CIGNA MEDICAL COVERAGE POLICIES – RADIOLOGY

Pediatric Head Imaging Guidelines

Effective Date: February 02, 2027

Instructions for use

The following coverage policy applies to health benefit plans administered by Cigna. Coverage policies are intended to provide guidance in interpreting certain standard Cigna benefit plans and are used by medical directors and other health care professionals in making medical necessity and other coverage determinations. Please note the terms of a customer's particular benefit plan document may differ significantly from the standard benefit plans upon which these coverage policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a coverage policy.

In the event of a conflict, a customer's benefit plan document always supersedes the information in the coverage policy. In the absence of federal or state coverage mandates, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of:

1. The terms of the applicable benefit plan document in effect on the date of service
2. Any applicable laws and regulations
3. Any relevant collateral source materials including coverage policies
4. The specific facts of the particular situation

Coverage policies relate exclusively to the administration of health benefit plans. Coverage policies are not recommendations for treatment and should never be used as treatment guidelines.

This evidence-based medical coverage policy has been developed by EviCore, Inc. Some information in this coverage policy may not apply to all benefit plans administered by Cigna.

These guidelines include procedures EviCore does not review for Cigna. Please refer to the **Cigna CPT code list** for the current list of high-tech imaging procedures that EviCore reviews for Cigna.

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Table of Contents

Guideline Page

General Guidelines (PEDHD-1)....3
Specialized Imaging Techniques (PEDHD-2).... 20
Pediatric Headache (PEDHD-3).... 25
Pediatric Head and Face Trauma (PEDHD-4)....31
Sinusitis and Allergic Rhinitis (PEDHD-5)....36
Epilepsy and Other Seizure Disorders (PEDHD-6)....45
Macrocephaly, Microcephaly, and Hydrocephalus (PEDHD-7)....54
Craniofacial Anomalies (PEDHD-8)....64
Chiari and Skull Base Malformations (PEDHD-9)....69
Intracranial Aneurysms and AVM (PEDHD-10).... 76
Syncope (PEDHD-11).... 89
Pediatric Stroke (PEDHD-12).... 92
Benign Brain Lesions (PEDHD-13).... 105
Pediatric Demyelinating Diseases (PEDHD-14).... 109
Pituitary Dysfunction (PEDHD-15)....119
Pediatric Ear Disorders (PEDHD-16)....130
Autism Spectrum Disorders (PEDHD-17)....137
Behavioral and Psychiatric Disorders (PEDHD-18)....140
Developmental Disorders (PEDHD-19).... 143
Ataxia (PEDHD-20).... 150
Epistaxis (PEDHD-21).... 154
Papilledema/Pseudotumor Cerebri (PEDHD-22).... 157
Cranial Neuropathies (PEDHD-23)....159
Pediatric Sleep Disorders (PEDHD-24)....161
Temporomandibular Joint (TMJ)/Dental/Maxillofacial Imaging in Children (PEDHD-25).... 164
Movement Disorders including Tourette Syndrome (PEDHD-26).... 168
Tuberous Sclerosis (PEDHD-27)....173
Von Hippel-Lindau Syndrome (VHL) (PEDHD-28)....175
CNS Infection (PEDHD-29).... 177
Scalp and Skull Lesions (PEDHD-30).... 180
Eye Disorders (PEDHD-31).... 183

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General Guidelines (PEDHD-1)

Guideline Page

Procedure Codes Associated with Head Imaging....4
General Guidelines (PEDHD-1.0)....8
Pediatric Head Imaging Age Considerations (PEDHD-1.1).... 10
Pediatric Head Imaging Appropriate Clinical Evaluation (PEDHD-1.2)....11
Pediatric Head Imaging Modality General Considerations (PEDHD-1.3)....12
General Guidelines-Other Imaging Situations (PEDHD-1.4)....16
References (PEDHD-1).... 17

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Procedure Codes Associated with Head Imaging

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Procedure Codes Associated with Head Imaging	
MRI	**CPT®**
MRI Brain without contrast	70551
MRI Brain with contrast (rarely used)	70552
MRI Brain without and with contrast	70553
MRI Orbit, Face, Neck without contrast	70540
MRI Orbit, Face, Neck with contrast (rarely used)	70542
MRI Orbit, Face, Neck without and with contrast	70543
MRI Temporomandibular Joint (TMJ)	70336
Functional MRI Brain not requiring physician or psychologist	70554
Functional MRI Brain requiring physician or psychologist	70555
MR Spectroscopy	76390
Unlisted MRI procedure (for radiation planning or surgical software)	76498
MRA	**CPT®**
MRA Head without contrast	70544
MRA Head with contrast	70545
MRA Head without and with contrast	70546

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Procedure Codes Associated with Head Imaging	
MRA Neck without contrast	70547
MRA Neck with contrast	70548
MRA Neck without and with contrast	70549
CT	**CPT®**
CT Head without contrast	70450
CT Head with contrast	70460
CT Head without and with contrast	70470
CT Orbits without contrast (includes temporal bone and mastoid)	70480
CT Orbits with contrast (includes temporal bone and mastoid)	70481
CT Orbits without and with contrast (includes temporal bone and mastoid)	70482
CT Maxillofacial without contrast (includes sinuses, jaw, and mandible)	70486
CT Maxillofacial with contrast (includes sinuses, jaw, and mandible)	70487
CT Maxillofacial without and with contrast (includes sinuses, jaw, and mandible)	70488
CT Neck without contrast (includes jaw, and mandible)	70490
CT Neck with contrast (includes jaw, and mandible)	70491
CT Neck without and with contrast (includes jaw, and mandible)	70492
CT Guidance for Stereotactic Localization (used for sinus surgery planning)	77011
CT Guidance for Placement of Radiation Therapy Fields	77014

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Procedure Codes Associated with Head Imaging	
Unlisted CT procedure (for radiation planning or surgical software)	76497
CTA	**CPT®**
CTA Head	70496
CTA Neck	70498
CTA Head and Neck without and with contrast	70471

Ultrasound	**CPT®**
Echoencephalography (Head or Cranial Ultrasound)	76506
Ophthalmic ultrasound, diagnostic; B-scan & quantitative A-scan performed same encounter	76510
Ophthalmic ultrasound, diagnostic; quantitative A-scan only	76511
Ophthalmic ultrasound, diagnostic; B-scan	76512
Ophthalmic ultrasound, diagnostic; anterior segment ultrasound, immersion (water bath) B-scan	76513
Ophthalmic ultrasound, diagnostic; corneal pachymetry, unilateral or bilateral	76514
Ophthalmic biometry by ultrasound, A-scan	76516
Ophthalmic biometry by ultrasound, A-scan, with lens power calculation	76519
Ophthalmic ultrasonic foreign body localization	76529
Soft tissues of head and neck Ultrasound (thyroid, parathyroid, parotid, etc.)	76536
Transcranial Doppler study of the intracranial arteries; complete study	93886

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Transcranial Doppler study of the intracranial arteries; limited study	93888

Pediatric Head Imaging Guidelines

General Guidelines (PEDHD-1.0)

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Criteria

- A pertinent clinical evaluation including a detailed history, physical examination with a thorough neurologic examination since the onset or change in signs and/or symptoms, appropriate laboratory studies and basic imaging such as plain radiography or ultrasound should be performed prior to considering advanced imaging (CT, MR, Nuclear Medicine), unless the individual is undergoing a guideline-supported scheduled imaging evaluation. A meaningful technological contact (telehealth visit, telephone call, electronic mail, or messaging) since the onset or change in signs and/or symptoms can serve as a pertinent clinical evaluation.
  - A detailed neurological exam is required prior to advanced imaging except in the following scenarios:
    - Individual is undergoing a guideline-supported scheduled follow-up imaging evaluation
    - Tinnitus, TMJ, sinus or mastoid disease, ear pain, hearing loss, eye disease, papilledema, dental requests and epistaxis (a relevant physical exam is still required)
    - The request is from a neurologist, neurosurgeon, endocrinologist, otolaryngologist, or ophthalmologist who has evaluated the individual since onset of symptoms.
- Unless otherwise stated in a specific guideline section, the use of advanced imaging to screen asymptomatic individuals for disorders involving the head is considered not medically necessary. Advanced imaging of the head is only considered medically necessary in individuals who have documented active clinical signs or symptoms of disease involving the head.
- Unless otherwise stated in a specific guideline section, repeat imaging studies of the head are considered not medically necessary unless there is evidence for progression of disease, new onset of disease, and/or documentation of how repeat imaging will affect individual management or treatment decisions.

Health Equity Consideration

Health equity is the highest level of health for all individuals; health inequity is the avoidable difference in health status or distribution of health resources due to the social conditions in which individuals are born, grow, live, work, and age. Social determinants of health are the conditions in the environment that affect a wide range of health, functioning, and quality of life outcomes and risks. Examples include the following:

safe housing, transportation, and neighborhoods; racism, discrimination, and violence; education, job opportunities, and income; access to nutritious foods and physical activity opportunities; access to clean air and water; and language and literacy skills.

Pediatric Head Imaging Guidelines

Pediatric Head Imaging Age Considerations (PEDHD-1.1)

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- Many conditions affecting the head in the pediatric population are different diagnoses than those occurring in the adult population. For those diseases which occur in both pediatric and adult populations, minor differences may exist in management due to individual age, comorbidities, and differences in disease natural history between children and adults.
- Individuals who are under 19 years of age and have any conditions not specifically discussed in the General Head Imaging Guidelines should be imaged according to the Pediatric Head Imaging Guidelines. Any conditions not specifically discussed in the Pediatric Head Imaging Guidelines should be imaged according to the General Head Imaging Guidelines. Individuals who are 19 years of age or older should be imaged according to the General Head Imaging Guidelines, except where directed otherwise by a specific guideline section.

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Pediatric Head Imaging Appropriate Clinical Evaluation (PEDHD-1.2)

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Requests for Studies with Overlapping Fields

- There are many CPT® codes for imaging the head that have significantly overlapping fields. In the majority of cases where multiple head CPT® codes are requested, only one CPT® code is appropriate unless there is clear documentation of a need for the additional codes to cover all necessary body areas.
- See **General Guidelines - Anatomic Issues (HD-1.1)** in the Head Imaging Guidelines for the correct coding of these studies.

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Pediatric Head Imaging Modality General Considerations (PEDHD-1.3)

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- MRI
  - MRI is superior to CT imaging of the pediatric head unless otherwise stated in a specific guideline section.
  - Anesthesia is usually required for almost all infants (except neonates) and young children (age <7 years) as well as older children with delays in development or maturity.
  - MRI sessions should be planned with a goal of minimizing anesthesia exposure by adhering to the following considerations:
    - MRI/MRA of all necessary body areas, when multiple body areas are supported by the guidelines for the clinical condition being evaluated, should be obtained concurrently in the same anesthesia session.
    - MRI without and with contrast is medically necessary if requested to avoid repetitive anesthesia administration that would be needed to perform an MRI with contrast, if the initial study without contrast is inconclusive when:
      - intravenous access will already be present for anesthesia administration **AND**
      - there is no contraindication for using contrast.
  - For MRI spine imaging with contrast to be performed following a contrast-enhanced MRI Brain, see **CNS Tumors General Considerations (PEDONC-4.1)** in the Pediatric and Special Populations Oncology Guidelines.
- CT
  - CT is generally inferior to MRI for imaging of the pediatric head, but has specific indications in which it is the preferred modality listed in specific sections of these guidelines.
    - CT should not be used to replace MRI in an attempt to avoid sedation unless listed as a recommended study in a specific guideline section.
  - CT Head without contrast (CPT® 70450) may be medically necessary for:
    - Mass effect
    - Blood/blood products
    - Urgent/emergent settings due to availability and speed of CT
    - Trauma
    - Recent hemorrhage, whether traumatic or spontaneous
    - Bony structures of the head evaluations including dystrophic calcifications
    - Hydrocephalus evaluation and follow-up

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- Some centers use limited non-contrast “fast or rapid MRI” (CPT® 70551) to minimize radiation exposure in children - these requests are appropriate.
  - Prior to lumbar puncture in individuals with cranial complaints
  - Scenarios in which MRI is contraindicated (i.e. pacemakers, ICDs, cochlear implants, aneurysm clips, orbital metallic fragments, etc.)
  - Concern for calcifications
- CT and MR Angiography (CTA and MRA) Head and Neck
  - Contrast level
    - MRA Head may be performed without contrast (CPT® 70544), with contrast (CPT® 70545), or without and with contrast (CPT® 70546).
    - CTA Head is performed without and with contrast (CPT® 70496).
    - MRA Neck may be done either without contrast (CPT® 70547), with contrast (CPT® 70548), or without and with contrast (CPT® 70549), depending on facility preference and protocols and type of scanner.
    - CTA Neck is done without and with contrast (CPT® 70498).
    - CTA Head and Neck without and with contrast (CPT ® 70471). This code is applicable when both CTA Head and Neck are performed together during the same session.
  - Indications for CTA and MRA Head and Neck vessels include, but are not limited to the following:
    - Pulsatile tinnitus
    - Hemifacial spasm if consideration for surgical decompression
    - Evaluation of stroke or TIA (See **Pediatric Stroke Initial Imaging (PEDHD-12.2)**, **Pediatric Stroke Subsequent Imaging (PEDHD-12.3)**, **Moyamoya Disease (PEDHD-12.4)**, **Sickle Cell Disease (PEDHD-12.5)** and **CNS Vasculitis (PEDHD-12.6)** including collateral assessment)
    - Follow-up of known cerebral artery stenosis
    - Trigeminal neuralgia that has failed medical therapy
    - Cerebral sinus thrombosis suspected with increased intracranial pressure (refractory headaches, papilledema, diagnosis of pseudotumor cerebri)
    - Aneurysm suspected with acute “thunderclap” headache syndrome and appropriate screening or evaluation of known subarachnoid hemorrhage and pseudoaneurysms (may be appropriate to limit CTA to include only the head to avoid unnecessary radiation to the individual) (See **Pediatric Intracranial Aneurysms (PEDHD-10.1)**)
    - Noninflammatory vasculopathy, including radiation vasculopathy (See **Long Term Pediatric Cancer Surviors (PEDONC-19)** in the Pediatric and Special Populations Oncology Imaging Guidelines)
    - Traumatic vascular injuries

        - Vascular malformations, vascular anatomic variants, and fistulas (See **Pediatric Intracranial Arteriovenous Malformations (AVM) (PEDHD-10.2)**)
        - Arterial, including carotid dissections
        - Tumors of vascular origin or involving vascular structures
        - Surgical and radiation therapy localization, planning and neuronavigation
        - Evaluation for vascular intervention and follow-up including post-surgical/post-treatment vascular complications
        - Intra-cranial pre-operative planning if there is concern of possible vascular involvement or risk for vascular complication from procedure
        - Vasculitis and collagen vascular disease (See **CNS Vasculitis (PEDHD-12.6)**)
        - Sickle cell disease (See **Sickle Cell Disease (PEDHD-12.5)**)
        - Moyamoya disease (See **Moyamoya Disease (PEDHD-12.4)**)
        - Evaluation of posterior circulation disease requires both neck and head MRA/CTA to visualize the entire vertebral-basilar system
    - For follow-up of aneurysm clipping or coiling procedures, see **Intracranial Aneurysms (HD-12.1)** in the Head Imaging Guidelines.
- CT and MR Venography (CTV and MRV)
    - CTV and MRV are reported with the same codes as the CTA/MRA counterpart (there is no specific code for CT/MR venography).
    - If arterial and venous CT or MR studies are both performed in the same session, only one CPT® code should be used to report both procedures.
    - MRA without and with contrast with venous sinus thrombosis to differentiate total from subtotal occlusion
- Ultrasound
    - Cranial ultrasound (CPT® 76506) is a non-invasive means of evaluating for intracranial abnormalities in infants with an open anterior fontanelle.
    - Transcranial Doppler ultrasonography has some utility in select populations of older children with known or suspected intracranial vascular disease.
- 3D Rendering
    - CPT® 76377 (3D rendering requiring image post-processing on an independent workstation) or CPT® 76376 (3D rendering not requiring image post-processing on an independent workstation) is medically necessary in the following clinical scenarios:
        - Bony conditions:
            - Evaluation of congenital skull abnormalities in newborns, infants, and toddlers (usually for pre-operative planning)
            - Complex joint fractures or pelvis fractures
            - Spine fractures (usually for pre-operative planning)
            - Complex facial fractures
        - Pre-operative planning for other complex surgical cases

    - Cerebral angiography
  - 3D Rendering (CPT® 76377 or CPT® 76376) is medically necessary for surgical planning and surgical follow-up after craniotomy when ordered by a surgical specialist.
  - 3D Rendering indications in pediatric head imaging are identical to those in the general imaging guidelines. See **3D Rendering (Preface-4.1)** in the Preface Imaging Guidelines.
- CT or MRI Perfusion (See **CT or MRI Perfusion (HD-24.5)** in the Head Imaging Guidelines.)

Background and Supporting Information

- The guidelines listed in this section for certain specific indications are not intended to be all-inclusive. Clinical judgment remains paramount and variance from these guidelines may be appropriate and warranted for specific clinical situations.
- "The U.S. Food and Drug Administration (FDA) is warning that repeated or lengthy use of general anesthetic and sedation drugs during surgeries or procedures in children younger than 3 years or in pregnant women during their third trimester may affect the development of children's brains. …Published studies in pregnant animals and young animals have shown the use of general anesthetic and sedation drugs for more than 3 hours caused widespread loss of nerve cells in the brain. …All the studies in children had limitations, and it is unclear whether any negative effects seen in children's learning or behavior were due to the drugs or to other factors, such as the underlying medical condition that led to the need for the surgery or procedure."
- Evidence-based literature demonstrates the potential for gadolinium deposition in various organs including the brain, after the use of MRI contrast.
  - The FDA has noted that there is currently no evidence to suggest that gadolinium retention in the brain is harmful and restricting gadolinium-based contrast agents (GBCAs) use is not warranted at this time. It has been recommended that GBCA use should be limited to circumstances in which additional information provided by the contrast agent is necessary and the necessity of repetitive MRIs with GBCAs should be assessed.

General Guidelines-Other Imaging Situations (PEDHD-1.4)

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Criteria

- MRI Brain without contrast (CPT® 70551) or MRI Brain without and with contrast (CPT® 70553) can be performed for nausea and vomiting which is persistent and unexplained and there is a negative GI evaluation.
- Screening for metallic fragments before MRI should be done initially with plain x-ray.
- Plain x-ray is generally sufficient to screen for aneurysm clips.
- For neurosarcoidosis, see **Autoimmune/Paraneoplastic Encephalitis & Neuroinflammatory Disorders (HD-14.3)**.

Background and Supporting Information

- The use of CT Orbital to rule out orbital metallic fragments prior to MRI is rarely necessary.
- Plain x-rays are generally sufficient; x-ray detects fragments of 0.12 mm or more, and CT detects those of 0.07 mm or more.

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Specialized Imaging Techniques (PEDHD-2)

Guideline Page

Magnetic Resonance Spectroscopy (MRS, CPT®76390) (PEDHD-2.1)..... 21
Functional Magnetic Resonance Imaging (fMRI, CPT® 70554 and CPT®70555) (PEDHD-2.2)..... 22
PET Brain Imaging (CPT®78608) (PEDHD-2.3)..... 23
References (PEDHD-2)..... 24

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Magnetic Resonance Spectroscopy (MRS, CPT® 76390) (PEDHD-2.1)

HDP.SI.0002.1.A
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Criteria

- Magnetic Resonance Spectroscopy (MRS) involves the analysis of the levels of certain chemicals in pre-selected voxels (small regions) on an MRI scan done at the same time.
- Uses in pediatric neuro-oncology: See **Pediatric CNS Tumors (PEDONC-4)** in the Pediatric and Special Populations Oncology Imaging Guidelines.
- MRS is considered medically necessary in individuals with neonatal hypoxic ischemic encephalopathy to help estimate the age of the injury.
- Uses in Metabolic Disorders:
  - See **Neurometabolic and Neurogenetic Disorders (PEDHD-19.4)**.
- MRS is considered not medically necessary for all other pediatric indications at this time.

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Functional Magnetic Resonance Imaging (fMRI, CPT® 70554 and CPT® 70555) (PEDHD-2.2)

HDP.SI.0002.2.A
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Criteria

- fMRI is considered medically necessary to define eloquent areas of the brain as part of pre-operative planning for epilepsy surgery or removal of a mass lesion.
  - The documentation should be clear that brain surgery is planned.
  - Can be performed concurrently with MRI Brain (CPT® 70551 or CPT® 70553) and/or PET Brain Metabolic (CPT® 78608 or CPT® 78609).
- fMRI is considered not medically necessary for all other pediatric indications at this time.

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PET Brain Imaging (CPT® 78608) (PEDHD-2.3)

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Criteria

- Metabolic FDG PET (CPT® 78608)
  - For pre-operative planning for epilepsy surgery, see **Special Imaging Studies in Evaluation for Epilepsy Surgery (PEDHD-6.3)**.
  - For encephalitis including autoimmune encephalitis, see **Autoimmune/ Paraneoplastic Encephalitis & Neuroinflammatory Disorders (HD 14.3)**.
  - For uses in pediatric neuro-oncology, see **Pediatric CNS Tumors (PEDONC-4)**.
  - Metabolic FDG PET (CPT® 78608) is considered not medically necessary for all other pediatric indications at this time.
- For Metabolic PET/MRI, see **Special Imaging Studies in Evaluation for Epilepsy Surgery (PEDHD-6.3)**.

Background and Supporting Information

- FDG PET Brain is considered medically necessary to define active areas of the brain as part of pre-operative planning for epilepsy surgery.
- FDG PET Brain/MRI is generally considered not medically necessary for neurological conditions, except pre-operative planning for epilepsy surgery, due to lack of standardization in imaging technique and interpretation.

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Pediatric Headache (PEDHD-3)

Guideline Page

Pediatric Headache (PEDHD-3.1)..... 26
References (PEDHD-3)..... 30

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Pediatric Headache (PEDHD-3.1)

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Criteria

- A pertinent clinical evaluation including a detailed history and physical examination with a thorough neurologic examination, since the onset or change in signs and/or symptoms, and appropriate laboratory studies should be performed prior to considering advanced imaging.
- Advanced imaging is considered not medically necessary for pediatric individuals with headache in the absence of supported indications.

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Indications	Medically Necessary Imaging Study
◦ Age less than or equal to 5 years ◦ Focal neurological complaints including acute hypertension or altered mental status ◦ Clumsiness (common description of gait or coordination problems in young children) ◦ Headaches awakening from sleep or always present in the morning ◦ Headaches associated with morning nausea/vomiting ◦ Seizures ◦ Progressive worsening in headache frequency and severity without period of temporary improvement ◦ Systemic symptoms such as persistent fever, weight loss, rash, or joint pain ◦ Immunocompromised individual ◦ Known history of cancer of any type ◦ Known autoimmune or rheumatologic disease ◦ Known genetic disorder with predisposition to intracranial mass lesions ◦ History of stable chronic headaches with recent significant change in frequency or severity ◦ Neurological signs and/or symptoms, including headache, after COVID-19 infection ◦ If a recent CT Head is inconclusive	◦ MRI Brain without contrast (CPT® 70551) **OR** ◦ MRI Brain without and with contrast (CPT® 70553)
◦ Abnormality identified on MRI Brain without contrast (CPT® 70551)	◦ MRI Brain with contrast (CPT® 70552) **OR** ◦ MRI Brain without and with contrast (CPT® 70553)

Indications	Medically Necessary Imaging Study
◦ Headache precipitated by coughing, sneezing, physical exertion, or Valsalva ◦ Thunderclap headache ◦ Individual with hypercoagulable state or bleeding disorder	◦ MRI Brain without contrast (CPT® 70551) **OR** ◦ MRI Brain without and with contrast (CPT® 70553) **AND/OR** ◦ MRA Head (CPT® 70544, CPT® 70545, or CPT® 70546) **OR** ◦ CTA Head (CPT® 70496)
◦ Papilledema on physical exam ◦ Focal signs and/or symptoms of bruit, dissection, vertebrobasilar insufficiency, and/or positional changes	◦ MRI Brain without contrast (CPT® 70551) **OR** ◦ MRI Brain without and with contrast (CPT® 70553) **AND/OR** ◦ MRA Head (CPT® 70544, CPT® 70545, or CPT® 70546) **OR** ◦ CTA Head (CPT® 70496) **OR** ◦ MRV Head (CPT® 70544, CPT® 70545, or CPT® 70546) For requests of MRA OR CTA AND MRV, see **Pediatric Head Imaging Modality General Considerations (PEDHD-1.3)**.

Indications	Medically Necessary Imaging Study
◦ Urgent/Emergent settings ◦ Sudden severe headache including thunderclap headache ◦ Acute setting of suspected intracranial infection prior to lumbar puncture (CT Head with contrast CPT® 70460 if intracranial spread of disease is suspected, to detect suppurative fluid collections) (See **General Guidelines-Other Imaging Situations (PEDHD-1.4)**) ◦ Concern for new hemorrhage, significant mass effect, or hydrocephalus and/or rapid clinical deterioration ◦ Recent head trauma ◦ Suspected skull or other bony involvement ◦ If MRI is contraindicated ◦ Ventriculoperitoneal shunt with suspected shunt malfunction. See **Macrocephaly, Microcephaly, and Hydrocephalus (PEDHD-7)** for additional imaging.	◦ CT Head without contrast (CPT® 70450) *CT Head permitted even with prior MRI Brain imaging.*

- If concern for CNS infection, see **CNS Infection (PEDHD-29)**.

Background and Supporting Information

- Headache is a very common complaint in school aged children and adolescents. Many of these children have a family history of one of the primary headache disorders, such as migraine or tension headache.
- CT Head poorly visualizes the posterior fossa in children and is generally insufficient to evaluate pediatric headaches in the absence of supported indications. CT is not supported in lieu of MRI solely to avoid sedation. See **Pediatric Head Imaging Modality General Considerations (PEDHD-1.3)**.

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Pediatric Head and Face Trauma (PEDHD-4)

Guideline Page

Head Trauma (PEDHD-4.1)..... 32
Facial Trauma (PEDHD-4.2)..... 34
References (PEDHD-4)..... 35

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Head Trauma (PEDHD-4.1)

HDP.PS.0004.1.A
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Criteria

- In individuals with recent head trauma, a history focused on the incident and careful examination of the head, neck, and neurological function should be performed since the onset or change in signs and/or symptoms prior to considering advanced imaging.
- Advanced imaging is considered medically necessary for children with head trauma with ANY of the following red flags:
  - Loss of consciousness
  - Altered mental status or abnormal behavior
  - Known or suspected skull fracture
  - Glasgow Coma Score <15
  - Age younger than 2 years
  - Vomiting
  - Severe mechanism of injury, including, but not limited to:
    - Motor vehicle crash with patient ejection
    - Motor vehicle crash with death of another passenger
    - Motor vehicle crash with rollover
    - Pedestrian or bicyclist without helmet struck by a motorized vehicle
    - Head struck by a high-impact object
    - Falls of more than 1.5m (5 feet) for children aged 2 years and older and more than 0.9m (3 feet) for those younger than 2 years
  - Severe or worsening headache
  - Amnesia
  - Non-frontal scalp hematoma
- CT Head without contrast (CPT® 70450) is the primary advanced imaging study in individuals with acute head trauma.
- MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is medically necessary for the following:
  - Children with an abnormal neurological exam that is not explained by the CT findings
  - Subacute (8 days to one month after initial traumatic event) or chronic blunt head trauma with new or worsening neurological signs or cognitive symptoms
  - Children suspected of being the victims of physical abuse. See **Suspected Physical Child Abuse (PEDMS-7)** in the Pediatric Musculoskeletal Imaging Guidelines.

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- For facial trauma, see **Facial Trauma (PEDHD 4.2)** in the Pediatric Head imaging Guidelines.
- For neck injury, see **Spine Pain Related to Trauma and Painless Spine Trauma (PEDSP 2.6)** in Pediatric Spine Imaging Guidelines.
- Repeat and follow-up imaging can be done at the discretion of the ordering provider.

Pediatric Head Imaging Guidelines

Facial Trauma (PEDHD-4.2)

HDP.PS.0004.2.A
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Criteria

- CT Maxillofacial without contrast (CPT® 70486)

AND/OR

- CT Orbital/Facial/Temporal Bone without contrast (CPT® 70480) **OR** MRI Orbits/Face/Neck (CPT® 70540)

AND/OR

- CT Head without contrast (CPT® 70450) **OR** MRI Brain without contrast (CPT® 70551)
- Repeat and follow-up imaging can be done at the discretion of the ordering provider.
- For additional concerns, see **Facial Trauma (HD-13.2)** in the Head Imaging Guidelines.

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Sinusitis and Allergic Rhinitis (PEDHD-5)

Guideline Page

Sinus And Facial Imaging General Considerations (PEDHD-5.1).....37
Imaging Indications in Sinusitis (PEDHD-5.2).....38
Stereotactic CT Localization (CPT®77011) (PEDHD-5.3).....40
Requests for both Head and Sinus Imaging (PEDHD-5.4).....41
Allergic Rhinitis (PEDHD-5.5).....42
Other Indications for Sinus Imaging (PEDHD-5.6).....43
References (PEDHD-5).....44

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Sinus And Facial Imaging General Considerations (PEDHD-5.1)

HDP.AR.0005.1.A
v1.0.2027

Criteria

- Acute sinusitis is a clinical diagnosis, and imaging is considered not medically necessary to establish a diagnosis. Acute bacterial sinusitis can be presumptively diagnosed in a child with acute upper respiratory infection (URI) symptoms and any of the following:
  - Persistent symptoms lasting >10 days without improvement
  - Worsening symptoms after initial period of improvement
  - Severe symptoms including purulent nasal discharge and fever >102.2°F for at least 3 consecutive days

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Imaging Indications in Sinusitis (PEDHD-5.2)

HDP.AR.0005.2.A
v1.0.2027

Criteria

- Mild mucosal thickening in the paranasal sinuses or mastoids is an extremely common incidental finding noted on head imaging studies done for other indications. If there are no other abnormalities of facial structures noted, this finding is not an indication for advanced imaging of the sinuses or temporal bone.
- CT Maxillofacial without contrast (CPT® 70486) is considered medically necessary if ANY of the following is present:
  - No improvement after 10 days of appropriate antibiotic treatment (generally this will be amoxicillin/clavulanate, amoxicillin, cefdinir, cefuroxime, cefpodoxime, or ceftriaxone)
  - Recurrence of a treated infection within 8 weeks of effective treatment
  - Chronic sinusitis (persistent residual URI symptoms, including nasal obstruction, facial pressure/pain or cough for over 90 days)
  - Known or suspected fungal sinusitis
    - MRI Orbit/Face/Neck without and with contrast (CPT® 70543) is considered medically necessary if requested instead of CT Maxillofacial.
  - Pre-operative evaluation to assess surgical candidacy
- CT Maxillofacial with contrast (CPT® 70487) is considered medically necessary if ANY of the following is present:
  - Orbital or facial cellulitis
  - Proptosis
  - Abnormal visual examination
  - Ophthalmoplegia
  - Immunocompromised individual
  - Fungal or vascular lesions visualized in nasal cavity
- CT Head with contrast (CPT® 70460) **OR** MRI Brain without and with contrast (CPT® 70553) **OR** MRI Orbit/Face/Neck without and with contrast (CPT® 70543) is considered medically necessary if ANY of the following are present:
  - Focal neurologic findings
  - Altered mental status
  - Seizures
  - Concern for orbital complications

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  - Concern for invasive fungal sinusitis
  - MRA Head (CPT® 70544, CPT® 70545, or CPT® 70546) **OR** CTA Head (CPT® 70496) is considered medically necessary with these findings as well if there is clinical concern for associated vascular complications including but not limited to mycotic aneurysm or venous sinus thrombosis.
- Repeat sinus imaging is generally considered not medically necessary for individuals who have responded satisfactorily to treatment but is considered medically necessary with clear documentation of the need for updated CT results to direct acute individual care decisions.

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Stereotactic CT Localization (CPT® 77011) (PEDHD-5.3)

HDP.AR.0005.3.A
v1.0.2027

Criteria

- Stereotactic CT localization is frequently obtained prior to sinus surgery. The dataset is then loaded into the navigational workstation in the operating room for use during the surgical procedure. The information provides exact positioning of surgical instruments with regard to the individual's 3D CT images. In most cases, the pre-operative CT is a technical-only service that does not require interpretation by a radiologist.
- For treatment planning for sinus surgery CPT® 77011: A stereotactic CT localization scan is frequently obtained prior to sinus surgery. The dataset is then loaded into the navigational workstation in the operating room for use during the surgical procedure. The imaging facility should report CPT® 77011 when performing a scan not requiring interpretation by a radiologist.
- If a diagnostic scan is performed and interpreted by a radiologist, the appropriate diagnostic CT code (e.g., CPT® 70486) should be used.
- It is not appropriate to report both CPT® 70486 and CPT® 77011 for the same CT stereotactic localization imaging session.
- 3D Rendering (CPT® 76376 or CPT® 76377) should not be reported in conjunction with CPT® 77011 (or CPT® 70486 if used). The procedure inherently generates a 3D dataset.
- Such operative studies are considered medically necessary when ordered by the operating surgeon for this purpose.

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Requests for both Head and Sinus Imaging (PEDHD-5.4)

HDP.AR.0005.4.A
v1.0.2027

Criteria

- CT Head does not visualize all of the sinuses.
- MRI Brain provides excellent visualization of the sinuses sufficient to recognize sinusitis, and addition of sinus CT for this purpose is unnecessary.
- In individuals being evaluated for potential sinus surgery, separate CT Sinus is often appropriate even after an MRI Brain in order to visualize obstructions to spontaneous mucus flow. See **Stereotactic CT Localization (CPT® 77011) (PEDHD-5.3)**.
- Separate head imaging is considered not medically necessary in individuals with a normal neurological examination who have headaches associated with sinus symptoms.
- CT or MRI Sinus is not considered medically necessary for the evaluation of headaches or neurological complaints without a more specific indication pointing to a sinus etiology.

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Allergic Rhinitis (PEDHD-5.5)

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Criteria

- Advanced imaging is considered not medically necessary for diagnosis or management of individuals with uncomplicated allergic rhinitis.

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Other Indications for Sinus Imaging (PEDHD-5.6)

HDP.AR.0005.6.A
v1.0.2027

Criteria

- See **Facial Trauma (PEDHD-4.2)** for imaging guidelines in trauma.
- CT Maxillofacial without contrast (CPT® 70486) - Congenital anomalies of facial structures.
- Cleft lip and palate can be associated with brain malformations and abnormal brain development.
  - MRI Brain (CPT® 70551) is considered medically necessary in cases of cleft lip and/or palate.
  - MRI Orbits/Face/Neck without contrast (CPT® 70540) or MRI Orbits/Face/Neck without and with contrast (CPT® 70543) is appropriate if requested by surgeon or any provider in consultation with the surgeon. See **Facial Anomalies (PEDHD-8.2)**.
- 3D CT reconstructed images (CPT® 76377 **OR** CPT® 76376) in conjunction with routine CT should be an integral part of the examination in evaluating craniofacial abnormalities.
- CT Maxillofacial without and with contrast (CPT® 70488) **OR** MRI Orbits/Face/Neck without and with contrast (CPT® 70543) - Tumors or other disorders of facial structures.
- Obstructive sleep apnea - See **Pediatric Sleep Disorders (PEDHD-24.1)** for imaging guidelines.
- See **Sinus and Facial Imaging (HD-29)** for conditions not addressed in **Sinus and Facial Imaging (PEDHD-5)**.

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Epilepsy and Other Seizure Disorders (PEDHD-6)

Guideline Page

Epilepsy and Other Seizure Disorders (PEDHD-6.0).....46
Initial Imaging of Non-Febrile Seizures (PEDHD-6.1).....47
Repeat Imaging Indications (PEDHD-6.2).....48
Special Imaging Studies in Evaluation for Epilepsy Surgery (PEDHD-6.3).....49
Febrile Seizures (PEDHD-6.4)..... 51
References (PEDHD-6)..... 52

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Epilepsy and Other Seizure Disorders (PEDHD-6.0)

HDP.EP.0006.0.A
v1.0.2027

Criteria

- A pertinent evaluation including a detailed history, physical examination with a thorough neurologic examination, since the onset or change in signs and/or symptoms, and appropriate laboratory studies should be performed prior to considering the use of an advanced imaging (CT, MRI, Nuclear Medicine) procedure. An exception can be made if the individual is undergoing guideline-supported, scheduled follow-up imaging evaluation or request is from or in consultation with a neurologist or neurosurgeon who has seen the individual since onset of symptoms. This clinical evaluation should also include family history and (whenever possible) the accounts of eyewitnesses to the event(s).

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Initial Imaging of Non-Febrile Seizures (PEDHD-6.1)

HDP.EP.0006.1.A
v1.0.2027

Criteria

- MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is considered medically necessary for the following:
  - First-time seizure in child that has no known cause and is not associated with fever
  - Focal onset seizures
  - New onset primary generalized epilepsy (e.g., absence epilepsy or juvenile myoclonic epilepsy) in those who are neurologically abnormal (e.g., developmental delay)
  - Focal neurologic deficits
  - Inconclusive findings on recent cranial ultrasound or CT Head
    - If an individual meets criteria for MRI imaging for initial imaging of non-febrile seizure, MRI is considered medically necessary even with a recent negative CT.
  - Concern for a mass lesion or demyelinating disease
- CT Head without contrast (CPT® 70450) is considered medically necessary for the following (and does not preclude MRI imaging when requested):
  - First-time seizure in child associated with recent head trauma
  - Individual cannot safely undergo MRI (avoidance of sedation is not an indication) or in urgent situations
  - Concern for blood and/or calcifications
- Cranial ultrasound (CPT® 76506) for the following:
  - First-time seizure in child under 30 days of age that has no known cause and is not associated with fever if the infant has an open fontanelle.
  - Cranial ultrasound is not required before MRI Brain for hypoxic ischemic encephalopathy (HIE) and/or congenital malformations.

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Repeat Imaging Indications (PEDHD-6.2)

HDP.EP.0006.2.A
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Criteria

- Repeat MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is considered medically necessary for the following:
  - Need to perform MRI using Epilepsy Protocol (typically 3T magnet with thin section angled slices through hippocampus and temporal lobes, either without or without and with contrast)
  - New or worsening focal neurologic deficits
  - Drug-resistant epilepsy (DRE) (See **Background and Supporting Information** below.)
  - Change in seizure type
  - Repeat imaging for persistent seizures as requested by a specialist or any provider in consultation with a specialist
  - MRI Brain with contrast (CPT® 70552) **OR** MRI Brain without and with contrast (CPT® 70553) to clarify an abnormality on non-contrast MRI or if considering infection or inflammation

Background and Supporting Information

- DRE occurs when there is failure of 2 antiseizure medications (ASMs).
- DRE can also be referred to as "refractory", "intractable," and/or "pharmacoresistant" epilepsy.

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Special Imaging Studies in Evaluation for Epilepsy Surgery (PEDHD-6.3)

HDP.EP.0006.3.A
v1.0.2027

Criteria

- For individuals with a previous MRI Brain and documentation of intractable epilepsy for which surgical treatment or another interventional modality is under active consideration , any or all of the following requests can be obtained concurrently and are considered medically necessary:
  - MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast 3T/7T (CPT® 70553) **AND/OR**
  - Ictal SPECT (CPT® 78803 or CPT® 78830) **AND/OR**
  - Functional MRI (f-MRI) (CPT® 70555 or CPT® 70554) See **Functional MRI (fMRI) (HD-24.2)** in the Head Imaging Guidelines **AND/OR**
  - MR Spectroscopy (CPT® 76390)
  - Metabolic (FDG) PET Brain (CPT® 78608) **AND/OR**
  - CTA Head (CPT® 70496) OR MRA Head (CPT® 70544, CPT® 70545 or CPT® 70546) **AND/OR**
  - CTA Neck (CPT® 70498) OR MRA Neck without contrast (CPT® 70547), with contrast (CPT® 70548), or without and with contrast (CPT® 70549) OR
  - CTA Head and Neck (CPT® 70471) if performed during the same session **AND/OR**
  - 3D rendering CPT® 76377 (3D rendering requiring image post-processing on an independent workstation) or CPT® 76376 (3D rendering not requiring image post-processing on an independent workstation) is not necessary for epilepsy surgery alone, since 3D rendering can be obtained as part of the MRI Brain epilepsy protocol, unless complicated surgical repair considerations involving craniotomy are required.
  - Metabolic PET/MRI is MRI Brain without contrast (CPT® 70551) OR MRI Brain without and with contrast (CPT® 70553) co-registered with FDG-PET Brain (CPT® 78608) and is considered medically necessary for pre-surgical evaluation of refractory seizure when requested by neurosurgeon or neurologist or any provider in consultation with a neurosurgeon or neurologist.
- For additional imaging requests for surgery, see **Neurosurgical Imaging (HD-28)** in the Head Imaging Guidelines and/or **Primary Central Nervous System Tumors – General Considerations (ONC 2.1)** in the Oncology Imaging Guidelines.

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- For intracranial monitoring with stereo-EEG or grids/strips and electrodes, additional imaging for neuronavigation is considered medically necessary with one each of the following, after consulting the health plan direction for unlisted codes:
  - MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551)
  - CT Head, contrast as requested
  - Due to variances with techniques currently available for neuronavigation, the following are considered medically necessary:
    - CTA Head (CPT® 70496) **OR** MRA Head (CPT® 70544, CPT® 70545 or CPT® 70546)
- Repeat diagnostic head imaging is considered medically necessary if previous head imaging is inadequate or additional sequences/protocols are required (including epilepsy protocol imaging) or previous imaging is greater than 6 months old.
- Post-operative imaging including after intracranial (EEG) monitoring is considered medically necessary per neurosurgeon's request.

Background and Supporting Information

Examples of epilepsy surgery and other interventional modalities include but are not limited to:

- Focal resection
- Temporal lobe resection
- Extratemporal resection
- Lesionectomy
- Multiple subpial transections
- Laser Interstitial Thermal Therapy (LITT)
- Anatomical or functional hemispherectomy and hemispherotomy
- Corpus callostomy
- Steretactic radiosurgery (SRS)
- Neurostimulation device implantations including the following:
  - Vagus nerve stimulation (VNS)
  - Responsive neurostimulation (RNS)
  - Deep brain stimulation (DBS)
- Magnetoencephalography (MEG) plays an important role in clarifying the significance of abnormalities seen on both structural and functional imaging, for the purpose of epileptogenic zone localization for surgical planning. When used in conjunction with other techniques, MEG plays a major role in the non-invasive epilepsy surgery evaluation. Currently, the guidelines only require review for the MRI co-registered with MEG. MEG followed by co-registration with MRI Brain is referred to as Magnetic Source Imaging (MSI).

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Febrile Seizures (PEDHD-6.4)

HDP.EP.0006.4.A
v1.0.2027

Criteria

- Neuroimaging should not be performed in the routine evaluation of children with simple febrile seizures.
- MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is considered medically necessary for febrile seizures in the presence of one or more of the following:
  - Seizure lasting over 15 minutes
  - Focal onset seizures
  - Focal neurologic deficits
  - Multiple seizures within 24 hours
  - Macrocephaly (head circumference that is greater than the 97th percentile for age and sex, established by use of measurements and CDC growth charts. See **Macrocephaly (PEDHD-7.1)**)
  - Signs and symptoms of increased intracranial pressure
  - Developmental delay
  - MRI Brain permitted even with prior CT Head imaging
- CT Head without contrast (CPT® 70450) **OR** CT Head without and with contrast (CPT® 70470) is considered medically necessary for:
  - Concern for calcifications
  - For additional indications for CT Head, see **Pediatric Head Imaging Modality General Considerations (PEDHD-1.3)**.

Background and Supporting Information

A typical (simple) febrile seizure is a generalized seizure that occurs in a young child between 6 months and 5 years of age, in association with a fever greater than or equal to 38°C (100.4°F), without evidence of central nervous system infection or another identifiable cause (Subcommittee on Febrile Seizures, & American Academy of Pediatrics, 2011).

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Pediatric Head Imaging Guidelines

Macrocephaly, Microcephaly, and Hydrocephalus (PEDHD-7)

Guideline Page

Macrocephaly (PEDHD-7.1)..... 55
Microcephaly (PEDHD-7.2)..... 57
Hydrocephalus, Shunts, and Endoscopic Third Ventriculostomy (ETV) (PEDHD-7.3)..... 58
References (PEDHD-7)..... 63

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Macrocephaly (PEDHD-7.1)

HDP.MC.0007.1.A
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Criteria

Indications	Age or Condition	Medically Necessary Imaging Study
Head circumference that is greater than the 97th percentile for age and sex, or head circumference increasing in percentiles over two visits established by use of measurements and CDC growth charts (cdc.gov).	Birth to age 6 months or open fontanelle	• Ultrasound Head (CPT® 76506)
	Hydrocephalus or hemorrhage is present on ultrasound	• CT Head without contrast (CPT® 70450)
	Any abnormality seen on ultrasound	• MRI Brain without contrast (CPT® 70551) **OR** • MRI Brain without and with contrast (CPT® 70553) *MRI Brain permitted even with prior CT Head imaging*.
	Greater than 6 months old or closed fontanelle	• MRI Brain without contrast (CPT® 70551) **OR** • MRI Brain without and with contrast (CPT® 70553) *CT is considered not medically necessary in this age group since uncomplicated hydrocephalus is less likely after early infancy.*

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Background and Supporting Information

- Macrocephaly is defined as head circumference that is greater than the 97th percentile for age and sex, or head circumference increasing in percentiles over two visits established by use of measurements and CDC growth charts (Centers for Disease Control and Prevention, 2024).

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Microcephaly (PEDHD-7.2)

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Criteria

- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) is considered medically necessary for all individuals with head circumference that is less than the 3rd percentile for age and sex, or head circumference decreasing in percentiles over two visits established by use of measurements and CDC growth charts (cdc.gov).
  - CT is generally not recommended as that modality lacks the sensitivity to detect the relevant anatomical abnormalities.
  - For CT Head indications, see **Pediatric Head Imaging Modality General Considerations (PEDHD-1.3)**.

Background and Supporting Information

- Microcephaly is defined as head circumference that is less than the 3rd percentile for age and sex, or head circumference decreasing in percentiles over two visits established by use of measurements and CDC growth charts (Centers for Disease Control and Prevention, 2024).

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Hydrocephalus, Shunts, and Endoscopic Third Ventriculostomy (ETV) (PEDHD-7.3)

HDP.MC.0007.3.A
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Criteria

Initial Imaging

Indication	Medically Necessary Imaging Study
Age 0-6 months	• Screening Ultrasound Head examination (CPT® 76506) • If ultrasound shows hydrocephalus, MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551)
Greater than 6 months old	• MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain without contrast (CPT® 70551)
Siblings of individuals with aqueductal stenosis (familial screening for hydrocephalus is otherwise considered not medically necessary)	• One-time CT Head without contrast (CPT® 70450) **OR** • Rapid MRI Brain without contrast (CPT® 70551)

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Repeat Imaging in the Setting of VP Shunt and/or ETV

Indication	Medically Necessary Imaging Study
New signs or symptoms suggesting shunt malfunction or ETV malfunction, including (but not limited to): • Sepsis • Decreased level of consciousness • Protracted vomiting • Visual or neurologic deterioration • Decline of mentation after initial improvement • New or changing pattern of seizures	• Rapid MRI Brain without contrast (CPT® 70551) **OR** • CT Head without contrast (CPT® 70450)
• Post-operatively, or • After shunt setting adjustments, or • As ordered by a neurologist or neurosurgeon or any provider in consultation with a neurologist or neurosurgeon	• Rapid MRI Brain without contrast (CPT® 70551) **OR** • CT Head without contrast (CPT® 70450)

Repeat Imaging of Ventriculomegaly

Indication	Medically Necessary Imaging Study
0-6 months old	• Serial US Head (CPT® 76506) to monitor ventricular size to determine need and timing of placement of a ventricular catheter, or performance of an endoscopic third ventriculostomy (ETV), timing as requested by the provider
Older than 6 months	• MRI Brain without and with contrast (CPT® 70553), timing as requested by the provider **OR** • MRI Brain without contrast (CPT® 70551), timing as requested by the provider

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Abdominal Imaging Indications in the Setting of VP Shunts

Indication	Medically Necessary Imaging Study
• Suspicion of CSF pseudocyst formation or distal shunt outlet obstruction • Surveillance imaging of the abdomen is considered medically necessary if ordered by a neurologist, neurosurgeon, or interventional radiologist, or in consultation with one of these providers	• Ultrasound Abdomen (CPT® 76700) **AND/OR** • CT Abdomen **OR** CT Abdomen and Pelvis, contrast as requested

Spine Imaging

Indication	Medically Necessary Imaging Study
Including, but not limited to the following: • Chiari malformation • Malignant infiltration of meninges	• MRI Cervical Spine without and with contrast (CPT® 72156) **OR** • MRI Cervical Spine without contrast (CPT® 72141) **AND/OR** • MRI Thoracic Spine without contrast (CPT® 72146) **OR** • MRI Thoracic Spine without and with contrast (CPT® 72157) **AND/OR** • MRI Lumbar Spine without and with contrast (CPT® 72158) **OR** • MRI Lumbar Spine without contrast (CPT® 72148)

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Indication	Medically Necessary Imaging Study
Dandy-Walker malformation	• MRI Cervical Spine without and with contrast (CPT® 72156) **OR** • MRI Cervical Spine without contrast (CPT® 72141)

- For hydrocephalus due to choroid plexus papillomas, see **Choroid Plexus Tumors (PEDONC-4.13)** in the Pediatric and Special Populations Oncology Imaging Guidelines for those lesions.
- For CSF flow imaging, see **CSF Flow Imaging (HD-24.4)** in the Head Imaging Guidelines.

Additional Rarely Used Studies

- Cisternogram (CPT® 78630) is rarely done in children, but is considered medically necessary for the following:
  - Known hydrocephalus with worsening symptoms
  - Suspected obstructive hydrocephalus
  - Suspected normal pressure hydrocephalus with gait disturbance and either dementia or urinary incontinence
- Cerebrospinal Ventriculography (CPT® 78635) is rarely done in children, but is considered medically necessary for the following:
  - Evaluation of internal shunt, porencephalic cyst, or posterior fossa cyst
- Nuclear Medicine Shunt Evaluation (CPT® 78645) and CSF Flow SPECT (CPT® 78803) are rarely done in children, but are considered medically necessary for the following:
  - Suspected malfunction of ventriculoperitoneal, ventriculopleural, or ventriculovenous shunts

Background and Supporting Information

- Head ultrasound can be performed while the fontanelles are still open and has excellent spatial and anatomic resolution, particularly within the first 2 months of life. After 6 months, smaller acoustic windows due to closing fontanelles limit the sensitivity of the examination.
- Rapid MRI Brain without contrast (CPT® 70551) provides more anatomical detail and does not involve radiation exposure, but many providers use CT Head, as rapid MRI is not universally available.

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- Hydrocephalus is traditionally divided into non-communicating (the obstruction lies within the course of the brain's ventricular system) and communicating (the obstruction is distal to the ventricular system).
- Ventriculomegaly refers to enlarged ventricular spaces. It is often initially found on fetal ultrasound. It can be from an obstructive cause or can be relative secondary to small brain volume.
- Benign enlargement of the subarachnoid space in infancy (BESSI), also called benign external hydrocephalus or benign extra-axial fluid collections is the rapid increase in head circumference in an infant with enlarged frontal subarachnoid spaces. See **Macrocephaly (PEDHD-7.1)** for initial imaging guidelines. It typically requires no intervention. Once diagnosed and confirmed with MRI Brain, no additional imaging is required unless new neurological symptoms appear, worsen, or persist beyond age 4 years. If developmental motor delay, see **Developmental Motor Delay (PEDHD 19.3)**.

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Craniofacial Anomalies (PEDHD-8)

Guideline Page

Craniosynostosis Imaging (PEDHD-8.1)..... 65
Facial Anomalies (PEDHD-8.2)..... 66
References (PEDHD-8)..... 67

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Craniosynostosis Imaging (PEDHD-8.1)

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Criteria

- Skull x-rays and/or ultrasound should be obtained prior to considering advanced imaging. In cases of very strong consideration of craniosynostosis with surgical planning in progress, x-rays and/or ultrasound are not required.
- CT Head without contrast (CPT® 70450) is considered medically necessary in the diagnosis of craniosynostosis, with reported sensitivity near 100%. CT also detects associated intracranial pathology.
- 3D rendering (CPT® 76376 or CPT® 76377) is considered medically necessary with the initial diagnostic CT to evaluate the extent of synostosis and determine surgical candidacy or for preoperative planning.
- CT Maxillofacial without contrast (CPT® 70486) **AND** CT Orbits/Temporal Bone without contrast (CPT® 70480) are generally considered not medically necessary to evaluate individuals with craniosynostosis, but are considered medically necessary if the craniosynostosis is part of a larger congenital defect which also involves the bones of the face or orbit.
- CT Maxillofacial without contrast (CPT® 70486) **AND/OR** CT Orbits/Temporal Bone without contrast (CPT® 70480) is/are considered medically necessary in certain types of craniosynostosis and is/are considered medically necessary when ordered by surgical specialties or in consultation with surgical specialties during surgical evaluation and planning.
- Ultrasound Head (CPT® 76506) is considered medically necessary as an alternative method of assessing sutural patency in neonates and infants when radiographs are indeterminate. If inconclusive or for pre-operative planning, CT with 3D rendering is considered medically necessary as discussed previously in this section.
- CT Head without contrast (CPT® 70450) is considered medically necessary post-operatively at the discretion of or in consultation with the surgical specialist coordinating the individual's care.
- Positional plagiocephaly typically does NOT require advanced imaging.

Background and Supporting Information

- Craniosynostosis is the premature closure of one or more cranial sutures, usually during infancy.
- Craniosynostosis may be caused by a genetic condition, such as Apert, Pfeiffer, or Crouzon syndrome to name a few (Wenger, Miller, & Evans, 2020).
- Abnormal head shape is the common clinical feature.

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Facial Anomalies (PEDHD-8.2)

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Criteria

- Congenital anomalies of facial structures
  - CT Maxillofacial without contrast (CPT® 70486) **OR** MRI Orbits/Face/Neck without contrast (CPT® 70540) **OR** MRI Orbits/Face/Neck without and with contrast (CPT® 70543)
  - MRI Brain without contrast (CPT® 70551) is considered medically necessary in individuals with cleft lip and/or palate and encephalocele.
- See also **Craniosynostosis Imaging (PEDHD-8.1)**.

Background and Supporting Information

- Facial anomalies (such as cleft lip and palate) can be associated with brain malformations and abnormal brain development.
- Congenital anomalies of facial structures can include, but are not limited to:
  - Cleft lip/palate
  - Choanal atresia
  - Facial clefting
  - CHARGE syndrome
  - Nasofrontal dermoid
  - Encephalocele

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Chiari and Skull Base Malformations (PEDHD-9)

Guideline Page

Chiari Malformations (PEDHD-9.1)..... 70
Basilar Impression/Basilar Invagination (PEDHD-9.4)..... 73
Platybasia (PEDHD-9.5)..... 74
References (PEDHD-9)..... 75

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Chiari Malformations (PEDHD-9.1)

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Criteria

- Ultrasound can be utilized for initial examination in infants to determine ventricular size and associated anomalies and to provide a baseline for follow-up evaluation but is not required prior to MRI.

Indication	Medically Necessary Imaging Study
◦ Initial evaluation for suspected or known Chiari malformations	Any of the following sets of imaging: MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) **AND/OR** MRI Cervical Spine without contrast (CPT® 72141) **OR** MRI Cervical Spine without and with contrast (CPT® 72156) **AND/OR** MRI Thoracic Spine without contrast (CPT® 72146) **OR** MRI Thoracic Spine without and with contrast (CPT® 72157) **AND/OR** MRI Lumbar Spine without contrast (CPT® 72148) **OR** MRI Lumbar Spine without and with contrast (CPT® 72158)

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Indication	Medically Necessary Imaging Study
◦ Repeat imaging for any of the following: ▪ At the discretion of or in consultation with the neurologist and/or neurosurgeon coordinating the individual's care ▪ New or worsening signs or symptoms ▪ Surgical procedure is actively being considered	Any of the following sets of imaging: MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) **AND/OR** MRI Cervical Spine without contrast (CPT® 72141) **OR** MRI Cervical Spine without and with contrast (CPT® 72156) **AND/OR** MRI Thoracic Spine without contrast (CPT® 72146) **OR** MRI Thoracic Spine without and with contrast (CPT® 72157) **AND/OR** MRI Lumbar Spine without contrast (CPT® 72148) **OR** MRI Lumbar Spine without and with contrast (CPT® 72158)

- Familial screening is considered not medically necessary for Chiari I Malformations.
- For CSF flow imaging, see **CSF Flow Imaging (HD-24.4)** in the Head Imaging Guidelines.

Background and Supporting Information

- Chiari I malformations involve caudal displacement or herniation of the cerebellar tonsils. Chiari I may be associated with syringomyelia, and rarely with hydrocephalus. Most cases are asymptomatic and discovered incidentally on a head scan performed for another indication. When symptoms are present, they are usually nonspecific but can include headache, lower cranial nerve palsies, or sleep apnea.
- Chiari II malformations are more severe than Chiari I malformations. These individuals usually present at birth. Myelomeningocele is always present, and syringomyelia and hydrocephalus are extremely common.
- Chiari III malformations include cerebellar herniation into a high cervical myelomeningocele. Chiari IV malformations refer to complete cerebellar agenesis.

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Both Chiari III and IV malformations are noted at birth and are rarely compatible with life.

- Repeat brain and spine imaging in individuals with Chiari I malformations and known syringomyelia or hydromyelia is highly individualized.

Pediatric Head Imaging Guidelines

Basilar Impression/Basilar Invagination (PEDHD-9.4)

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- See **Basilar Impression/Basilar Invagination (HD-5.4)** in the Head Imaging Guidelines.

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Platybasia (PEDHD-9.5)

HDP.CH.0009.5.A
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- See **Platybasia (HD-5.5)** in the Head Imaging Guidelines.

Pediatric Head Imaging Guidelines

References (PEDHD-9)

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Intracranial Aneurysms and AVM (PEDHD-10)

Guideline Page

Pediatric Intracranial Aneurysms and Subarachnoid Hemorrhage (PEDHD-10.1).....77
Pediatric Intracranial Arteriovenous Malformations (AVM) (PEDHD-10.2).....80
References (PEDHD-10).....87

Pediatric Intracranial Aneurysms and Subarachnoid Hemorrhage (PEDHD-10.1)

HDP.IA.0010.1.A
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Criteria

- A pertinent evaluation including a detailed history, physical examination with a thorough neurologic examination, and appropriate laboratory studies should be performed prior to considering advanced imaging, unless the individual is undergoing guideline-supported scheduled follow-up imaging evaluation or request is from a neurologist or neurosurgeon who has seen the individual since onset of symptoms.
- MRI Brain permitted even with prior CT Head imaging.
- MRI Perfusion is obtained with MRI Brain (CPT® 70551 **OR** CPT® 70552 **OR** CPT® 70553).
  - No additional CPT® codes are necessary or appropriate to perform MRI perfusion.
- Initial study for suspected subarachnoid hemorrhage:
  - CT Head without contrast (CPT® 70450) **AND/OR**
  - MRI Brain without contrast (CPT® 70551) **OR**
  - MRI Brain without and with contrast (CPT® 70553)
- If subarachnoid hemorrhage is present on CT or MRI, or lumbar puncture findings suggest hemorrhage, then the following is/are considered medically necessary:
  - MRA Head (CPT® 70544, CPT® 70545, **OR** CPT® 70546) **OR**
  - CTA Head (CPT® 70496) **AND/OR**
  - CT Brain Perfusion (CPT® 70472 or 70473) or MRI Brain Perfusion (CPT® 70553)
- Initial study for suspected intracranial aneurysm - individuals presenting with headache, increased intracranial pressure, seizures, or focal neurologic findings:
  - CT Head without contrast (CPT® 70450) **AND/OR**
  - MRI Brain without contrast (CPT® 70551) **OR**
  - MRI Brain without and with contrast (CPT® 70553)
- If findings suspicious for intracranial aneurysm on prior imaging, then the following is supported:
  - MRA Head (CPT® 70544, CPT® 70545, **OR** CPT® 70546) **OR**
  - CTA Head (CPT® 70496)
- Imaging for individuals with known aneurysm presenting with headache, increased intracranial pressure, seizures, or focal neurologic findings:
  - CT Head without contrast (CPT® 70450) **AND/OR**
  - MRI Brain without contrast (CPT® 70551) **OR**

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  - MRI Brain without and with contrast (CPT® 70553) **AND/OR**
  - MRA Head (CPT® 70544, CPT® 70545 **OR** CPT® 70546) **OR**
  - CTA Head (CPT® 70496)
- CT Head without contrast (CPT® 70450) **AND/OR** MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) **AND/OR** MRA Head (CPT® 70544, CPT® 70545, **OR** CPT® 70546) **OR** CTA Head (CPT® 70496) (except in the case of multisystemic smooth muscle syndrome (MSMS)/smooth muscle dysfunction syndrome (SMDS)/ACTA2 mutations, (see **Multisystemic Smooth Muscle Syndrome (MSMS)/Smooth Muscle Dysfunction Syndrome (SMDS)/ ACTA2 Mutations (HD-21.7**))) is/are considered medically necessary for individuals with headache, increased intracranial pressure, seizures, or focal neurologic findings **AND** any of the following conditions (including but not limited to):
  - Aicardi–Goutières syndrome
  - Alpha-1-antitrypsin deficiency
  - Alpha-glucosidase deficiency
  - Azygos anterior cerebral artery
  - Bicuspid aortic valve
  - Coarctation of the aorta (for screening of intracranial aneurysms, see **Aortic Coarctation and IAA (interrupted aortic arch) (PEDCD-2.4.11)**)
  - Ehlers-Danlos Syndrome
  - Fibromuscular dysplasia
  - Hereditary hemorrhagic telangiectasia (Osler-Weber-Rendu syndrome)
  - Hyper-IgE syndrome
  - Kawasaki disease
  - Klinefelter syndrome
  - Klippel-Trenaunay-Weber syndrome
  - Loeys-Dietz syndrome (there are 4 forms)
  - Marfan syndrome
  - Microcephalic osteodysplastic primordial dwarfism type II
  - Moyamoya syndrome
  - Multisystemic smooth muscle syndrome (MSMS)/smooth muscle dysfunction syndrome (SMDS)/ACTA2 mutations (See **Multisystemic Smooth Muscle Syndrome (MSMS)/Smooth Muscle Dysfunction Syndrome (SMDS)/ACTA2 Mutations (HD-21.7**)
  - Neurofibromatosis type 1
  - Noonan syndrome
  - Patent ductus arteriosus
  - Pheochromocytoma
  - Pseudoxanthoma elasticum

  - Polycystic kidney disease
  - Tuberous sclerosis
- The timing of follow-up imaging for intracranial aneurysms in children is similar to that in adults. See **Intracranial Aneurysms (HD-12.1)** in the Head Imaging Guidelines.
- Screening for intracranial aneurysms is considered not medically necessary in individuals with coarctation of the aorta repaired before 3 years of age. See **Intracranial Aneurysms (HD-12.1)** in the Head Imaging Guidelines.
- Screening is considered not medically necessary in asymptomatic individuals under 20 years of age, unless there are 2 or more first-degree relatives with intracranial aneurysm. See **Intracranial Aneurysms (HD-12.1)** in the Head Imaging Guidelines.

Background and Supporting Information

- Unlike adults, the majority of pediatric aneurysms are caused by genetic or developmental defects rather than environmental or lifestyle factors.
- Pediatric aneurysms most commonly present with subarachnoid hemorrhage, headache, increased intracranial pressure, seizure activity, or focal neurologic findings.

Pediatric Intracranial Arteriovenous Malformations (AVM) (PEDHD-10.2)

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Criteria

- A pertinent evaluation including a detailed history, physical examination with a thorough neurologic examination, and appropriate laboratory studies should be performed prior to considering advanced imaging, unless the individual is undergoing guideline-supported scheduled follow-up imaging evaluation or request is from or in consultation with a neurologist or neurosurgeon who has seen the individual since onset of symptoms.
- Use this guideline for cerebral vascular malformations including arteriovenous, venous, cavernous, and capillary malformations and vein of Galen malformations.

Disorders	Indications (any of the following)	Medically Necessary Imaging Study
• Any cerebral vascular and/or AVM Disorder listed in this guideline	• When MRI is contraindicated • Any emergency setting	• CT Head without contrast (CPT® 70450) **AND/OR** • CTA Head (CPT® 70496) **AND/OR** • CTA Neck (CPT® 70498) ◦ CTA Head and Neck (CPT® 70471) must be substituted if performed during the same session

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Disorders	Indications (any of the following)	Medically Necessary Imaging Study
• Suspected Vein of Galen malformation in the neonate	• Confirmation by Ultrasound Head (CPT® 76506)	• MRI Brain without contrast (CPT® 70551) **OR** • MRI Brain without and with contrast (CPT® 70553) **OR** • Catheter Angiography to precisely identify the feeding arteries and draining vein, especially if embolization is planned
• Low flow malformations	• When requested by a neurologist or neurosurgeon or any provider in consultation with a neurologist or neurosurgeon	• MRA Head (CPT® 70544, CPT® 70545, **OR** CPT® 70546) **OR** • CTA Head (CPT® 70496)
• Suspected AVM after the neonatal period	• When requested by a neurologist or neurosurgeon or any provider in consultation with a neurologist or neurosurgeon	• MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain without contrast (CPT® 70551)

Disorders	Indications (any of the following)	Medically Necessary Imaging Study
• Known AVM	• When requested by a neurologist or neurosurgeon or any provider in consultation with a neurologist or neurosurgeon	• MRI Brain without contrast (CPT® 70551) **OR** • MRI Brain without and with contrast (CPT® 70553) **AND/OR** • MRA Head (CPT® 70544, CPT® 70545, **OR** CPT® 70546) **OR** • CTA Head (CPT® 70496)
• Hereditary Hemorrhagic Telangiectasia (HHT, Osler-Weber-Rendu syndrome)	• Suspected based on family history with at least one affected first-degree relative. (biological parent or sibling or child) • At diagnosis • Screening for confirmed HHT • Clinical signs or symptoms concerning for disease progression • When requested by a neurologist, neurosurgeon, geneticist, or any provider in consultation with a neurologist or neurosurgeon or geneticist	• MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain without contrast (CPT® 70551) **AND/OR** • MRA Head (CPT® 70544, CPT® 70545 **OR** CPT® 70546) **OR** • CTA Head (CPT® 70496)

Disorders	Indications (any of the following)	Medically Necessary Imaging Study
• Capillary malformation-arteriovenous malformation (CM-AVM)	• Suspected based on family history with at least one affected first-degree relative (biological parent or sibling or child) • At diagnosis • Screening for confirmed CM-AVM • Clinical signs or symptoms concerning for disease progression • When requested by a neurologist, neurosurgeon, geneticist, or any provider in consultation with a neurologist or neurosurgeon or geneticist	• MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain without contrast (CPT® 70551) **AND/OR** • MRA Head (CPT® 70544, CPT® 70545 **OR** CPT® 70546) **OR** CTA Head (CPT® 70496) **AND/OR** • MRI Cervical Spine without and with contrast (CPT® 72156) **OR** MRI Cervical Spine without contrast (CPT® 72141) **AND/OR** • MRI Thoracic Spine without and with contrast (CPT® 72157) **OR** MRI Thoracic Spine without contrast (CPT® 72146)

Disorders	Indications (any of the following)	Medically Necessary Imaging Study
• Cerebral cavernous malformations (CCM)	• Suspected based on family history with at least one affected first-degree relative (biological parent or sibling or child) • At diagnosis • Screening for confirmed CCM • Clinical signs or symptoms concerning for disease progression • When requested by a neurologist, neurosurgeon, geneticist, or any provider in consultation with a neurologist or neurosurgeon or geneticist	• MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain without contrast (CPT® 70551) **AND/OR** • MRA Head (CPT® 70544, CPT® 70545 **OR** CPT® 70546) **OR** • CTA Head (CPT® 70496) **AND/OR** • MRI Cervical Spine without and with contrast (CPT® 72156) **OR** • MRI Cervical Spine without contrast (CPT® 72141) **AND/OR** • MRI Thoracic Spine without and with contrast (CPT® 72157) **OR** • MRI Thoracic Spine without contrast (CPT® 72146)

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Disorders	Indications (any of the following)	Medically Necessary Imaging Study
• Microcephalic osteodysplastic primordial dwarfism, type II (MOPDII)	• Suspected based on family history with at least one affected first-degree relative (biological parent or sibling or child) • At diagnosis • Screening for confirmed MOPDII, repeated annually • Clinical signs or symptoms concerning for disease progression • When requested by a neurologist, neurosurgeon, geneticist, or any provider in consultation with a neurologist or neurosurgeon or geneticist	• MRI Brain without contrast (CPT® 70551) **OR** • MRI Brain without and with contrast (CPT® 70553) **AND/OR** • MRA Head (CPT® 70544, CPT® 70545, **OR** CPT® 70546) **OR** • CTA Head (CPT® 70496) **AND/OR** • MRA Neck without contrast (CPT® 70547, CPT® 70548 **OR** CPT® 70549) **OR** • CTA Neck (CPT® 70498) **OR** • CTA Head and Neck (CPT® 70471) must be substituted if performed during the same session
• Sturge-Weber syndrome	• At diagnosis • Clinical signs or symptoms concerning for disease progression • When requested by a neurologist, neurosurgeon, or any provider in consultation with a neurologist or neurosurgeon	• MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain without contrast (CPT® 70551) **AND/OR** • MRI Orbits/Face/Neck without and with contrast (CPT® 70543) **OR** • MRI Orbits/Face/Neck without contrast (CPT® 70540)

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Additional indications

- CT Head without contrast (CPT® 70450) is considered medically necessary for ANY one of the following:
  - Mass effect
  - Urgent/emergent settings due to availability and speed of CT
  - Trauma
  - Recent hemorrhage, whether traumatic or spontaneous
  - Prior to lumbar puncture in individuals with cranial complaints
  - Scenarios in which MRI is contraindicated (e.g., pacemakers, ICDs, cochlear implants, aneurysm clips, orbital metallic fragments, etc.)
- Prior CT Head (CPT® 70450) does not exclude indication for MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551).

Background and Supporting Information

- Most intracranial AVMs are congenital, vary widely in their location and type, and are discovered at birth due to associated clinical findings or incidentally later in life. Certain hereditary conditions are associated with an increased risk for AVM development.
- Vascular malformations include arteriovenous, venous, cavernous, and capillary malformations. The vein of Galen malformation is the most common arteriovenous malformation, presenting in neonates with signs of high output congestive heart failure or later in infancy of childhood with signs of hydrocephalus. Low flow venous, cavernous, and capillary malformations may be asymptomatic and discovered incidentally, or they may present in childhood with seizures or neurologic findings secondary to intracranial hemorrhage.
- Hereditary AVMs usually have an autosomal dominant pattern of inheritance (McDonald & Stevenson 2021; Bayrak-Toydemir & Stevenson, 2019).

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Pediatric Head Imaging Guidelines

Syncope (PEDHD-11)

Guideline Page

Syncope (PEDHD-11.1).....90
References (PEDHD-11)..... 91

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Syncope (PEDHD-11.1)

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Criteria

- Advanced imaging of the brain is considered not medically necessary for individuals with isolated syncope without focal neurologic findings. See **Syncope (PEDCD-5)** in the Pediatric Cardiac Imaging Guidelines and **Epilepsy and Other Seizure Disorders (PEDHD-6)** for additional imaging considerations.

Background and Supporting Information

- Syncope in children is almost always neurocardiogenic (vasovagal) in nature. Intracranial mass lesions do not cause isolated syncope. Syncope and seizure activity can often be challenging to distinguish for unwitnessed syncope.
- There is no role for advanced neuroimaging for Postural Orthostatic Tachycardia Syndrome (POTS).

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Pediatric Stroke (PEDHD-12)

Guideline Page

Pediatric Stroke General Considerations (PEDHD-12.1)..... 93
Pediatric Stroke Initial Imaging (PEDHD-12.2)..... 94
Pediatric Stroke Subsequent Imaging (PEDHD-12.3)..... 95
Moyamoya Syndrome/Disease (PEDHD-12.4)..... 96
Sickle Cell Disease (PEDHD-12.5)..... 97
CNS Vasculitis (PEDHD-12.6)..... 99
COVID-19 and Multisystem Inflammatory Syndrome in Children (MIS-C) (PEDHD-12.7)..... 100
Multisystemic Smooth Muscle Syndrome (MSMS)/Smooth Muscle Dysfunction Syndrome (SMDS)/ACTA2 Mutations (PEDHD-12.8)..... 102
References (PEDHD-12)..... 103

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Pediatric Stroke General Considerations (PEDHD-12.1)

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- Imaging indications are the same for neonates as for older children.
- Children may not present with typical stroke findings.

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Pediatric Stroke Initial Imaging (PEDHD-12.2)

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Criteria

- In the presence of neurological signs and/or symptoms with concern for stroke, **ANY** of the following studies are considered medically necessary:
  - CT Head without contrast (CPT® 70450) **OR** MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553)
  - MRA Head (CPT® 70544, CPT® 70545, **OR** CPT® 70546) **OR** CTA Head (CPT® 70496)
  - For suspected carotid or vertebral artery dissection, CTA Neck (CPT® 70498) **OR** MRA Neck (CPT® 70547, CPT® 70548, **OR** CPT® 70549) **OR**
  - CTA Head and Neck (CPT® 70471) must be substituted if performed during the same session.
  - Note: Both MRA **OR** CTA Head **AND** Neck are needed to visualize the posterior vertebrobasilar circulation for evaluation of the vertebrobasilar stroke/TIA (vertigo associated with diplopia, dysarthria, bifacial numbness or ataxia) or concern for arterial dissection (risks may include premature stroke [under age 50], head or neck trauma, fibromuscular dysplasia, Ehlers-Danlos syndrome, and chiropractic neck manipulation)
- In individuals with COVID-19, see **COVID-19 and Multisystem Inflammatory Syndrome in Children (MIS-C) (PEDHD-12.7)**

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Pediatric Stroke Subsequent Imaging (PEDHD-12.3)

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Criteria

- MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is considered medically necessary for any new or worsening neurological findings or seizure activity.
- Repeat imaging for follow-up and resolution of stroke or hemorrhage as determined by a neurologist, neurosurgeon, hematologist, or physiatrist (PM&R), or any provider in consultation with a neurologist, neurosurgeon, hematologist, or physiatrist (PM&R).
  - MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553)
  - MRA Head/MRV Head (CPT® 70544, CPT® 70545 **OR** CPT® 70546) **OR** CTA Head/CTV Head (CPT® 70496) for follow-up of known cerebral artery stenosis or thrombosis
  - Other surveillance imaging indications after stroke are listed in the disease-specific sections.

Background and Supporting Information

- CT and MR Venography (CTV and MRV) are reported with the same codes as the CTA/MRA counterpart (there is no specific code for CT/MR venography):
  - If arterial and venous CT or MR studies are both performed in the same session, only **one** CPT® code is used to report both procedures.
  - If an arterial CTA **OR** MRA study has been performed and subsequently a repeat study is needed to evaluate the venous anatomy, then this study is considered medically necessary.
  - If a venous CTV **OR** MRV study has been performed and subsequently a repeat study is needed to evaluate the arterial anatomy, then this study is considered medically necessary.
  - MRA without and with contrast with venous sinus thrombosis to differentiate total from subtotal occlusion

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Moyamoya Syndrome/Disease (PEDHD-12.4)

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- See **Moyamoya Syndrome/Disease (HD-21.5)** in the Head Imaging Guidelines.

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Sickle Cell Disease (PEDHD-12.5)

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Criteria

- The following imaging is considered medically necessary for all sickle cell individuals with a severe phenotype (Hgb SS or Hgb $S\beta^0$):
  - Transcranial Doppler (TCD) Ultrasound (CPT® 93886 or CPT® 93888) annually for all individuals aged 2 to 16:
    - A short interval repeat study is considered medically necessary for individuals with conditional (170-199cm/sec) flow results, or with individuals undergoing transfusion therapy.
  - Transcranial Doppler (TCD) Ultrasound (CPT® 93886 or CPT® 93888) for children aged 17 years old may be appropriate on a case-by-case basis.
    - See also **Stroke/TIA (HD-21.1)** in the Head Imaging Guidelines.
  - After 17 years old, for individuals with a history of abnormal TCDs, TCDs may be repeated every 3 months.
  - TCD is considered not medically necessary for individuals with other phenotypes (Hgb SC, Hgb $S\beta^+$).
  - See indications below for advanced imaging with MR or CT.
- MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is considered medically necessary for any of the following:
  - Two non-imaging Transcranial Doppler (TCD) measurements of greater than or equal to 200cm/sec or a single measurement of greater than 220cm/sec or 2 assessment TCD measurements greater than or equal to 185cm/sec or a single measurement greater than 205cm/sec.
  - Persistently abnormal TCD velocities
  - Screening to detect silent cerebral infarcts
  - New symptoms or cognitive impairment occurs or a change in academic performance
  - After an infarct-like lesion is identified, repeat every 12-24 months to assess for cerebral infarct progression
  - Prior to any change in therapy

Background and Supporting Information

- TCD is used to screen for overt and silent infarctions and monitor response to transfusion therapy.
- Individuals with sickle cell disease are at significantly increased risk for stroke and silent infarction, beginning at a very young age. Recent advances allow physicians

to identify individuals at high risk for stroke and begin a primary stroke prevention program.

- Identification of silent cerebral infarction is important because treatment with prophylactic red cell transfusions to maintain hemoglobin S levels at under 30% of total hemoglobin may reduce recurrent stroke and extent of neurologic damage.

Pediatric Head Imaging Guidelines

CNS Vasculitis (PEDHD-12.6)

HDP.PS.0012.6.A
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Criteria

- Medically necessary initial imaging for concern for primary CNS vasculitis, or for individuals with systemic vasculitis and suspected CNS involvement include the following:
  - MRI Brain without and with contrast (CPT® 70553) **AND/OR**
  - MRA Head (CPT® 70544, CPT® 70545, or CPT® 70546) **AND/OR**
  - MRA Neck (CPT® 70547, CPT® 70548, or CPT® 70549) **OR**
  - CTA Head (CPT® 70496) **AND/OR**
  - CTA Neck (CPT® 70498) **OR**
  - CTA Head and Neck (CPT® 70471) if performed during the same session.
- If MRI findings are suggestive of vasculitis, the following is considered medically necessary:
  - MRA Head (CPT® 70544, CPT® 70545, or CPT® 70546) **AND/OR**
  - MRA Neck (CPT® 70547, CPT® 70548, or CPT® 70549) **OR**
  - CTA Head (CPT® 70496) **AND/OR**
  - CTA Neck (CPT® 70498) **OR**
  - CTA Head and Neck (CPT® 70471) if performed during the same session.
- The following are considered medically necessary for treatment response and/or surveillance imaging as ordered by a neurologist, rheumatologist, or neurosurgeon, or in consultation with one of these providers:
  - MRI Brain without and with contrast (CPT® 70553) **AND/OR**
  - MRA Head (CPT® 70544, CPT® 70545, or CPT® 70546) **AND/OR**
  - MRA Neck (CPT® 70547, CPT® 70548, or CPT® 70549) **OR**
  - CTA Head (CPT® 70496) **AND/OR**
  - CTA Neck (CPT® 70498) **OR**
  - CTA Head and Neck (CPT® 70471) if performed during the same session.

Background and Supporting Information

- A normal MRI Brain almost always completely excludes intracranial vasculitis.

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COVID-19 and Multisystem Inflammatory Syndrome in Children (MIS-C) (PEDHD-12.7)

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Criteria

- If concern for CNS infection, see **CNS Infection (PEDHD-29.1)**.
- For cardiac imaging, see **Multisystem Inflammatory Syndrome in Children (MIS-C) (PEDCD-12)**

  in the Pediatric Cardiac Imaging Guidelines.
- Symptoms of MIS-C may include some or all of the following:
  - Headache **AND/OR** irritability
  - Mucocutaneous changes similar to Kawasaki disease (i.e., strawberry tongue, red cracked lips, rash of hands and/or feet)
  - Polymorphus **AND/OR** vasculitic rash
  - Non-exudative conjunctivitis
  - Tachycardia **AND/OR** hypotension
  - Cough **AND/OR** shortness of breath
  - Abdominal pain, vomiting, **AND/OR** diarrhea
  - Lymphadenopathy, joint pain, **AND/OR** sore throat

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Indication	Medically Necessary Imaging Study
◦ Imaging for neurological signs and/ or symptoms, including headache, after known or presumed COVID-19 infection	◦ MRI Brain without contrast (CPT® 70551) **OR** ◦ MRI Brain without and with contrast (CPT® 70553) **AND/OR** ◦ MRA Head (CPT® 70544, CPT® 70545, **OR** CPT® 70546) **OR** ◦ CTA Head (CPT® 70496) **AND/OR** ◦ MRA Neck (CPT® 70547, CPT® 70548, **OR** CPT® 70549) **OR** ◦ CTA Neck (CPT® 70498) **OR** ◦ CTA Head and Neck (CPT® 70471) must be substituted if performed during the same session.

Background and Supporting Information

- COVID-19 infections in children are generally mild in comparison to that of adults. However a post-viral syndrome in children has become increasingly noted.
- Multisystem Inflammatory Syndrome in Children (MIS-C) can cause an inflammatory vasculopathy, prothrombotic state, and/or post-viral myocarditis in children who have had a COVID-19 infection caused by SARS-CoV-2. The child may have had minor symptoms or been asymptomatic at the time of COVID-19 infection, but the virus can trigger endothelial injury and activation of the IL-1 pathway similar to that in Kawasaki disease and acute rheumatic fever.

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Multisystemic Smooth Muscle Syndrome (MSMS)/Smooth Muscle Dysfunction Syndrome (SMDS)/ACTA2 Mutations (PEDHD-12.8)

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- See **Multisystemic Smooth Muscle Syndrome (MSMS)/Smooth Muscle Dysfunction Syndrome (SMDS)/ACTA2 Mutations (HD-21.7)** in the Head Imaging Guidelines.

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Benign Brain Lesions (PEDHD-13)

Guideline Page

Arachnoid Cysts (PEDHD-13.1)..... 106
Pineal/Colloid Cysts (PEDHD-13.2)..... 107
Acoustic Neuromas (PEDHD-13.3)..... 108

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Arachnoid Cysts (PEDHD-13.1)

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- See **Arachnoid Cysts (HD-35.1)** in the Head Imaging Guidelines.

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Pineal/Colloid Cysts (PEDHD-13.2)

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- See **Pineal/Colloid Cysts (HD-34.1)** in the Head Imaging Guidelines.

Pediatric Head Imaging Guidelines

Acoustic Neuromas (PEDHD-13.3)

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- See **Neurofibromatosis 2 (PEDPND-2.2)** in the Pediatric Peripheral Nerve and Neuromuscular Disorders Imaging Guidelines.

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Pediatric Demyelinating Diseases (PEDHD-14)

Guideline Page

Pediatric Demyelinating Disease General Considerations (PEDHD-14.1)..... 110
Multiple Sclerosis (MS) (PEDHD-14.2)..... 111
Acute Disseminated Encephalomyelitis (ADEM) and Other Pediatric Demyelinating Disorders (PEDHD-14.3)..... 115
Transverse Myelitis (PEDHD-14.4)..... 116
References (PEDHD-14)..... 117

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Pediatric Demyelinating Disease General Considerations (PEDHD-14.1)

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Criteria

- For evaluation of pediatric demyelinating disease, the following imaging is considered medically necessary:
  - MRI Brain without and with contrast (CPT® 70553) **AND/OR**
  - MRI Cervical Spine without and with contrast (CPT® 72156) **AND/OR**
  - MRI Thoracic Spine without and with contrast (CPT® 72157)
- MRI Lumbar Spine without and with contrast (CPT® 72158) is considered not medically necessary unless the individual has a tethered cord or other anatomic abnormality causing caudal displacement of the filum terminalis.
- CT imaging is generally **NOT** considered medically necessary in the evaluation of demyelinating disease.
- Metabolic (FDG) PET Brain (CPT® 78608) and MR Spectroscopy (CPT® 76390) are considered not medically necessary for evaluation of pediatric demyelinating diseases.
- For metabolic or genetic white matter disorders, including leukodystrophies and mitochondrial disorders, see **Neurometabolic and Neurogenetic Disorders (PEDHD-19.4)**.

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Multiple Sclerosis (MS) (PEDHD-14.2)

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Criteria

Indication	Medically Necessary Imaging Study
Initial diagnosis in individuals with clinical signs and/or symptoms suggestive of MS	• MRI Brain without and with contrast (CPT® 70553) **AND/OR** • MRI Cervical Spine without and with contrast (CPT® 72156) **AND/OR** • MRI Thoracic Spine without and with contrast (CPT® 72157) If there is a contraindication to gadolinium administration, then • MRI Brain without contrast (CPT® 70551) **AND/OR** • MRI Cervical Spine without contrast (CPT® 72141) **AND/OR** • MRI Thoracic Spine without contrast (CPT® 72146)

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Indication	Medically Necessary Imaging Study
Disease monitoring whether or not receiving treatment	Every 6 months or for new signs/ symptoms: • MRI Brain without contrast (CPT® 70551) **OR** • MRI Brain without and with contrast (CPT® 70553) Every 12 months or for new signs/ symptoms: • MRI Cervical Spine without and with contrast (CPT® 72156) **OR** • MRI Cervical Spine without contrast (CPT® 72141) **AND/OR** • MRI Thoracic Spine without and with contrast (CPT® 72157) **OR** • MRI Thoracic Spine without contrast (CPT® 72146)
Optic neuritis suspected	• MRI Orbits/Face/Neck without and with contrast (CPT® 70543) may be added If there is a contraindication to gadolinium administration, then • MRI Orbits/Face/Neck without contrast (CPT® 70540) may be added
Symptoms suggestive of Progressive multifocal leukoencephalopathy (PML) during natalizumab (Tysabri®) therapy (or other medications with similar risk)	• MRI Brain without and with contrast (CPT® 70553) If there is a contraindication to gadolinium administration, then ◦ MRI Brain without contrast (CPT® 70551)

Indication	Medically Necessary Imaging Study
Screening for individuals on natalizumab (Tysabri®) or other drugs with risk of progressive multifocal leukoencephalopathy (PML)	Every 6 months while on treatment: • MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain without contrast (CPT® 70551) Every 3-6 months for high-risk individuals positive for serum JC virus antibody and >18 months natalizumab exposure: • MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain without contrast (CPT® 70551)
If MRI Brain without contrast (CPT® 70551) shows incidental evidence of possible demyelinating disease	• MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain with contrast (CPT® 70552)
After an MRI Brain without contrast (CPT® 70551), a follow-up MRI brain may be performed at the discretion of a neurologist, a neurosurgeon, or a neuro-ophthalmologist, or any provider in consultation with a neurologist, neurosurgeon, or neuro-ophthalmologist, and/or at the recommendation of the radiologist	• MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain with contrast (CPT® 70552)

Background and Supporting Information

- Multiple sclerosis is less common in children. About 4% of MS cases are diagnosed before age 18, and only ~0.7% of all MS cases begin before age of 10 years.
- Common presentations of MS in children include ataxia, optic neuritis, diplopia, transverse myelitis or as an acute encephalitis-like illness.
- Among children with suspected demyelinating diseases, the principal differential diagnosis is often between MS, Acute Disseminated Encephalomyelitis (See **Acute Disseminated Encephalomyelitis (ADEM) and Other Pediatric Demyelinating Disorders (PEDHD-14.3)** or MOG Antibody-Associated Disease (MOGAD). (See **MOG Antibody-Associated Disease (MOGAD) (HD-16.3)**).
- Medications with similar risks of Progressive Multifocal Leukoencephalopathy (PML) as Tysabri® include: dimethyl fumarate (Tecfidera®), fingolimod (Gilenya®),

ocrelizumab (Ocrevus®), clardribine (Mavenclad®), diroximel fumarate (Vumerity®), eculizaumab (Soliris®), ozanimod (Zeposia®), alemtuzumab (Lemtrada®), monomethyl fumarate (Bafiertam®), rituximab (Rituxan®).

- If a non-contrast study shows incidental evidence of possible demyelinating disease, repeat imaging is appropriate as the presence of enhancing lesions may be helpful in confirming the diagnosis.
- 3D imaging in the evaluation of Multiple Sclerosis is not supported as a separate code. Most scanners are capable of 3D acquisitions or other imaging sequences.

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Acute Disseminated Encephalomyelitis (ADEM) and Other Pediatric Demyelinating Disorders (PEDHD-14.3)

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Criteria

- MRI Brain without and with contrast (CPT® 70553) **AND/OR** MRI Cervical Spine without and with contrast (CPT® 72156) **AND/OR** MRI Thoracic Spine without and with contrast (CPT® 72157) are considered medically necessary as the initial imaging in individuals with clinical signs and/or symptoms suggestive of ADEM OR for follow-up imaging when ordered by a neurologist or any provider in consultation with a neurologist.
  - MRI Brain without contrast (CPT® 70551) **AND/OR** MRI Cervical Spine without contrast (CPT® 72141) **AND/OR** MRI Thoracic Spine without contrast (CPT® 72146) are considered medically necessary if there is a contraindication to gadolinium.
- Other pediatric demyelinating disorders that have clinical overlap with multiple sclerosis and ADEM include, but are not limited to:
  - **Neuromyelitis Optica Spectrum Disorders (HD-16.2)**
  - **Anti-MOG Syndromes (HD-16.3)**
  - **Traverse myelitis (HD-16.4)**
- For metabolic or genetic white matter disorders, including leukodystrophies and mitochondrial disorders, see **Neurometabolic and Neurogenetic Disorders (PEDHD-19.4)**.

Background and Supporting Information

- ADEM has an acute onset, and is more common among younger children than MS, but the signs and symptoms overlap significantly and distinguishing between MS and ADEM can be challenging based on clinical examination alone.
- Most individuals will have complete clinical recovery by 12 months, while stable MRI abnormalities (gliosis) may persist. These findings do not require additional imaging unless the individual develops new neurologic symptoms. Prolonged symptoms or return of symptoms may represent a different demyelinating disorder.

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Transverse Myelitis (PEDHD-14.4)

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- See **Transverse Myelitis (HD-16.4)** in the Head Imaging Guidelines.

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Pituitary Dysfunction (PEDHD-15)

Guideline Page

Pituitary Dysfunction General Considerations (PEDHD-15.1)....120
Panhypopituitarism (PEDHD-15.2)....121
Isolated Growth Hormone Deficiency (PEDHD-15.3)....122
Diabetes Insipidus (DI) and Other Disorders of Anti-Diuretic Hormone (PEDHD-15.4)....123
Precocious Puberty (PEDHD-15.5)....125
Benign Pituitary Tumors (PEDHD-15.6)....127
Pituitary Malignancies (PEDHD-15.7)....128
References (PEDHD-15)....129

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Pituitary Dysfunction General Considerations (PEDHD-15.1)

HDP.PD.0015.1.A
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Criteria

- The initial step in the evaluation of all potential pituitary masses is a detailed history, recent physical examination, and thorough neurological exam, including evaluation of the visual fields.
- Endocrine laboratory studies should be performed prior to considering initial advanced imaging.
- MRI Brain without and with contrast (CPT® 70553) or MRI Brain without contrast (CPT® 70551) when pituitary imaging is considered medically necessary.
  - Pituitary Gland: one study (either MRI Brain without and with contrast [CPT® 70553] **OR** MRI Orbits/Face/Neck [CPT® 70543]) is adequate to report the imaging of the pituitary. The reporting of two CPT® codes to image the pituitary is considered not medically necessary.
- If a previous MRI Brain was reported to show a possible pituitary tumor with supporting evidence of pituitary disease or is inconclusive, a repeat MRI with dedicated pituitary protocol may be performed. If a prior MRI Brain was without contrast, a follow-up scan either MRI Brain with contrast (CPT® 70552) **OR** MRI Brain without and with contrast (CPT® 70553) is appropriate.
- For association between pituitary dysfunction and optic nerve issues, see **Eye Disorders and Visual Loss (HD- 32.1)** in the Head Imaging Guidelines.
- For repeat imaging, see **Pituitary, Sella, Hypothalamus (HD-19.1)** in the Head Imaging Guidelines.

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Panhypopituitarism (PEDHD-15.2)

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Criteria

- Endocrine testing should be performed initially.
- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) with special attention to the pituitary is considered medically necessary for newly diagnosed panhypopituitarism.
- Individuals with a normal pituitary on initial MRI do not need routine follow-up imaging.
- Individuals with mass lesions should have follow-up imaging according to the guidelines for the specific diagnosis.

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Isolated Growth Hormone Deficiency (PEDHD-15.3)

HDP.PD.0015.3.A
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Criteria

- Clinical features include: height below the normal range (<3rd percentile), subnormal growth velocity, or the child's height is below the range expected based on parental height.
- Risk factors include: a history of brain tumor, cranial irradiation, or other congenital/ organic hypothalamic-pituitary abnormality as well as an incidental finding of a hypothalamic-pituitary abnormality on MRI.
- Endocrine testing should be performed initially.
- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) with special attention to the pituitary is considered medically necessary for any of the following:
  - Both IGF1 and IGFBP3 are below the laboratory reference range for age/sex or Tanner stage.
  - 2 measurements of growth hormone stimulation with different stimulation agents (glucagon, clonidine, arginine, insulin, levodopa) performed on the same day or separate days produce maximal GH levels <10ng/mL. See **Background and Supporting Information.**
- Individuals with a normal pituitary on initial MRI do not need routine follow-up imaging.
- Individuals with mass lesions should have follow-up imaging according to the guidelines for the specific diagnosis.

Background and Supporting Information

- Growth hormone stimulation testing is limited by poor specificity and requires failure on 2 tests to diagnose growth hormone deficiency.
- Controversy exists as to the cutoff level which differentiates a normal response from a deficient response on provocative testing. Some experts support GH <7ng/mL however many pediatric endocrinologists consider a peak GH level <10ng/mL to be indicative of growth hormone deficiency and may identify children with partial GHD.

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Diabetes Insipidus (DI) and Other Disorders of Anti-Diuretic Hormone (PEDHD-15.4)

HDP.PD.0015.4.A
v1.0.2027

Criteria

- Laboratory testing should be performed initially. Diabetes insipidus is characterized by serum osmolality greater than 300mOsm/kg and urine osmolality under 300mOsm/kg.
- Central diabetes insipidus (CDI) is caused by diminished synthesis or secretion of vasopressin in the hypothalamus and nephrogenic diabetes insipidus (NDI) is caused by renal resistance to vasopressin.

Central Diabetes Insipidus (DI)

- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) is considered medically necessary for newly diagnosed central DI.
- Individuals with a normal pituitary on initial MRI can have repeat MRI Brain without and with contrast (CPT® 70553) every 3-6 months for the first 2 years as germinomas may cause central DI while still too small to detect on imaging.
  - Serial measurement of β -hCG is also considered medically necessary for these individuals, and MRI should be repeated if a significant rise in β -hCG is detected on screening.
- Individuals with mass lesions should have follow-up imaging according to the guidelines for the specific diagnosis.

Nephrogenic DI

- Once this diagnosis is firmly established, further advanced imaging is usually considered not medically necessary.

Syndrome of Inappropriate Antidiuretic Hormone Secretion (SIADH)

- Laboratory studies should be obtained prior to considering advanced imaging—urine osmolality should be high and serum osmolality low.
- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) is considered medically necessary for initial evaluation of unexplained central (hypothalamic pituitary) SIADH.
- Individuals with a normal pituitary on initial MRI do not need routine follow-up imaging.

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- Individuals with mass lesions should have follow-up imaging according to the guidelines for the specific diagnosis.

Background and Supporting Information

- See **Small Cell Lung Cancer-Suspected/Diagnosis (ONC-7.1)** and **Paraneoplastic Syndromes (ONC-30.3)** in the Oncology Imaging Guidelines.
- Pulmonary diseases including infection (tuberculosis, viral/bacterial pneumonia), acute respiratory infections, mechanical ventilation and others can cause SIADH although the mechanism is unclear. Individuals with lung disease should have chest imaging according to the guidelines for the specific diagnosis.

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Precocious Puberty (PEDHD-15.5)

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Criteria

- Defined as the appearance of secondary sexual characteristics before age 8 in females and before age 9 in males. The diagnosis is made clinically using Tanner staging and often will include a bone age assessment (hand/wrist radiographs) and/or abdominal and/or pelvic ultrasound (See Peripheral Precocious Puberty below).
- Endocrine laboratory studies (baseline LH, FSH and either estradiol or testosterone) are used to determine if the etiology of precocious puberty is central (gonadotropin dependent) or peripheral (gonadotropin independent). Estradiol and testosterone levels will often be elevated to a pubertal range.

Central Precocious Puberty (CPP)

- An LH greater than 0.3U/L on a random blood sample is the most reliable screening test for central precocious puberty. If LH is under 0.3U/L and CPP is suspected, a stimulation test with a GnRH analog is the gold standard.
- Neuroimaging should always follow hormonal studies that suggest a central origin of precocious puberty.
- MRI Brain without and with contrast (CPT® 70553, preferred study) **OR** MRI Brain without contrast (CPT® 70551) is considered medically necessary for evaluation of any child with documented central precocious puberty.
- MRI is appropriate irrespective of age and gender in individuals with precocious puberty and concurrent CNS symptoms of severe headache, visual changes, or seizures.
- Individuals with a normal pituitary on initial MRI do not need routine follow-up imaging.
- Individuals with mass lesions should have follow-up imaging according to the guidelines for the specific diagnosis. (**Benign Pituitary Tumors (PEDHD-15.6**) and **Pituitary Malignancies (PEDHD-15.7)**)

Peripheral Precocious Puberty

- The differential diagnosis of peripheral precocious puberty (LH suppressed or in the pre-pubertal range with elevated estradiol, testosterone, and/or adrenal androgens) is broad and may include ovarian, testicular, adrenal, and other sources of excessive hormonal production.
- Ultrasound Abdomen (CPT® 76700) in both genders and Ultrasound Pelvis (CPT® 76856) in females and Scrotal ultrasound (CPT 76870) in males depending on the suspected source of hormonal excess for initial imaging.

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- See **CNS Germinomas and Non-Germinomatous Germ Cell Tumors (PEDONC-4.7)** in the Pediatric and Special Populations Oncology Imaging Guidelines for evaluation of HCG secreting CNS tumors.
- See **Hepatoblastoma (PEDONC-11.2)** in the Pediatric and Special Populations Oncology Imaging Guidelines for evaluation of HCG secreting hepatic tumors.
- See **Pediatric Germ Cell Tumors (PEDONC-10)** in the Pediatric and Special Populations Oncology Imaging Guidelines and **Testicular, Ovarian and Extragonadal Germ Cell Tumors (ONC-20)** in the Oncology Imaging Guidelines for evaluation of Leydig Cell tumors.
- See **Adrenal Cortical Lesions (AB-16.1)** in the Abdomen Imaging Guidelines for evaluation of adrenal virilizing tumors.

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Benign Pituitary Tumors (PEDHD-15.6)

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- Benign pituitary tumor indications in pediatric individuals are identical to those for adult individuals. See **Pituitary, Sella, Hypothalamus (HD-19)** in the Head Imaging Guidelines.

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Pituitary Malignancies (PEDHD-15.7)

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- See **Craniopharyngioma and Other Hypothalamic/Pituitary Region Tumors (PEDONC-4.10)** or **Histiocytic Disorders (PEDONC-18)** in the Pediatric and Special Populations Oncology Imaging Guidelines.

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Pediatric Ear Disorders (PEDHD-16)

Guideline Page

Hearing Loss (PEDHD-16.1)..... 131
Ear Pain (PEDHD-16.2)..... 132
Cholesteatoma (PEDHD-16.3)..... 133
Vertigo (PEDHD-16.4)..... 134
Tinnitus (PEDHD-16.5)..... 135
References (PEDHD-16)..... 136

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Hearing Loss (PEDHD-16.1)

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Criteria

- A pertinent evaluation including a detailed history, physical examination (including otoscopic examination), and age-appropriate audiology testing should be performed on any child with known or suspected hearing loss prior to considering advanced imaging. The selection of imaging testing will depend on the age of the child and type of hearing loss.
- CT Orbits/Temporal Bone without contrast (CPT® 70480) is considered medically necessary for the following:
  - Conductive hearing loss of any cause
  - Pre-operative planning for resection of mass lesion or cochlear implant placement
  - Sensorineural hearing loss in individuals who cannot safely undergo MRI
  - Mixed conductive and sensorineural hearing loss
  - Congenital hearing loss
  - Total deafness
- MRI Brain without and with contrast (CPT® 70553) with attention to internal auditory canals (included in CPT® 70553 and does not require a separate CPT® code) **OR** MRI Brain without contrast (CPT® 70551) is considered medically necessary for the following:
  - Conductive hearing loss secondary to known or suspected mass lesion
  - Pre-operative planning for resection of mass lesion or cochlear implant placement
  - Sensorineural hearing loss of any cause
  - Mixed conductive and sensorineural hearing loss
  - Congenital hearing loss
  - Total deafness
  - For hearing loss associated with tinnitus, see **Tinnitus (PEDHD-16.5)**.
- Both modalities (CT and MRI) are supported simultaneously for evaluation and surgical planning if ordered by or in consultation with an ENT or neurosurgical specialist.
- Limited MRI Brain with attention to internal auditory canals (CPT® 70540, CPT® 70542, or CPT® 70543) is considered medically necessary when requested by the provider in place of a complete MRI Brain. Note: Limited MRI codes should not be used in addition to MRI Brain codes; IAC views are performed as additional sequences as part of the brain study. (See **General Guidelines – Anatomic Issues (HD-1.1)** in the Head Imaging Guidelines)

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Ear Pain (PEDHD-16.2)

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Criteria

- A pertinent evaluation including a detailed history, physical examination (including otoscopic examination), should be performed on any child with ear pain prior to considering advanced imaging. Common causes of ear pain include external and middle ear infections, dental problems, sinus infection, neck problems, and referred pain from the oral pharynx, tonsillitis, and pharyngitis.
- Advanced imaging is considered not medically necessary in the overwhelming majority of pediatric individuals with ear pain.

Indications	Medically Necessary Imaging Study
◦ Any of the following ▪ Persistent ear pain without obvious cause ▪ Clinical suspicion for complicated or invasive infection such as mastoiditis ▪ Clinical suspicion of mass lesion causing ear pain ▪ Significant trauma with concern for hematoma formation ▪ Pre-operative planning	◦ ONE of the following: ▪ CT Orbits/Temporal Bone without contrast (CPT® 70480) **OR** ▪ CT Orbits/Temporal Bone without and with contrast (CPT® 70482) **OR** ▪ MRI Brain without and with contrast with attention to internal auditory canals (CPT® 70553) **OR** ▪ MRI Orbits/Face/Neck without and with contrast (CPT® 70543)

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Cholesteatoma (PEDHD-16.3)

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Criteria

- ONE of the following studies is considered medically necessary for pre-operative evaluation in children with cholesteatoma:
  - CT Orbits/Temporal Bone without contrast (CPT® 70480) **OR**
  - CT Orbits/Temporal Bone without and with contrast (CPT® 70482) **OR**
  - MRI Brain without and with contrast with attention to internal auditory canals (CPT® 70553), **OR**
  - MRI Orbits/Face/Neck without and with contrast (CPT® 70543)
- ONE of the following studies is considered medically necessary one time post-operatively to exclude residual or regrown cholesteatoma to avoid the need for a second-look surgery:
  - CT Orbits/Temporal Bone without contrast (CPT® 70480) **OR**
  - CT Orbits/Temporal Bone without and with contrast (CPT® 70482) **OR**
  - MRI Brain without and with contrast with attention to internal auditory canals (CPT® 70553) **OR**
  - MRI Orbits/Face/Neck without and with contrast (CPT® 70543)

Background and Supporting Information

- Cholesteatomas are expansive cysts of the middle ear filled with cellular debris. They can be congenital or arise from recurrent middle ear infections or trauma to the tympanic membrane. Hearing loss is usually conductive, although if the lesion is large enough combined conductive and sensorineural hearing loss may be present. Otoscopic exam findings and symptoms may include a white mass in the middle ear cleft, painless drainage from the ear or chronic/recurrent ear infections. Advanced imaging for the diagnosis and management of suspected cholestatoma, in particular, should be reserved for the otolaryngologist or provider in consultation with the otolaryngologist.

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Vertigo (PEDHD-16.4)

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Criteria

- A pertinent evaluation including a detailed history, physical examination (including otoscopic examination), should be performed on any child with vertigo prior to considering advanced imaging.
- If physical examination is otherwise normal and the vertigo responds to treatment, advanced imaging is considered not medically necessary.
- MRI Brain without and with contrast with attention to internal auditory canals (CPT® 70553) is medically necessary for the following:
  - Vertigo with associated headache or ataxia
  - Vertigo associated with tinnitus
  - Vertigo that does not respond to vestibular treatment

Background and Supporting Information

Isolated vertigo is an uncommon complaint during childhood. Middle ear/Eustachian tube problems are the most common cause of isolated vertigo in children.

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Tinnitus (PEDHD-16.5)

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Criteria

- Tinnitus without hearing loss is a less common complaint during childhood.
- Children with hearing loss and tinnitus should be imaged according to **Hearing Loss (PEDHD-16.1)**. A pertinent evaluation including a detailed history, physical examination (including otoscopic examination), and age-appropriate audiology testing should be performed on any child with known or suspected tinnitus prior to considering advanced imaging.
- Advanced imaging is considered not medically necessary in the overwhelming majority of pediatric individuals with isolated tinnitus and normal hearing.

Indications	Medically Necessary Imaging Study
• ANY of the following ◦ Clinical suspicion of mass lesion causing tinnitus ◦ Persistent tinnitus after recent significant trauma	• ONE of the following ◦ CT Orbits/Temporal Bone without contrast (CPT® 70480) **OR** ◦ CT Orbits/Temporal Bone without and with contrast (CPT® 70482), **OR** ◦ MRI Brain without and with contrast with attention to internal auditory canals (CPT® 70553) **OR** ◦ MRI Brain without contrast with attention to internal auditory canals (CPT® 70553) **OR** ◦ MRI Orbits/Face/Neck without and with contrast (CPT® 70543)
• ANY of the following: ◦ Pulsatile tinnitus ◦ Suspicion for vascular lesions	• MRA Head (CPT® 70544, CPT® 70545 **OR** CPT® 70546) **OR** • CTA Head (CPT® 70496) **AND/OR** • MRA Neck (CPT® 70547, CPT® 70548 **OR** CPT® 70549) **OR** • CTA Neck (CPT® 70498) ◦ CTA Head and Neck (CPT® 70471) must be substituted if performed during the same session.

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Autism Spectrum Disorders (PEDHD-17)

Guideline Page

Autism Spectrum Disorders (PEDHD-17.1)..... 138
References (PEDHD-17)..... 139

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Autism Spectrum Disorders (PEDHD-17.1)

HDP.AS.0017.1.A
v1.0.2027

Criteria

- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) is considered medically necessary for:
  - new or worsening focal neurologic findings documented on a pertinent physical **AND/OR**
  - loss of developmental milestones and/or regression in two or more areas of development.
- PET imaging is considered considered not medically necessary in the evaluation of individuals with autism spectrum disorders.

Background and Supporting Information

- The group of diagnoses are classified as pervasive development disorders (PDD). These diagnoses are established on clinical criteria, and no imaging study can confirm the diagnosis.
- Comprehensive evaluation for autism might include history, physical exam, audiology evaluation, speech, language, and communication assessment, cognitive and behavioral assessments, and academic assessment.

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Behavioral and Psychiatric Disorders (PEDHD-18)

Guideline Page

Behavioral and Psychiatric Disorders (PEDHD-18.1)..... 141
Reference (PEDHD-18)..... 142

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Behavioral and Psychiatric Disorders (PEDHD-18.1)

HDP.BD.0018.1.A
v1.0.2027

Criteria

- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) **OR** CT Head without contrast (CPT® 70450) is considered medically necessary for:
  - acute onset mental status change
  - new or worsening focal neurologic findings
  - presentation of acute psychiatric symptoms with comorbid serious medical illness
  - non-auditory hallucinations (e.g., visual, tactile, olfactory) with no known etiology
  - non-response to adequate medication trials
  - symptoms of an organic brain disorder (e.g., focal deficits, severe headache, or seizures)
- For concerns of PANS (Pediatric acute-onset neuropsychiatric syndrome) and PANDAS (Pediatric autoimmune neuropsychiatric disorder associated with streptococcal infection), see **Movement Disorders including Tourette Syndrome (PEDHD-26)**.

Background and Supporting Information

- Routine brain imaging is not routinely recommended for obsessive compulsive disorder (OCD), attention deficit hyperactivity disorder (ADHD), and autism spectrum disorder (ASD).

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Developmental Disorders (PEDHD-19)

Guideline Page

Intellectual Disability (PEDHD-19.1)....144
Cerebral Palsy (PEDHD-19.2)....145
Developmental Motor Delay (PEDHD-19.3)....146
Neurometabolic and Neurogenetic Disorders (PEDHD-19.4)....147
References (PEDHD-19)....149

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Intellectual Disability (PEDHD-19.1)

HDP.ID.0019.1.A
v1.0.2027

Criteria

- Intellectual disability may be primary or secondary to a variety of heterogeneous disorders.
- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) is considered medically necessary for new or worsening focal neurologic findings and/or new or worsening cognitive decline.

Background and Supporting Information

- Intellectual disability is a condition characterized by significant limitations in both intellectual functioning and adaptive behavior that originates before the age of 22. One way to measure intellectual functioning is an IQ test. Generally, an IQ test score of around 70 or as high as 75 indicates a significant limitation in intellectual functioning (American Association on Intellectual and Developmental Disabilities, 2019).

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Cerebral Palsy (PEDHD-19.2)

HDP.ID.0019.2.A
v1.0.2027

Criteria

- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) is considered medically necessary for:
  - initial evaluation of newly diagnosed cerebral palsy
  - new or worsening focal neurologic findings documented on a physical examination, including the presence of developmental delay
  - re-evaluation after 24 months of age due to rapid myelination during the first 2 years of life
- For spinal imaging requests, see **Myelopathy (SP-7.1)** in the Spine Imaging Guidelines.

Background and Supporting Information

- Many individuals with intellectual disability also have cerebral palsy, but not all individuals with cerebral palsy have intellectual disability.
- Cerebral palsy is a static motor encephalopathy caused by a variety of entities spanning developmental, metabolic, genetic, infectious, ischemic, and other acquired etiologies.

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Developmental Motor Delay (PEDHD-19.3)

HDP.ID.0019.3.A
v1.0.2027

Criteria

- MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is considered medically necessary for:
  - initial evaluation of newly diagnosed developmental motor delay with abnormal muscle tone
  - toe walking, when associated with upper motor neuron signs including hyperreflexia, abnormal tone (spasticity/hypotonia), or positive Babinski sign
  - new or worsening focal neurologic findings
  - repeat brain imaging one time after 24 months of age due to rapid myelination during the first 2 years of life
- For spinal imaging requests, see **Myelopathy (SP-7.1)** in the Spine Imaging Guidelines and **Spinal Dysraphism and Tethered Spinal Cord (PEDSP-4)** in the Pediatric and Special Populations Spine Imaging Guidelines.

Background and Supporting information

- There are many causes for developmental motor delay. Individuals with motor delay can have decreased, normal, or increased muscular tone. Individuals with normal tone do not require imaging unless they have focal neurologic findings.

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Neurometabolic and Neurogenetic Disorders (PEDHD-19.4)

HDP.ID.0019.4.A
v1.0.2027

Criteria

Medically Necessary Imaging Study	Indications	Suspected or Known Neurometabolic and/or Neurogenetic Disorders Including, but not limited to
MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) **AND/OR** Magnetic Resonance Spectroscopy (MRS, CPT® 76390)	Requested by a neurologist or geneticist, or any provider in consultation with a neurologist or geneticist, for: • Initial evaluation **AND/OR** • Disease monitoring **AND/OR** • New or worsening symptoms **AND/OR** • Change in therapy is being considered	• X-linked adrenoleukodystrophy (X-ALD, CALD) • Alexander disease (ALX, AXD, dysmyelinogenic leukodystrophy) • Canavan disease • Creatine deficiency • Globoid cell leukodystrophy (Krabbe disease) • Hypomyelination and congenital cataract • Maple syrup urine disease • Megalencephalic leukoencephalopathy with subcortical cysts

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Medically Necessary Imaging Study	Indications	Suspected or Known Neurometabolic and/or Neurogenetic Disorders Including, but not limited to
MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) **AND/OR** Magnetic Resonance Spectroscopy (MRS, CPT® 76390)	Requested by a neurologist or geneticist, or any provider in consultation with a neurologist or geneticist, for: • Initial evaluation **AND/OR** • Disease monitoring **AND/OR** • New or worsening symptoms **AND/OR** • Change in therapy is being considered	• Metachromatic leukodystrophy (MCL) • Mitochondrial disorders (such as, but not limited to, Leigh's syndrome, Kearns-Sayre syndrome, Mitochondrial encephalopathy with lactic acidosis and stroke-like episodes (MELAS)) • Nonketotic hyperglycinemia • Pelizaeus-Merzbacher disease (PMD) • Vanishing white matter (VWM) disease (Leukoencephalopathy with VWM, childhood ataxia with CNS hypomyelination (CACH) syndrome)

References (PEDHD-19)

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Ataxia (PEDHD-20)

Guideline Page

Ataxia (PEDHD-20.1).....151
References (PEDHD-20)..... 153

Pediatric Head Imaging Guidelines

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Ataxia (PEDHD-20.1)

HDP.AT.0020.1.A
v1.0.2027

Criteria

- See also **Developmental Disorders (PEDHD-19)**.
- A pertinent evaluation, including a detailed history and physical examination with a thorough neurologic examination, should be performed prior to considering advanced imaging, unless the individual is undergoing guideline-supported scheduled follow-up imaging evaluation or request is from or in consultation with a neurologist or neurosurgeon who has seen the individual since onset of symptoms.

Indications	Medically Necessary Imaging Study
• ANY of the following: ◦ Ataxia ◦ Hereditary ataxia ◦ Slowly progressive ataxia	• MRI Brain without and with contrast (CPT® 70553) **OR** • MRI Brain without contrast (CPT® 70551) **OR** • CT Head without contrast (CPT® 70450) *If the initial CT or MRI study is unable to answer the clinical question at hand, an exam of the other modality is considered medically necessary if needed to direct clinical management.*
• Suspected spinal etiology	• MRI Cervical Spine without contrast (CPT® 72141) **OR** • MRI Cervical Spine without and with contrast (CPT® 72156) **AND/OR** • MRI Thoracic Spine without contrast (CPT® 72146) **OR** • MRI Thoracic Spine without and with contrast (CPT® 72157) **AND/OR** • MRI Lumbar Spine without contrast (CPT® 72148) **OR** • MRI Lumbar Spine without and with contrast (CPT® 72158)

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Indications	Medically Necessary Imaging Study
• Acute ataxia following significant head trauma	• CT Head without contrast (CPT® 70450) **OR** • CT Head without and with contrast (CPT® 70470) **OR** • MRI Brain without contrast (CPT® 70551) **OR** • MRI Brain without and with contrast (CPT® 70553)
• Contraindication to MRI	• CT Head without and with contrast (CPT® 70470) **OR** • CT Head with contrast (CPT® 70460
• BOTH of the following: ◦ Contraindication to MRI ◦ Suspected spinal etiology	• CT Cervical Spine without contrast (CPT® 72125) **OR** • CT Cervical Spine without and with contrast (CPT® 72127) **AND/OR** • CT Thoracic Spine without contrast (CPT® 72128) **OR** • CT Thoracic Spine without and with contrast (CPT® 72130) **AND/OR** • CT Lumbar Spine without contrast (CPT® 72131) **OR** • CT Lumbar Spine without and with contrast (CPT® 72133)

- Repeat imaging is considered medically necessary when ordered by a neurologist or neurosurgeon, or any provider in consultation with one of these providers, or if there are new signs or symptoms.

Background and Supporting Information

- Ataxia refers to an abnormally ill-coordinated or unsteady gait for age. "Limb ataxia" refers to impaired coordination (for age) of limbs, especially arms. Developmental failure to acquire the ability to walk is a form of developmental delay, not ataxia.
- CT should not be used in place of MRI solely to avoid sedation in young children because MRI is superior for imaging the posterior fossa.

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Epistaxis (PEDHD-21)

Guideline Page

Epistaxis Imaging (PEDHD-21.1)..... 155
References (PEDHD-21)..... 156

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Epistaxis Imaging (PEDHD-21.1)

HDP.ET.0021.1.A
v1.0.2027

Criteria

- Initial evaluation of epistaxis (nosebleed), including recurrent epistaxis that is refractory to medical management is by direct or endoscopic visualization of the relevant portions of the upper airway.
- If a mass lesion is detected on direct visualization, the following imaging studies are considered medically necessary:
  - CT Maxillofacial without contrast (CPT® 70486) **OR** CT Maxillofacial without and with contrast (CPT® 70488) **AND/OR**
  - MRI Orbits/Face/Neck without and with contrast (CPT® 70543)

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Papilledema/Pseudotumor Cerebri (PEDHD-22)

Guideline Page

Papilledema/Pseudotumor Cerebri (PEDHD-22.1)..... 158

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Papilledema/Pseudotumor Cerebri (PEDHD-22.1)

HDP.PC.0022.1.A

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- Papilledema/Pseudotumor cerebri indications in pediatric individuals are identical to those for adult individuals. See **Papilledema/Pseudotumor Cerebri (HD-17.1)** in the Head Imaging Guidelines.

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Cranial Neuropathies (PEDHD-23)

Guideline Page

Cranial Neuropathies (PEDHD-23.1).....160

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Cranial Neuropathies (PEDHD-23.1)

HDP.CN.0023.1.A
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- See **Cranial Neuropathies (HD-31.1)** in the Head Imaging Guidelines.

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Pediatric Sleep Disorders (PEDHD-24)

Guideline Page

Pediatric Sleep Disorders (PEDHD-24.1).....162
References (PEDHD-24)..... 163

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Pediatric Sleep Disorders (PEDHD-24.1)

HDP.SD.0024.1.A
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Criteria

- See **Pediatric Sleep Guidelines (SL-3)** in the Sleep Apnea and Treatment Clinical Guidelines.
- For over 18 years of age OR regarding oral appliance OR hypersomnolence, see **Sleep-Related Imaging Guidelines (HD-37)** in the Head Imaging Guidelines.
- For Obstructive Sleep Apnea:
  - Imaging prior to tonsillectomy (with or without adenoidectomy) for obstructive sleep apnea is considered not medically necessary.
  - Initially, endoscopic examination of the upper airway should be performed.
    - CT Maxillofacial without contrast (CPT® 70486) is considered medically necessary for evaluation of obstructive anatomy if operative intervention, other than a tonsillectomy (with or without adenoidectomy), is being considered.
- For suspected central sleep apnea, the following is considered medically necessary:
  - MRI Brain without contrast (CPT® 70551) OR
  - MRI Brain without and with contrast (CPT® 70553)
- Advanced imaging is NOT considered medically necessary for the following:
  - Confusional arousals
  - Sleep terrors
  - Nightmare disorder
  - Sleepwalking (somnambulism)
  - Bed wetting (enuresis)
  - Insomnia
  - Narcolepsy (without or with cataplexy)
  - Restless leg syndrome/periodic limb movement disorder
- For suspected sleep-related seizure imaging, see **Epilepsy and Other Seizure Disorders (PEDHD-6)**.

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Temporomandibular Joint (TMJ)/Dental/ Maxillofacial Imaging in Children (PEDHD-25)

Guideline Page

Temporomandibular Joint Imaging (PEDHD-25.1)..... 165
Dental/Periodontal/Maxillofacial Imaging (PEDHD-25.2).....166
References (PEDHD-25)..... 167

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Temporomandibular Joint Imaging (PEDHD-25.1)

HDP.TJ.0025.1.A
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Criteria

- Temporomandibular Joint (TMJ) imaging indications in pediatric individuals are very similar to those for adult individuals. See **Temporomandibular Joint Disease (TMJ) (HD-30.1)** in the Head Imaging Guidelines.
- Pediatric-specific imaging considerations include the following:
  - There is a paucity of clinical symptoms and poor sensitivity of conventional x-rays in diagnosing TMJ arthritis in pediatric individuals with arthritis.
- MRI TMJ (CPT® 70336) is considered medically necessary annually for detecting silent TMJ arthritis in children with juvenile idiopathic arthritis (JIA) as requested by a rheumatologist and/or oral/maxillofacial surgeon (OMS) and/or any provider in consultation with a rheumatologist or OMS.
- Repeat imaging with MRI TMJ (CPT® 70336) in individuals with JIA is considered medically necessary for any of the following:
  - Change in signs or symptoms suggesting progression of disease
  - To monitor the effects of treatment
- Bone Scintigraphy/Bone Scan 3 Phase Study (CPT® 78315) in individuals over 12 years of age is considered medically necessary in anticipation or consideration of surgery.
- Unilateral condylar hyperplasia is manifested by slow growth in areas of the mandible causing facial asymmetry. It is usually a self-limiting condition seen predominantly in 12-30 year-olds.

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Dental/Periodontal/Maxillofacial Imaging (PEDHD-25.2)

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- See **Dental/Periodontal/Maxillofacial Imaging (HD 30.2)** in the Head Imaging Guidelines.

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Movement Disorders including Tourette Syndrome (PEDHD-26)

Guideline Page

Tourette Syndrome (PEDHD-26.1)..... 169
Movement Disorders (PEDHD-26.2)..... 170
References (PEDHD-26)..... 172

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Tourette Syndrome (PEDHD-26.1)

HDP.MD.0026.1.A
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Criteria

- The diagnosis of Tourette syndrome is made clinically and advanced neuroimaging is not considered medically necessary for either diagnosis or management.

Background and Supporting Information

- Tourette syndrome (TS) is a neurological disorder characterized by repetitive, stereotyped, involuntary movements and vocalizations called tics. The first symptoms of TS are almost always noticed in childhood. Some of the more common tics include eye blinking and other vision irregularities, facial grimacing, shoulder shrugging, and head or shoulder jerking. Perhaps the most dramatic and disabling tics are those that result in self-harm such as punching oneself in the face, or vocal tics including coprolalia (uttering swear words) or echolalia (repeating the words or phrases of others). Many with TS experience additional neurobehavioral problems including inattention, hyperactivity and impulsivity, and obsessive-compulsive symptoms such as intrusive thoughts/worries and repetitive behaviors(National Institute of Neurological Disorders and Stroke, 2026).

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Movement Disorders (PEDHD-26.2)

HDP.MD.0026.2.A
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Criteria

- MRI Brain without contrast (CPT® 70551), **OR** MRI Brain without and with contrast (CPT® 70553) is considered medically necessary in the following clinical scenarios:
  - Atypical clinical features for example, movements that persist in sleep, onset outside of typical age at onset (4-6 years for tics), rapid progression, incomplete or uncertain medication responsiveness, clinical diagnostic uncertainty, limbic encephalitis
  - Dystonia, intermittent involuntary muscle contractions
  - Chorea, continual irregular movements
  - Ballism, involuntary high amplitude movements
  - Athetosis, slow writhing continuous movements
  - Myoclonus, involuntary muscle jerks (not sleep myoclonus)
- MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is considered medically necessary only after a complete medical workup including labs, acute infection, and other comorbid psychiatric disorders (examples, such as obsessive compulsive disorder (OCD), attention deficit hyperactivity disorder (ADHD), and autism spectrum disorder (ASD) have been investigated for concerns of:
  - PANS (pediatric acute-onset neuropsychiatric syndrome) **AND/OR**
  - PANDAS (pediatric autoimmune neuropsychiatric disorder associated with streptococcal infection)
- See **Movement Disorders (HD-15.1)** in the Head Imaging Guidelines for the following:
  - Suspected Huntington's disease
  - Evaluation for surgical treatment of essential tremor or Parkinson’s disease, including deep brain stimulator (DBS) placement

Background and Supporting Information

- Movement disorders are hyperkinetic and hypokinetic movements that are involuntary. The majority are diagnosed based on a clinical diagnosis and do not require imaging.
- Typically, benign movement disorders include:
  - Stereotypies, repetitive rhythmic movements
  - Tics that are vocal or motor with typical onset and course

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  - Tourette syndrome
  - Essential tremor or tremors of anxiety or weakness
  - Restless leg syndrome
- Routine brain imaging is not routinely recommended for OCD, ADHD, or ASD.
- There is little evidence to support the use of MRA/CTA and PET in the evaluation of movement disorders.

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Tuberous Sclerosis (PEDHD-27)

Guideline Page

Tuberous Sclerosis (PEDHD-27.1).....174

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Tuberous Sclerosis (PEDHD-27.1)

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- See **Tuberous Sclerosis Complex (TSC) (PEDONC-2.9)** in the Pediatric and Special Populations Oncology Imaging Guidelines.

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Von Hippel-Lindau Syndrome (VHL) (PEDHD-28)

Guideline Page

Von Hippel-Lindau Syndrome (VHL) (PEDHD-28.1)..... 176

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Von Hippel-Lindau Syndrome (VHL) (PEDHD-28.1)

HDP.VL.0028.1.A

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- See **Von Hippel-Lindau Syndrome (VHL) (PEDONC-2.10)** in the Pediatric and Special Populations Oncology Imaging Guidelines.

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CNS Infection (PEDHD-29)

Guideline Page

CNS Infection (PEDHD-29.1)..... 178
References (PEDHD-29)..... 179

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CNS Infection (PEDHD-29.1)

HDP.CI.0029.1.A
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Criteria

- CNS infection imaging indications in pediatric individuals are similar to those for adult individuals. See **CNS and Head Infection (HD-14.1)** in the Head Imaging Guidelines.
- For COVID-19 infection, see **Neuro-COVID-19 and Sars-CoV-2 Vaccines (HD 14.2)** in the Head Imaging Guidelines.
- For Multisystem Inflammatory Syndrome in Children (MIS-C), see **COVID-19 and Multisystem Inflammatory Syndrome in Children (MIS-C) (PEDHD-12.7)**.
- For autoimmune/paraneoplastic encephalitis, see **Autoimmune/Paraneoplastic Encephalitis & Neuroinflammatory Disorders (HD-14.3)** in the Head Imaging Guidelines.
- For pediatric-specific imaging considerations, including suspected congenital brain infection and neonatal meningitis, the following is considered medically necessary:
  - Ultrasound Head (CPT© 76506) **AND/OR**
  - CT Head without contrast (CPT® 70450) **OR** CT Head without and with contrast (CPT® 70470)

    AND/OR
  - MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551)
- Newborn infants with microcephaly should be evaluated as discussed in **Macrocephaly, Microcephaly, and Hydrocephalus (PEDHD-7).**

Background and Supporting Information

- Neonatal meningitis most often is caused by bacterial pathogens and usually occurs as a complication of sepsis in the first week of life. In older infants and children, meningeal inoculation occurs secondary to hematogenous spread or penetrating trauma.
- The common causes of prenatal infections of the central nervous system are cytomegalovirus, *Toxoplasma gondii*, herpes simplex type 2 virus, and most recently, zika virus. The findings suggesting prenatal brain infection include microcephaly, microphthalmia, chorioretinitis, cataracts, hypotonia, and seizures.

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Scalp and Skull Lesions (PEDHD-30)

Guideline Page

Scalp and Skull Lesions (PEDHD-30.1).....181
References (PEDHD-30)..... 182

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Scalp and Skull Lesions (PEDHD-30.1)

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Criteria

- Scalp and skull lesion imaging indications (including Pott Puffy Tumor) in pediatric individuals are identical to those for adult individuals with the exception of neonates. See **Scalp and Skull Lesions (HD-20.1)** in the Head Imaging Guidelines.
- For neonates with palpable scalp and skull lesions, the following is considered medically necessary:
  - Ultrasound Head (CPT® 76506) **AND/OR**
  - MRI Brain without and with contrast (CPT® 70553) **AND/OR**
  - CT Head without and with contrast (CPT® 70470)

Background and Supporting Information

- In neonates and young infants, scalp masses include the following:
  - Congenital lesions (cephalocele, dermoid cyst, epidermoid cyst)
  - Vascular lesions (hemangioma, sinus pericranii)
  - Extracranial hemorrhage related to birth trauma (caput succedaneum, cephalohematoma, subgaleal hematoma)
  - After the first year of life, malignant tumors, such as Langerhans cell histiocytosis, as well as metastases from neuroblastoma and rhabdomyosarcoma are additional causes of a scalp mass.

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v1.0.2027

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Eye Disorders (PEDHD-31)

Guideline Page

Eye Disorders (PEDHD-31.1).....184
References (PEDHD-31)..... 185

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Eye Disorders (PEDHD-31.1)

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Criteria

- Eye disorder imaging indications in pediatric individuals are close to identical to those for adult individuals. See **Eye Disorders and Visual Loss (HD-32.1)** in the Head Imaging Guidelines.

Indication	Medically Necessary Imaging Study
◦ Evaluation for congenital disorders or disorders that begin early in life, such as, but not limited to the following: ▪ Optic nerve hypoplasia ▪ Septo-optic dysplasia ▪ Infantile nystagmus syndrome	◦ MRI Orbits/Face/Neck without contrast (CPT® 70540) **OR** ◦ MRI Orbits/Face/Neck without and with contrast (CPT® 70543) **OR** ◦ CT Orbits/Temporal Bone with contrast (CPT® 70481) **OR** ◦ CT Orbits/Temporal Bone without contrast (CPT® 70480) **AND/OR** ◦ MRI Brain without contrast (CPT® 70551) **OR** ◦ MRI Brain without and with contrast (CPT® 70553)

- Repeat imaging is considered medically necessary if requested by a neurologist, ophthalmologist, neuro-ophthalmologist, or neurosurgeon, or in consultation with one of these providers.
- For traumatic retinal hemorrhages as seen in suspected shaken baby syndrome, see **Head Trauma (PEDHD-4.1)**.
- For suspected and/or confirmed neuroblastoma, see **Neuroblastoma (PEDONC-6)**.
- For orbital cellulitis, see **Eye Disorders and Visual Loss (HD-32.1)** and/or **Imaging in Sinusitis (PEDHD-5.2)**.

Background and Supporting Information

- Neuroblastoma may be suspected in the setting of disorders, such as, but not limited to, Opsoclonus-Myoclonus syndrome, Horner's syndrome, and/or choroidal metastases.

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