Pre-radiation planning; every 3 to 5 weeks, post-operatively
    c. Post-radiation; 3 to 6 weeks post-radiation, then every 2 to 3 months for 3 years, then every 2 to 4 months indefinitively
3. Glioma, imaging with MRI of the brain and **ANY** of the following:
    a. Astrocytoma, *IDH* mutated and **ANY** of the following:
        i. Grade 2 and **ANY** of the following:
            A. After radiation therapy (RT) **AND** chemotherapy: every 6 months until tumor progression
            B. After RT **OR** chemotherapy: every 3 to 4 months for the 1st 5 years, then every 3 to 4 months until tumor progression
            C. After surgery: every 3 to 4 months until tumor progression
        ii. Grade 3 and **ANY** of the following;
            A. After RT **AND** chemotherapy: every 6 months until tumor progression
            B. After RT **OR** chemotherapy: every 3 to 4 months for the 1st 5 years, then every 3 to 4 months until tumor progression

iii. Grade 2 or 3, recurrent; image every 2 to 3 months

b. Oligodendroglioma, *IDH* mutated, 1p/19q co-deleted and **ANY** of the following:

i. Grade 2 and **ANY** of the following:

A. After radiation therapy (RT) **AND** chemotherapy: every 6 to 9 months until tumor progression

B. After RT **OR** chemotherapy: every 3 to 4 months for the 1st 5 years, then every 3 to 4 months until tumor progression

C. After surgery: every 3 to 4 months until tumor progression (*__NOTE__: *For individuals who underwent gross total resection, every 6 to 9 months for 5 years post-surgery until tumor progression*)

ii. Grade 3 and **ANY** of the following:

A. After radiation therapy (RT) **AND** chemotherapy: every 6 to 9 months until tumor progression

B. After RT **OR** chemotherapy: every 3 to 4 months for the 1st 5 years, then every 3 to 4 months until tumor progression

iii. Grade 2 or 3, recurrent, image every 3 to 4 months

4. Leptomeningeal metastases imaging with MRI of the brain and/or total spine every 2 to 3 months for the 1st 2 years, every 6 months until year 5, then annually indefinitively
5. Medulloblastoma, imaging with MRI of the brain every 2 to 3 months for 2 years
6. Primary CNS lymphoma, image every 2 to 3 months for 2 years

***References:*** [2025 Central Nervous System Cancers Version 1.2025]

## Esophageal and Esophagogastric Junction Cancer Surveillance

Esophageal and esophagogastric junction cancer surveillance includes **ANY** of the following[1]:

1. Adenocarcinoma, squamous cell carcinoma; imaging studies if symptoms are new or progressing
2. Tumor classification T1b[a] (N0 on ultrasound) after endoscopic resection or ablation, imaging surveillance includes computed tomography (CT) chest and abdomen (+ contrast, unless **contraindicated**) every 6 months for the first 2 years and annually for up to 5 years

[1]Routine esophageal/esophagogastric junction cancers are **NOT** recommended for cancer-specific surveillance, for more than 5 years after the end of treatment.

3. Tumor classification T1b or greater, any N[a] or T1a N+, imaging surveillance includes esophagectomy performed with or **WITHOUT** adjuvant therapy then surveillance includes chest and abdomen CT (+ contrast, unless **contraindicated**) every 6 months for the first 2 years and annually for up to 5 years
4. Tumor classification any T and/or any N, with neoadjuvant chemotherapy **OR** chemoradiotherapy **AND** esophagectomy, with or **WITHOUT** adjuvant treatment, imaging surveillance includes chest and abdomen CT (+ contrast, unless **contraindicated**) every 6 months for up to 2 years, then annually for up to 5 years and EGD, then if symptoms are new or progressing
5. Tumor classification (pretreatment) N0 to N+, T1b to T4, T4b, with definitive chemoradiation (**WITHOUT** esophagectomy), surveillance imaging includes chest and abdomen CT (+ contrast unless **contraindicated**) every 3 to 6 months for the first 2 years and annually for up to 5 years

***References:*** [2025 Esophageal and Esophagogastric Junction Cancers Version 3.2025]

## Head and Neck Cancers Surveillance

Head and neck cancers surveillance for locoregionally advanced disease after treatment, includes **ANY** of the following:

1. Short-term surveillance (less than 6 months after treatment), if there is high-risk of early recurrence, symptoms of early recurrence or before starting adjuvant post-operative therapy:
    a. Computed tomography (CT) or magnetic resonance imaging (MRI) within 3 to 4 months post-operatively to establish a new baseline for future comparisons
    b. FDG positron emissions tomography/computed tomography (FDG PET/CT) within 3 to 6 months of definitive radiation or systemic therapy/RT.
    c. Incomplete response is suspected: CT or MRI scan earlier (eg, 4 to 8 weeks) based on new or progressing symptoms. (*__NOTE__: *Use ultrasound [US] of the neck for targeted sampling.*)
2. Long-term surveillance (6 months or more from end-of-treatment, up to 5 years after treatment) with CT, MRI, FDG PET/CT to obtain surveillance for lesions that are recurrent, second primary or at distant sites.[2]

***References:*** [2025 Head and Neck Cancer Version 2.2025]

[2]Per the National comprehensive cancer network (NCCN) Guidelines for Head and Neck Cancers, there are no consensus guidelines for the surveillance imaging type, frequency or duration for locoregionally advanced disease. If an FDG PET/CT at 3 months post-treatment is negative, there are no data to support substantial benefit for further routine imaging when asymptomatic with negative exam. In the absence of multi-institutional prospective data, a tailored approach to

# Histiocytic Neoplasms Surveillance

### NCCN Histiocytic Neoplasms Version 3.2024

Histiocytic neoplasms surveillance imaging includes **ANY** of the following:

1. Erdheim-Chester disease surveillance imaging includes **ANY** of the following:
    a. Fluorodoxyglucose (FDG)-positron emission tomography/computed tomography (PET/CT) every 3 to 6 months after starting therapy until stabilization of the disease, and as clinically indicated after 2 years.
    b. Organ specific imaging with CT (+ contrast) or MRI (± contrast) every 3 to 6 months until disease stabilization and then every 6 to 12 months
2. Langerhans cell histiocytosis surveillance imaging includes FDG-PET/CT , FDG-PET or CT/ magnetic resonance imaging (MRI) every 3 to 6 months for the first 2 years after completion of therapy, then **NO** more than annually (*__NOTE__: *For individuals who are asymptomatic with a single-site bone lesion, imaging surveillance can end after 1 year, with continued tracking of symptoms*)
3. Rosai-Dorfman disease (RDD), surveillance imaging includes **ANY** of the following: (*__NOTE__: *for individuals who are asymptomatic with a single-site bone lesion, imaging surveillance can end after 1 year, with continued tracking of symptoms*)
    a. FDG-PET/CT every 3 to 6 months after starting therapy until stabilization of disease
    b. Organ specific imaging with CT (+ contrast) or MRI (± contrast) every 3 to 6 months until disease stabilization and then every 6 to 12 months

***References:*** [2025 Histiocytic Neoplasms Version 3.2025]

# Melanoma: Uveal Surveillance

Uveal melanoma surveillance imaging includes **ANY** of the following:

1. Low risk disease surveillance imaging every 12 months for 5 years or clinically as indicated, includes **ANY** of the following:
    a. Chest/abdomen/pelvis computed tomography (CT) (+ contrast)
    b. Magnetic resonance (MR) (+ contrast) or ultrasound of liver
2. Medium risk disease surveillance imaging every 6 to 12 months for 10 years, then as clinically indicated, includes **ANY** of the following:
    a. Chest/abdomen/pelvis CT (+ contrast)

surveillance with attention to tumor type, stage, prognostic factors, symptomatology and physical exam changes or restrictions is recommended.

b. MR (+ contrast) or ultrasound of liver

3. High risk disease surveillance imaging every 3 to 6 months for 5 years, then every 6 to 12 months for 10 years, then clinically as indicated, includes **ANY** of the following:
   a. Chest/abdomen/pelvis CT (+ contrast)
   b. MR (+ contrast) or ultrasound of liver

***References:*** [2025 Melanoma: Uveal Version 1.2025]

## Pediatric Central Nervous System Cancers

Pediatric central nervous system cancer surveillance includes **ANY** of the following:

1. Medulloblastoma and **ANY** of the following:
   a. Risk is low or average (after completion of adjuvant/maintenance treatment) and **ALL** of the following:
      i. Brain magnetic resonance imaging (MRI) every 3 to 4 months for 2 years, then every 6 months for 3 years, then if symptoms are new or progressing.
      ii. Spine MRI (cervical, lumbar **AND** thoracic) every 6 months for 2 years, then if symptoms are new or progressing.
   b. Risk is high or very high (after completion of adjuvant/maintenance treatment) and **ANY** of the following:
      i. Brain MRI every 3 to 4 months for 2 years, then every 6 months for 3 years, then if symptoms are new or progressing.
      ii. Spine MRI (cervical, lumbar **AND** thoracic) every 3 to 4 month for 2 years, then annually for 3 years, then if symptoms are new or progressing.
2. Pediatric diffuse high-grade glioma, image with brain MRI 2 to 6 weeks after radiation therapy, then every 2 to 3 months for year 1, then every 3 to 6 months indefinitely

***References:*** [2025 Pediatric Central Nervous System Cancers Version 3.2025]

## Soft Tissue Sarcoma Surveillance

Soft tissue sarcoma surveillance includes **ANY** of the following: (*__NOTE__: *Use contrast imaging; for long term surveillance to minimize radiation exposure,MRI may be substituted.*)

1. Desmoid tumor (aggressive fibromatosis) imaging surveillance includes computed tomography (CT) or magnetic resonance imaging (MRI) every 3 to 6 months for 3 years, then every 6 to 12 months thereafter
2. Extremity, trunk or head and neck, for long-term follow-up with **ANY** of the following:

a. Long-term follow-up with **ALL** of the following:
    i. Chest CT imaging (- contrast) to detect asymptomatic distant recurrence
    ii. MRI for imaging of primary site
b. Stage I tumors and **ALL** of the following:
    i. Chest CT imaging (- contrast) every 6 to 12 months
    ii. Post-operative baseline and periodic imaging of primary site with MRI or CT if MRI is **contraindicated or unavailable**.
c. Stage II and III tumors and **ANY** of the following:
    i. Baseline and periodic imaging of primary site
    ii. Chest and other known sites of metastatic disease imaging (CT [- contrast] or X-ray) every 2 to 6 months for 2 to 3 years, then every 6 months to complete a total of 5 years, then annually.
    iii. Post-operative reimaging to assess the primary tumor site and rule out metastatic disease (MRI or CT if MRI is **contraindicated or unavailable**.

3. Retroperitoneal/intra-abdominal, after management of primary disease imaging surveillance includes chest/abdomen/pelvis CT or MRI every 3 to 6 months for 3 years, then every 6 months for the next 2 years, then annually.

***References:*** [2025 Soft Tissue Sarcoma Version 1.2025]

## Thymomas and Thymic Carcinomas Surveillance

Thymomas and thymic carcinomas surveillance after primary treatment includes **ANY** of the following:

1. R0 resection surveillance imaging with chest computed tomography (CT) (+ contrast) or magnetic resonance imaging (MRI) for **ANY** of the following:
    a. Thymic carcinoma every 6 to 12 months for 2 years, then annually until year 5
    b. Thymoma every 6 months for 2 years, then annually until year 10
2. R1 and R2 resection surveillance imaging with chest CT (+ contrast) or MRI for **ANY** of the following:
    a. Thymic carcinoma every 3 to 6 months for 2 years, then annually for 5 years
    b. Thymoma every 6 months for 2 years, then annually for 10 years
3. Locally advanced disease surveillance imaging with chest CT (+ contrast) or MRI for **ANY** of the following:

a. Thymic carcinoma every 3 to 6 months for 2 years, then annually for 5 years

b. Thymoma every 6 months for 2 years, then annually for 10 years

***References:*** [2025 Thymomas and Thymic Carcinomas Version 2.2025]

## Thyroid Carcinoma Surveillance

Thyroid carcinoma surveillance imaging includes **ANY** of the following:

1. Anaplastic carcinoma (stage IVC surveillance imaging includes computed tomography (CT) or magnetic resonance imaging (MRI) (+ contrast) of brain, neck, chest, abdomen and pelvis at frequent intervals as clinically indicated (*__NOTE__: *consider fluorodeoxyglucose-positron emission tomography (FDG-PET)/CT 3 to 6 months after initial therapy*)
2. Medullary carcinoma surveillance imaging includes **ANY** of the following:
    a. MRI of whole body, if calcitonin levels are very elevated 150 pg/ml or more.
    b. Calcitonin level is 150 pg/ml or more: surveillance with CT or MRI (+ contrast) of the neck, chest, and liver, as clinically indicated
    c. FDG-PET/CT or Ga-68 DOTATE or MRI (+ contrast) of the neck, chest, abdomen with liver protocol, based on calcitonin/carcinoembryonic antigen (CEA) doubling time

***References:*** [2025 Thyroid Carcinoma Version 1.2025]

## CT Brain and Head Summary of Changes

CT Brain and Head guideline had the following version changes from 2024 to 2025:

- Added the following to keep in line with current evidence:
    - Criteria under "Cerebral spinal fluid (CSF) abnormality (eg, cranial arteriovenous malformation [AVM], hydrocephalus, infection, leak, shunt malfunction or spontaneous intracranial hypotension) is suspected or known and **ANY** of the following:"
    - "Glomerular filtration rate" to "Renal impairment" under Contraindications
    - "Postural headache and spontaneous intracranial hypotension is suspected." under "Symptoms" under "Headache with **ANY** of the following:" per ACR is a new indication.
    - "Strabismus, in a pediatric individual and developmental delay **OR** fundoscopic exam is abnormal, to rule out intracranial abnormalities" under "Symptoms" under "Vision or cranial nerve abnormalities" per EBM is a new indication.
    - "X-ray is completed and MRI is **contraindicated or unavailable**." to "Bone tumor or abnormality of the skull is known" under "Cancer of the brain" as other imaging is more appropriate

- Removed the following as current evidence no longer supports the indication:
  - "Central nervous system (CNS) cancer is known and received active treatment in the last year, when MRI is **contraindicated or unavailable**." from under "Cancer of the brain, central nervous system (CNS) or meningioma is known for **ANY** of the following:" as it is redundant with "Staging, restaging and surveillance"
  - Combination studies as they are redundant
  - "Low-grade tumor (eg, astrocytoma, glioma, meningioma) is known, for follow-up **AND** MRI **is contraindicated or unavailable**." as it is redundant
  - "MRI is **contraindicated or unavailable**" from "Seizure disorder/epilepsy is suspected or known Seizure disorder/epilepsy is suspected or known" per ACR
  - "Non-CNS cancer **OR** hereditary cancer syndromes, for screening. (***NOTE**: *MRI brain is preferred*.)" from under "Cancer of the brain, central nervous system (CNS) or meningioma is suspected for **ANY** of the following:" as it is redundant with "Cancer screeing"
  - "Unilateral, with radiating neck pain" from under "Headache" as CTA/MRA is test of choice

## CT Brain and Head Procedure Codes

**Table 1. CT Brain/Head Associated Procedure Codes**

| CODE | DESCRIPTION |
|---|---|
| 70450 | Computed tomography, head or brain; without contrast material |
| 70460 | Computed tomography, head or brain; with contrast material(s) |
| 70470 | Computed tomography, head or brain; without contrast material, followed by contrast material(s) and further sections |

# CT Brain and Head Definitions

**Abscess** is a swollen area within body tissue, containing an accumulation of pus.
**Achondroplasia** is a rare autosomal dominant condition characterized by impaired endochondral ossification, resulting in disproportionate short stature and abnormal growth of long bones, vertebrae, and several bones in the skull.
**Alzheimer's disease** is a degenerative brain disease of unknown cause that is the most common form of dementia. It usually starts in late middle age or in old age and results in progressive memory loss, impaired thinking, disorientation and changes in personality and mood.

**Amnesia** is defined as a significant loss of memory function, which can be categorized into various types such as anterograde amnesia (inability to form new memories) and retrograde amnesia (inability to recall past memories).
**Aneurysm** refers to weakness in an artery wall, allowing it to abnormally balloon out or widen.
**Anosmia** is the loss or impairment of the sense of smell.
**Anterior fontanelle** is the largest and most easily palpated fontanelle located at the junction of the frontal and parietal bones, typically soft, flat, and pulsatile, and usually closes between 5 and 24 months of age.
**Arteriovenous fistula (AVF)** is an abnormal connection between an artery and a vein. It happens when one or more arteries are directly connected to one or more veins or venous spaces called sinuses.
**Arteriovenous malformation (AVM)** are congenital high-flow vascular malformations characterized by abnormal shunting of blood from high-flow feeding arteries to low-resistance veins via a cluster of aberrant blood vessels termed a central nidus, bypassing the normal capillary bed.
**Astrocytomas** are tumors that originate from the star-shaped cells (astrocytes) that support the brain. They are the most common brain tumors in adults.
**Ataxia** is a pathological abnormality of organization or modulation of movement, typically caused by cerebellar dysfunction, but can also result from lesions in the corticospinal tract or dorsal columns of the spinal cord.
**Aura** is a subjective sensation (as of voices or colored lights or crawling and numbness) experienced at the onset of a neurological condition and especially a migraine or epileptic seizure.
**Brain herniation** is the shift of brain tissue through a naturally occurring opening in another tissue, often due to increased intracranial pressure, and is a life-threatening emergency.
**Brief Resolved Unexplained Event (BRUE)** is an event in an infant that is characterised by a marked change in breathing, tone, colour or level of responsiveness, followed by a complete return to a baseline state, and that cannot be explained by a medical cause. A BRUE is a diagnosis of exclusion.
**Bulbar palsy** involves problems with function of the glossopharyngeal nerve (CN IX), the vagus nerve (CN X), the accessory nerve (CN XI), and the hypoglossal nerve (CN XII). These all emerge from pathways in the medulla oblongata. A lower motor neuron lesion can impair their function. It includes symptoms such as lip trembling, drooling, dysphonia, weak jaw and facial muscles, pharyngeal muscle weakness.
**Central sleep apnea** (CSA) is a breathing disorder that causes the body to decrease or stop the effort of breathing during sleep. It is usually caused by an issue in the brain or heart. Certain medications (like opiod medications) can cause this breathing pattern too. It is different from obstructive sleep apnea (OSA) because the problem is not caused by a blockage of the airway. Types of central sleep apnea include Cheyne-Stokes breathing, drug-induced apnea, high-altitude periodic breathing, idiopathic central sleep apnea, medical condition-induced central sleep

apnea and treatment-emergent central sleep apnea. Symptoms of central sleep apnea include difficulty falling asleep, excessive daytime sleepiness (EDS), frequent nighttime awakening, pause in breathing, and waking up short of breath.

**Central vertigo** is a clinical condition that causes people to experience hallucinations of motion or a sensation of spinning while remaining still. It's caused by a dysfunction of the vestibular structures in the central nervous system (CNS).

**Cerebral Palsy (CP)** is a term for a group of neurological disorders that affect a person's ability to move, maintain balance, and posture. CP is the most common motor disability in childhood.

**Cerebrospinal fluid (CSF)** is a colorless liquid that is comparable to serum, is secreted from the blood into the lateral ventricles of the brain, and serves chiefly to maintain uniform pressure within the brain and spinal cord.

**Chiari malformation (Arnold-Chiari syndrome)** is a congenital abnormality in which the lower surface of the cerebellum and the lower brain stem protrude into the spinal canal through the foramen magnum.

**Chorea** is irregular, nonstereotyped, involuntary movements that flow to adjacent body regions and can be caused by various neurodegenerative, drug-induced, autoimmune, vascular and metabolic conditions.

**Cluster headache** are attacks of severe, unilateral pain in the orbital, supraorbital, or temporal regions, lasting 15 to 180 minutes, and occurring from once every other day to eight times a day, often accompanied by ipsilateral autonomic symptoms and restlessness or agitation.

**Coagulopathy** is an imbalance between the clotting and fibrinolytic systems, which can be hereditary or acquired in origin, often resulting in abnormal bleeding or clotting.

**Compression** is reducing in size, quantity or volume, as if by squeezing.

**Computed tomography (CT)** is an imaging test that uses X-rays to computer analysis to generate cross sectional images of the internal structures of the body that can be displayed in multiple planes.

**Computed tomography angiography (CTA)** is a medical test that combines a computed tomography (CT) scan with an injection of a special dye to produce pictures of blood vessels and tissues in a part of the body.

**Congenital** is a condition or trait present from birth.

**Craniosynostosis** is the premature fusion of one or more cranial sutures, leading to abnormal skull shape and potential complications such as increased intracranial pressure and neurodevelopmental issues.

**C-reactive protein (CRP)** is a pentameric protein synthesized by the liver, whose level rises in response to inflammation.

**Cyclical vomiting syndrome (CVS)** is a rare disorder that usually starts in childhood. It causes repeated episodes of being sick (vomiting) and feeling sick (nausea). The cause of CVS is not fully understood. The vomiting episodes are not caused by an infection or another illness.

**Dementia** is a usually progressive condition marked by the development of multiple cognitive deficits, such as memory impairment, aphasia and the inability to plan and initiate complex behavior.

**Diffuse Lewy body disease** is a neurodegenerative disorder characterized by dementia, fluctuations in mental status, hallucinations and parkinsonism.

**Diplopia** is a disorder of vision in which two images of a single object are seen (as from unequal action of the eye muscles).

**Dissection** refers to the separation of the layers within the wall of an artery, most commonly the aorta, due to a tear in the intimal layer, leading to the formation of a false lumen.

**Drop metastases** are intradural extramedullary spinal metastases that arises from intracranial lesions.

**Dural venous sinuses** are valveless channels formed by the separation of the periosteal and meningeal layers of the dura mater, responsible for draining venous blood from the brain and cerebrospinal fluid (CSF) into the internal jugular veins.

**Electronystagmography** is a diagnostic test that measures eye movements using electrodes placed near the eyes to assess the vestibular and oculomotor systems and help localize lesions.

**Embolism** is an obstruction of an artery, typically by a clot of blood or an air bubble, that has traveled from another part of the body.

**Encephalitis** is an inflammation of the brain parenchyma, often caused by viral or autoimmune processes, and can lead to severe neurological dysfunction, including seizures, focal deficits, and encephalopathy.

**Encephalopathy** is a disease, damage or malfunction of the brain.

**Endocarditis** is inflammation of the inside lining of the heart chambers and heart valves (endocardium). It is caused by a bacterial or rarely, a fungal infection.

**Epilepsy** is a chronic neurological disorder characterized by recurrent unprovoked seizures due to abnormal excessive or synchronous neuronal activity in the brain.

**Erdheim-Chester Disease (ECD)** is a rare blood disorder that causes the body to produce too many white blood cells. These cells, called histiocytes, are large phagocytic cells that normally respond to injury and infection. ECD is characterized by the accumulation of histiocytes in multiple tissues and organs.

**Funduscopic exam**, also known as ophthalmoscopy, is an eye exam that examines the back of the eye. The fundus is the medical term for the inner part of the back of the eye. It includes the retina, optic disc, choroids, and blood vessels. This exam is performed by any doctor, not just an opthamologist.

**Glioma** are primary central nervous system (CNS) tumors that originate from glial cells or neural stem/progenitor cells and are classified into various types and grades based on histological and molecular characteristics.

**Global developmental delay (GDD)** is term used for children under 5 years of age. It is defined as a significant delay in two or more domains of development, including activities of daily living as well as motor, cognitive, speech/language and personal/social skills.

**Head Thrust Test** also known as the head impulse test, is a clinical maneuver used to assess the function of the vestibulo-ocular reflex (VOR) and diagnose vestibular disorders such as vestibular neuritis and labyrinthitis.

**Hematoma** is a mass of usually clotted blood that forms in a tissue, organ or body space as a result of a broken blood vessel.

**Hemiballismus** is a rare neurological movement disorder characterized by involuntary, rapid, and forceful movements of the limbs on one side of the body. It is often caused by damage to a specific area of the brain called the subthalamic nucleus, which can result from various factors such as stroke, tumor, or infection.

**Hemicrania continua** is a rare primary headache disorder characterized by continuous unilateral pain with periods of exacerbation, often accompanied by ipsilateral cranial autonomic symptoms and a complete response to indomethacin.

**Hemorrhage** is a copious or heavy discharge of blood from the blood vessels.

**Hereditary cancer syndromes** are genetic conditions that significantly increase the risk of developing certain types of cancer due to inherited pathogenic variants in specific genes.

**Histiocytic neoplasms** is a type of cancer that arises from histiocytes, which are cells derived from the mononuclear phagocyte system, including macrophages, dendritic cells, and monocytes.

**Horner's syndrome** is a syndrome marked by sinking in of the eyeball, constriction of the pupil (miosis), drooping of the upper eyelid (ptosis), face vasodilation and anhidrosis (abnormal deficiency or absence of sweating) caused by paralysis of the cervical sympathetic nerve fibers on the affected side.

**Huntington's disease** is a hereditary brain disorder that is a progressive, neurodegenerative condition marked especially by impairments in thinking and reasoning, disturbances of emotion and behavior and the involuntary spasmodic movements of chorea that is associated with the loss or atrophy of nerve cells in the basal ganglia especially of the caudate nucleus and putamen.

**Hydrocephalus** is an abnormal increase in the amount of cerebrospinal fluid within the cranial cavity (as from obstructed flow, excess production, or defective absorption) that is accompanied by expansion of the cerebral ventricles and often increased intracranial pressure, skull enlargement and cognitive decline.

**Hyperosmolar state**, specifically hyperosmolar hyperglycemic state (HHS), is defined by severe hyperglycemia (blood glucose >600 mg/dL), serum osmolality >320 mOsm/kg, and absence of significant metabolic acidosis or ketonemia.

**Hypertension** (high blood pressure) is when the force of the blood flowing through blood vessels, is consistently too high. Blood pressure is made up of two numbers: systolic and diastolic. Systolic pressure is the pressure when the ventricles pump blood out of the heart. Diastolic pressure is the pressure between heartbeats when the heart is filling with blood. [3,4]

**Blood Pressure Classification**[5]

**Table 1. Blood Pressure Classification**

| Blood Pressure Category | Systolic mm Hg (upper number) | and/or | Diastolic mm Hg (lower number) |
|---|---|---|---|
| Normal | Less than 120 | and | Less than 80 |
| Elevated | 120-129 | and | Less than 80 |
| High blood pressure (Hypertension) Stage 1 | 120-139 | or | 80-89 |
| High blood pressure (Hypertension) Stage 2 | 140 or higher | or | 90 or higher |
| Hypertensive Crisis | Higher than 180 | and/or | Higher than 120 |

**Immunosuppression** is the deliberate reduction or inhibition of the immune system's ability to respond to antigens, typically achieved through medications or therapies, to prevent organ rejection or treat autoimmune diseases, but it increases the risk of infections and malignancies.
**Increased intracranial pressure (ICP)** is defined as a persistent elevation of intracranial pressure above 20 mm Hg or a cerebrospinal fluid opening pressure greater than 25 cm H2O.
**Indeterminate** findings are inconclusive or insufficient for treatment planning.
**Intracranial shunt** is a thin plastic tube that helps drain extra cerebrospinal fluid (CSF) from the brain.
**Ischemic stroke** occurs when the blood supply to part of the brain is interrupted or reduced, preventing brain tissue from getting oxygen and nutrients. Brain cells begin to die in minutes.
**Langerhans cell histiocytosis (LCH)** is a rare clonal proliferative disorder of Langerhans-type dendritic cells, characterized by granulomatous lesions and varying degrees of organ involvement and dysfunction.
**Leptomeningeal carcinomatosis** is a severe complication of late-stage cancer characterized by the spread of malignant cells to the leptomeninges, including the pia mater, arachnoid, and subarachnoid space, leading to rapid mortality despite treatment.
**Lumbar puncture** is a puncture of the subarachnoid space in the lumbar region of the spinal cord to withdraw cerebrospinal fluid or inject medications.
**Macrocephaly** is the condition in which the head circumference of an infant is above 2 standard deviations, which is above the 97th percentile.

[3]American Heart Association (AHA), "Health Topics." [Online]. Available: www.heart.org
[4]U.S. Department of Health & Human Services, National Heart, Blood and Lung Institute (NIH), "Health Topics." [Online]. Available: www.nhlbi.nih.gov/lbi.nih.gov
[5]American Heart Association (AHA), "Health Topics." [Online]. Available: www.heart.org

**Magnetic resonance imaging (MRI)** is a non-invasive diagnostic technique that produces computerized images of internal body tissues and is based on nuclear magnetic resonance of atoms within the body induced by the application of radio waves.
**Meningioma** is a slow-growing, encapsulated, typically benign tumor arising from the meninges and often causes damage by pressing upon the brain and adjacent parts.
**Meningitis** is an inflammation (swelling) of the protective membranes covering the brain and spinal cord. A bacterial or viral infection of the fluid surrounding the brain and spinal cord usually causes the swelling.
**Metabolic acidosis** is a condition characterized by a decrease in plasma bicarbonate and blood pH, generally defined as a plasma bicarbonate of less than 22 mmol/L and a pH lower than 7.35.
**Metastases** is the spread of a disease-producing agency (such as cancer cells) from the initial or primary site of disease to another part of the body.
**Microcephaly** is a condition of abnormal smallness of the circumference of the head that is present at birth or develops within the first few years of life and is often associated with developmental delays, impaired cognitive development, poor coordination and balance, deficits in hearing and vision and seizures.
**Mini-Mental State Examination** is a set of 11 questions that doctors and other healthcare professionals commonly use to check for cognitive impairment (problems with thinking, communication, understanding and memory).
**Migraine (typical)** is a headache that can cause severe throbbing pain or a pulsing sensation, usually on one side of the head. It's often accompanied by nausea, vomiting and extreme sensitivity to light and sound.
**Montreal Cognitive Assessment (MoCA)** is a brief test of cognitive function, taking 10 minutes to administer. It assesses short-term memory, visuospatial function, executive function, attention, concentration and working memory, language and orientation.
**Neuralgia** is acute paroxysmal pain radiating along the course of one or more nerves usually without demonstrable changes in the nerve structure
**Neurocutaneous disorders** are disorders that affect the brain, spinal cord, organs, skin and bones. The diseases are lifelong conditions that can cause tumors to grow in these areas.
**Neurofibromatosis** is a rare genetic disorder that causes benign tumors to grow on nerves and other parts of the body. There are three types of neurofibromatosis: neurofibromatosis 1 (NF1), neurofibromatosis 2 (NF2) and schwannomatosis.
**Neuropathy** is damage, disease or dysfunction of one or more nerves, especially of the peripheral nervous system, that is typically marked by burning or shooting pain, numbness, tingling, muscle weakness or atrophy It is often degenerative and is usually caused by injury, infection, disease, drugs, toxins or vitamin deficiency.
**Neurocutaneous disorders** are disorders that affect the brain, spinal cord, organs, skin and bones. The diseases are lifelong conditions that can cause tumors to grow in these areas.
**Non-diagnostic** is a result that does not lead to a confirmed diagnosis.

**Nystagmus** is a visual condition in which the eyes make repetitive, uncontrolled movements. These movements often result in reduced vision and depth perception and can affect balance and coordination; and can occur from side to side, up and down, or in a circular pattern.
**Pediatric approximate ages** are defined by the US Department of Health (USDH), the Food and Drug Administration (FDA), and the American Academy of Pediatrics (AAP) as the following:

1. Infancy, between birth and 2 years of age
2. Childhood, from 2 to 12 years of age
3. Adolescence, from 12 to 21 years of age, further defined by the AAP into:
    a. Early (ages 11–14 years)
    b. Middle (ages 15–17 years),
    c. Late (ages 18–21 years)
    d. Older ages may be appropriate for children with special healthcare needs.

**Ocular palsy** is the decreased strength of a muscle, which produces a reduced rotational movement of the eyeball in the direction corresponding to the paralysed muscle.
**Optic nerve infiltrative disorders** are conditions where the optic nerve is invaded by abnormal cells or substances, leading to vision impairment and other symptoms.
**Optic neuritis** is inflammation of the optic nerve.
**Orthostatic headache** is a headache while upright, that is relieved by lying down.
**Otorrhea** is drainage of liquid from the ear.
**Papilledema** is swelling of the optic nerve head due to increased intracranial pressure (ICP), which can lead to vision loss if not treated promptly.
**Parkinson's disease** is a chronic progressive neurological disease chiefly of later life that is linked to decreased dopamine production in the substantia nigra and is marked especially by tremor of resting muscles, rigidity, slowness of movement, impaired balance and a shuffling gait.
**Paroxysmal hemicrania** is a rare form of headache that brings on severe throbbing and claw-like pain usually on one side of the face near the eye and occasionally around the back of the neck. The pain may be accompanied by red and tearing eyes.
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    a. Early (ages 11–14 years)
    b. Middle (ages 15–17 years),

c. Late (ages 18–21 years)

d. Older ages may be appropriate for children with special healthcare needs.

**Polysomnogram (PSG)** is a sleep study that records physiological variables while you sleep. The test is used to diagnose sleep disorders.

**Post-concussive syndrome (PCS)** occurs when symptoms of a mild traumatic brain injury last longer than expected after an injury. These symptoms may include headaches, dizziness and problems with concentration and memory. They can last weeks to months.

**Pseudobulbar affect (PBA)** is a condition that's characterized by episodes of sudden uncontrollable and inappropriate laughing or crying. Pseudobulbar affect typically occurs in people with certain neurological conditions or injuries, which might affect the way the brain controls emotion.

**Recurrence** is a new occurrence of something that happened or appeared before.

**Rhinorrhea** is excessive mucous drainage from the nose.

**Rosai-Dorfman disease** is an uncommon histiocytic disorder most frequently presenting as bilateral cervical lymphadenopathy in children and young adults.

**Screening** is the systematic application of a test or inquiry to identify individuals at sufficient risk of a specific disorder to warrant further investigation or direct preventive action, among persons who have not sought medical attention for symptoms of that disorder.

**Seizure** is a sudden, uncontrolled electrical disturbance in the brain. It can cause changes in behavior, movements or feelings and in levels of consciousness.

**Sentinel headache** is headache characterized by sudden, severe head pain, often described as "the worst headache of my life." It is sometimes called a "thunderclap" headache. The pain usually peaks within five minutes, persists for at least one hour and may be accompanied by nausea or vomiting.

**Short-lasting unilateral neuralgiform headache** is a rare primary headache disorder that comes with infrequent attacks that last seconds. The pain can be severe stabbing on one side of the face.

**Shunt** is a hollow tube surgically placed in the brain (or occasionally in the spine) to help drain cerebrospinal fluid and redirect it to another location in the body where it can be reabsorbed.

**Sickle cell disease** is a chronic anemia that occurs in individuals who are homozygous for the gene controlling hemoglobin S (eg, African or Mediterranean descent). It is characterized by destruction of red blood cells and by episodic blocking of blood vessels by the adherence of sickle cells to the vascular endothelium. This causes the serious complications of the disease (such as organ failure).

**Skew deviation test** is a clinical examination used to detect vertical misalignment of the eyes, which is indicative of a brainstem lesion.

**Spontaneous intracranial hypotension (SIH)** is a condition characterized by cerebrospinal fluid (CSF) hypovolemia due to a noniatrogenic spinal CSF leak, often presenting with orthostatic headache.

**Staging** in cancer is the process of determining how much cancer is within the body (tumor size) and if it has metastasized (spread).

**Strabismus** is a disorder in which both eyes do not line up in the same direction, therefore, they do not look at the same object at the same time and is caused by an imbalance of the muscles of the eyeball.

**Stroke**, sometimes called a brain attack, occurs when something blocks blood supply to part of the brain or when a blood vessel in the brain bursts. In either case, parts of the brain becomes damaged or dies. A stroke can cause lasting brain damage, long-term disability or even death.

**Subdural hematoma** occurs when a blood vessel in the space between the skull and the brain (the subdural space) is damaged. Blood escapes from the blood vessel, leading to the formation of a blood clot (hematoma) that places pressure on the brain and damages it.

**Surveillance** in cancer is the ongoing, timely and systematic collection and analysis of information on new cancer cases, extent of disease, screening tests, treatment, survival and cancer deaths.

**Syncope** is loss of consciousness resulting from insufficient blood flow to the brain.

**Syringomyelia** is a chronic progressive disease of the spinal cord associated with sensory disturbances, muscle atrophy and spasticity.

**Thrombosis** is the formation of a blood clot (partial or complete blockage) within blood vessels, whether venous or arterial, limiting the natural flow of blood and resulting in clinical sequela.

**Thunderclap headache** is headache characterized by sudden, severe head pain, often described as "the worst headache of my life." It is sometimes called a sentinal headache. The pain usually peaks within five minutes, persists for at least one hour and may be accompanied by nausea or vomiting.is an uncommon type of headache that strikes suddenly, the pain peaks within 60 seconds and can warn of potentially life-threatening conditions (usually having to do with bleeding in and around the brain).

**Transient ischemic attack (TIA)** is a brief interruption of the blood supply to the brain that causes a temporary impairment of vision, speech or movement. The episode usually lasts for just a few moments but may be a warning sign of a full scale stroke.

**Trigeminal autonomic cephalalgia (TAC)** is a type of primary headache characterized by intense pain on one side of the head in the area where the trigeminal nerve is located, that may cause autonomic symptoms (watering eye, red eye, drooping eyelid and leaking nose) on the same side of the head where the pain occurs.

**Ultrasound** is the diagnostic or therapeutic use of ultrasound and especially a noninvasive technique involving the formation of images used for the examination and measurement of internal body structures and the detection of bodily abnormalities.

**Valsalva maneuver** is the action of attempting to exhale with the nostrils and mouth or the glottis, while closed. This increases pressure in the middle ear and the chest, as when bracing to lift heavy objects and is used as a means of equalizing pressure in the ears. It can be used to diagnose or treat certain cardiovascular conditions.

**Vasculitis** involves inflammation of the blood vessels. The inflammation can cause the walls of the blood vessels to thicken, which reduces the width of the passageway through the vessel. If blood flow is restricted, it can result in organ and tissue damage.

**Vertical Gaze Nystagmus Test** looks for jerking as the eyes move up, and are held for about 4 seconds at maximum elevation.

**Vertigo** is a sensation of motion or spinning that is often described as dizziness. People with vertigo feel as though they are actually spinning or moving, or that the world is spinning around them.

**Videonystagmography** is a test that measures a type of involuntary eye movement called nystagmus using special goggles with cameras.

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# Disclaimer section

## Purpose

The purpose of the HealthHelp's clinical guidelines is to assist healthcare professionals in selecting the medical service that may be appropriate and supported by evidence to safely improve outcomes. Medical information is constantly evolving, and HealthHelp reserves the right to review and update these clinical guidelines periodically. HealthHelp reserves the right to include in these guidelines the clinical indications as appropriate for the organization's program objectives. Therefore the guidelines are not a list of all the clinical indications for a stated procedure, and associated Procedure Code Tables may not represent all codes available for that state procedure or that are managed by a specific client-organization.

## Clinician Review

These clinical guidelines neither preempt clinical judgment of trained professionals nor advise anyone on how to practice medicine. Healthcare professionals using these clinical guidelines are responsible for all clinical decisions based on their assessment. All Clinical Reviewers are instructed to apply clinical indications based on individual patient assessment and documentation, within the scope of their clinical license.

## Payment

The use of these clinical guidelines does not provide authorization, certification, explanation of benefits, or guarantee of payment; nor do the guidelines substitute for, or constitute, medical advice. Federal and State law, as well as member benefit contract language (including definitions and specific contract provisions/exclusions) take precedence over clinical guidelines and must be considered first when determining eligibility for coverage. All final determinations on coverage and payment are the responsibility of the health plan. Nothing contained within this document can be interpreted to mean otherwise.

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# National and Local Coverage Determination (NCD and LCD)

**NOTICE**
To ensure appropriate review occurs to the most current NCD and/or LCD, always defer to https://www.cms.gov/medicare-coverage-database/search.aspx.

## Background

National Coverage Determinations (NCD) and Local Coverage Determinations (LCD) are payment policy documents outlined by the Centers for Medicare and Medicaid Services (CMS) and the government's delegated Medicare Audit Contractors (MACs) that operate regionally in jurisdictions.
CMS introduced variation between different jurisdictions/Medicare Audit Contractors (MACs) and their associated covered code lists with the transition to ICD 10. The variation resulted in jurisdictions independently defining how codes are applied for exclusions, limitations, groupings, ranges, etc. for the medical necessity indications outlined in the NCD and LCD. Due to this variation, there is an inconsistent use/application of codes and coverage determinations across the United States between the different MACs.
In addition, **WITHOUT** notice, CMS can change the codes that indicate medical necessity and the format of the coverage determinations/associated documents (eg, Articles). This is an additional challenge for organizations to keep up with ongoing, unplanned changes in covered codes and medical necessity indications.

## Medical Necessity Codes

Due to the variation in code application between jurisdictions/MACs and that updates can happen without notification, HealthHelp is not able to guarantee full accuracy of the codes listed for any Coverage Determination, and advises that prior to use, the associated Coverage Determination Articles are reviewed to ensure applicability to HealthHelp's programs and any associated NCDs and LCDs.

## For Internal Use Only:

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