UNITEDHEALTHCARE® COMMUNITY PLAN:
RADIOLOGY IMAGING COVERAGE DETERMINATION GUIDELINE

Pediatric Head Imaging Guidelines (For Ohio Only)

V2.0.2026

Guideline Number: CSRAD018OH.F

Effective Date: September 1, 2026

Application (for Ohio Only)

This Medical Policy only applies to the state of Ohio. Any requests for services that are stated as unproven or services for which there is a coverage or quantity limit will be evaluated for medical necessity using Ohio Administrative Code 5160-1-01.

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Guideline Development (Preface-1)

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- These evidence-based, proprietary clinical guidelines evaluate a range of advanced imaging and procedures, including NM, US, CT, MRI, PET, Radiation Oncology, Sleep Studies, as well as Cardiac, Musculoskeletal and Spine interventions.
- UnitedHealthcare reserves the right to change and update the guidelines. The guidelines undergo a formal review annually. These clinical guidelines are based on current evidence supported by major national and international association and society guidelines and criteria, peer-reviewed literature, and major treatises as well as input from health plans, and practicing academic and community-based physicians.
- These guidelines are not intended to supersede or replace sound medical judgment, but instead, should facilitate the identification of the most appropriate imaging or other designated procedure given the individual's clinical condition. These guidelines are written to cover medical conditions as experienced by the majority of individuals. However, these guidelines may not be applicable in certain clinical circumstances, and physician judgment can override the guidelines.
- These guidelines provide evidence-based, clinical benefits with a focus on health care quality and patient safety.
- Clinical decisions, including treatment decisions, are the responsibility of the individual and his/her provider. Clinicians are expected to use independent medical judgment, which takes into account the clinical circumstances to determine individual management decisions.

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Benefits, Coverage Policies, and Eligibility Issues (Preface-2)

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Investigational and Experimental Studies

- Certain studies, treatments, procedures, or devices may be considered experimental, investigational, or unproven for any condition, illness, disease, injury being treated if one of the following is present:
  - if there is a paucity of supporting evidence;
  - if the evidence has not matured to exhibit improved health parameters;
  - if clinical utility has not been demonstrated in any condition; OR
  - if the study, treatment, procedure, or device lacks a collective opinion of support
- Supporting evidence includes standards that are based on credible scientific evidence published in peer-reviewed medical literature (such as well conducted randomized clinical trials or cohort studies with a sample size of sufficient statistical power) generally recognized by the relevant medical community. Collective opinion of support includes physician specialty society recommendations and the views of physicians practicing in relevant clinical areas when physician specialty society recommendations are not available.

Clinical and Research Trials

- Similar to investigational and experimental studies, clinical trial imaging requests are reviewed to determine whether they meet these evidence-based clinical guidelines.
- Imaging studies which are inconsistent with established clinical standards, or are requested for data collection and not used in direct clinical management are not medically necessary.

CPT Codes

- The inclusion of any CPT code in the clinical guidelines does not imply that the code is under management or requires prior authorization.

References (Preface-2)

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1. 2.42 USC 300gg-8: Coverage for individuals participating in approved clinical trials. House.gov. Published 2024.

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Clinical Information (Preface-3)

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Clinical Documentation and Age Considerations

- These clinical guidelines use an evidence-based approach to determine the most appropriate procedure for each individual, at the most appropriate time in the diagnostic and treatment cycle. These clinical guidelines are framed by:
  - clinical presentation of the individual, rather than the studies requested
  - adequate clinical information that must be submitted to UnitedHealthcare in order to establish medical necessity for advanced imaging or other designated procedures including, but not limited to, the following:
    - Pertinent clinical evaluation since the onset or change in symptoms including a detailed history, physical examination, appropriate laboratory studies, and appropriate prior imaging studies.
      - Condition-specific guideline sections may describe additional clinical information which is required for a pertinent clinical evaluation.
      - The Spine and Musculoskeletal guidelines require x-ray studies from when the current episode of symptoms has started or changed.
      - Advanced imaging or other designated procedures should not be ordered prior to clinical evaluation of an individual by the physician treating the individual. This may include referral to a consultant specialist who will make further treatment decisions.
      - Other meaningful technological contact (telehealth visit, telephone or video call, electronic mail or messaging) since the onset or change in symptoms by an established individual can serve as a pertinent clinical evaluation.
        - Some conditions may require a face-to-face evaluation as discussed in the applicable condition-specific guideline sections.
    - A recent clinical evaluation may be unnecessary if the individual is undergoing a guideline-supported, scheduled follow-up imaging or other designated procedural evaluation. Exceptions due to routine surveillance indications are addressed in the applicable condition-specific guideline sections.
  - The evidence-based approach to determine the most appropriate procedure for each individual requires submission of medical records pertinent to the requested imaging or other designated procedures.
- Many conditions affecting 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 18 years old or younger should be imaged according to the Pediatric Imaging Guidelines if discussed in the condition-specific guideline sections. Any conditions not specifically discussed in the Pediatric Imaging Guidelines should be imaged according to the General Imaging Guidelines. Individuals who are >18 years old should be imaged according to the General Imaging Guidelines, except where directed otherwise by a specific guideline section.

General Imaging Information

- "Standard" or "conventional" imaging is most often performed in the initial and subsequent evaluations of malignancy. Standard or conventional imaging includes plain film, CT, MRI, or US.
  - Often, further advanced imaging is needed when initial imaging, such as ultrasound, CT, or MRI does not answer the clinical question. Uncertain, indeterminate, inconclusive, or equivocal may describe these situations.
- Appropriate use of contrast is a very important component of evidence-based advanced imaging use.
  - The appropriate levels of contrast for an examination (i.e., without contrast, with contrast, without and with contrast) is determined by the evidence-based guidance reflected in the condition-specific guideline sections.
  - If, during the performance of a non-contrast imaging study, there is the unexpected need to use contrast in order to evaluate a possible abnormality, then that is appropriate.

Ultrasound

- Diagnostic ultrasound uses high-frequency sound waves to evaluate soft tissue structures and vascular structures utilizing grey scale and Doppler techniques.
- Ultrasound allows for dynamic real-time imaging at the bedside.
  - Ultrasound is limited in areas where there is dense bone or other calcification.
  - Ultrasound also has a relatively limited imaging window so may be of limited value in evaluating very large abnormalities.
  - In general, ultrasound is highly operator-dependent, and proper training and experience are required to perform consistent, high-quality evaluations.
- Indications for ultrasound may include, but are not limited to, the following:
  - Obstetric and gynecologic imaging
  - Soft tissue and visceral imaging of the chest, abdomen, pelvis, and extremities
  - Brain and spine imaging when not obscured by dense bony structures
  - Vascular imaging when not obscured by dense bony structures
  - Procedural guidance when not obscured by dense bony structures

  - Initial evaluation of ill-defined soft tissue masses or fullness and differentiating adenopathy from mass or cyst. Prior to advanced imaging, ultrasound can be very beneficial in selecting the proper modality, body area, image sequences, and contrast level that will provide the most definitive information for the individual.
- More specific guidance for ultrasound usage, including exceptions to this general guidance, can be found throughout the condition-specific guidelines.

Computed Tomography (CT)

- The AMA CPT® manual does not describe nor assign any minimum or maximum number of sequences for any CT study. CT imaging protocols are often influenced by the individual's clinical situation and additional sequences are not uncommon. There are numerous CT protocols that may be performed to evaluate specific clinical questions, and this technology is constantly undergoing development.
- CT utilizes ionizing radiation to create cross-sectional and volumetric images of the body.
  - Advantages over ultrasound include a much larger field of view and faster completion time in general. Disadvantages compared to ultrasound include lack of portability and exposure to ionizing radiation.
  - Advantages over MRI include faster imaging and a more spacious scanner area limiting claustrophobia. Disadvantages compared to MRI include decreased soft tissue definition, especially with non-contrast imaging, and exposure to ionizing radiation.
- CT can be performed without, with, or without and with intravenous (IV) contrast depending on the clinical indication and body area.
  - In general, non-contrast imaging is appropriate for evaluating structures with significant tissue density differences such as lung parenchyma and bony structures, or when there is a contraindication to contrast.
  - In general, CT with contrast is the most common level of contrast and can be used when there is need for improved vascular or soft tissue resolution, including better characterization of known or suspected malignancy, as well as infectious and inflammatory conditions.
  - CT without and with contrast has a limited role as the risks of doubling the ionizing radiation exposure rarely outweigh the benefits of multiphasic imaging, though there are some exceptions which include, but are not limited to, the following:
    - Characterization of a mass
    - Characterization of arterial and venous anatomy
    - CT with contrast may be used to better characterize findings on a very recent (within two weeks) inconclusive non-contrast CT where the guidelines would support CT without and with contrast.
  - More specific guidance for CT contrast usage, including exceptions to this general guidance, can be found throughout the condition-specific guidelines.

- Shellfish allergy:
  - It is commonly assumed that an allergy to shellfish indicates iodine allergy, and that this implies an allergy to iodinated contrast media used with CT. However, this is NOT true. Shellfish allergy is due to tropomyosins. Iodine plays no role in these allergic reactions. Allergies to shellfish do not increase the risk of reaction to iodinated contrast media any more than that of other allergens.
- Enteric contrast (oral or rectal) is sometimes used in abdominal imaging. There is no specific CPT® code which refers to enteric contrast.
- The appropriate contrast level and anatomic region in CT imaging is specific to the clinical indication, as listed in the condition-specific guideline sections.
- CT should not be used to replace MRI in an attempt to avoid sedation unless it is listed as a recommended study in the appropriate condition-specific guideline.
- There are significant potential adverse effects associated with the use of iodinated contrast media. These include hypersensitivity reactions, thyroid dysfunction, and contrast-induced nephropathy (CIN). Individuals with impaired renal function are at increased risk for CIN.
- Both contrast CT and MRI are considered to have the same risk profile with renal failure (GFR <30mL/min).
- The use of CT contrast should proceed with caution in pregnant and breastfeeding individuals. There is a theoretical risk of contrast toxicity to the fetal and infant thyroid. The procedure can be performed if the specific need for that contrast-enhanced procedure outweighs risk to the fetus. Breastfeeding individuals may reduce this risk by choosing to pump and discard breast milk for 12-24 hours after the contrast injection.
- CT without contrast is medically necessary if clinical criteria for CT with contrast are met AND the individual has/is:
  - elevated blood urea nitrogen (BUN) and/or creatinine
  - renal insufficiency
  - allergies to iodinated contrast
  - thyroid disease which could be treated with I-131
  - diabetes
  - very elderly
  - urgent or emergent settings due to availability
  - trauma
- CT is superior to other imaging modalities in certain conditions including, but not limited to, the following:
  - Screening following trauma
  - Imaging pulmonary disease
  - Imaging abdominal and pelvic viscera
  - Imaging of complex fractures

  - Evaluation of inconclusive findings on Ultrasound or MRI, or if there is a contraindication to MRI
- More specific guidance for CT usage, including exceptions to this general guidance, can be found throughout the condition-specific guidelines.

Magnetic Resonance Imaging (MRI)

- The AMA CPT® manual does not describe nor assign any minimum or maximum number of sequences for any MRI study. MRI protocols are often influenced by the individual's clinical situation and additional sequences are not uncommon. There are numerous MRI sequences that may be performed to evaluate specific clinical questions, and this technology is constantly undergoing development.
- Magnetic Resonance Imaging (MRI) utilizes the interaction between the intrinsic radiofrequency of certain molecules in the body (hydrogen in most cases) and a strong external magnetic field.
  - MRI is often superior for advanced imaging of soft tissues and can also define physiological processes in some instances (e.g., edema, loss of circulation [AVN], and increased vascularity [tumors]).
  - MRI does not use ionizing radiation and even non-contrast images have much higher soft tissue definition than CT or Ultrasound.
  - MRI typically takes much longer than either CT or Ultrasound, and for some individuals may require sedation. It is also much more sensitive to individual motion that can degrade image quality than either CT or Ultrasound.
- MRI Breast and MRI Chest are not interchangeable, as they focus detailed sequences on different adjacent body parts.
- MRI may be utilized either as the primary advanced imaging modality, or when further definition is needed based on CT or ultrasound imaging.
- Most orthopedic and dental implants are not magnetic. These include hip and knee replacements; plates, screws, and rods used to treat fractures; and cavity fillings. Yet, all of these metal implants can distort the MRI image if near the part of the body being scanned.
  - Other implants, however, may have contraindications to MRI. These include the following:
    - pacemakers
    - ICD or heart valves
    - metal implants in the brain
    - metal implants in the eyes or ears
    - infusion catheters and bullets or shrapnel
  - CT can therefore be an alternative study to MRI in these scenarios.
- The contrast level and anatomic region in MRI imaging is specific to the clinical indication, as listed in the specific guideline sections.

- MRI utilizing Xenon Xe 129 (CPT® C9791) for contrast is considered investigational and experimental at this time. MRI with or with and without contrast in these guidelines refers to MRI utilizing gadolinium for contrast.
- MRI is commonly performed without, and without and with contrast.
  - Non-contrast imaging offers excellent tissue definition.
  - Imaging without and with contrast is commonly used when needed to better characterize tissue perfusion and vascularization.
    - Most contrast is gadolinium based and causes T2 brightening of the vascular and extracellular spaces.
    - Some specialized gadolinium and non-gadolinium contrast agents are available, and are most commonly used for characterizing liver lesions.
  - MRI with contrast only is rarely appropriate and is usually used to better characterize findings on a recent inconclusive non-contrast MRI, commonly called a completion study.
  - MRI contrast is relatively contraindicated in pregnant individuals.
  - More specific guidance for MRI contrast usage, including exceptions to this general guidance, can be found throughout the condition-specific guidelines.
- MRI may be preferred in individuals with renal failure and in individuals allergic to intravenous CT contrast.
  - Both contrast CT and MRI are considered to have the same risk profile with renal failure (GFR <30mL/min).
  - Gadolinium can cause Nephrogenic Systemic Fibrosis (NSF). The greater the exposure to gadolinium in individuals with a low GFR (especially if on dialysis), the greater the chance of individuals developing NSF.
  - Multiple studies have demonstrated potential for gadolinium deposition following the use of gadolinium-based contrast agents (GBCAs) for MRI studies. The U.S. Food and Drug Administration (FDA) has noted that there is currently no evidence to suggest that gadolinium retention in the brain is harmful and restricting 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.
- A CT is medically necessary in place of an MRI when clinical criteria are met for MRI AND there is a contraindication to having an MRI (e.g., pacemaker, ICD, insulin pump, neurostimulator, etc.).
  - When replacing MRI with CT, contrast level matching should occur as follows:
    - MRI without contrast → CT without contrast
    - MRI without and with contrast → CT with contrast or CT without and with contrast
- The following situations may impact the appropriateness for MRI and/or MR contrast:

  - Caution should be taken in the use of gadolinium in individuals with renal failure.
  - The use of gadolinium contrast agents is relatively contraindicated during pregnancy unless the specific need for that procedure outweighs risk to the fetus.
  - MRI can be performed for non-ferromagnetic body metals (i.e., titanium), although some imaging facilities will consider it contraindicated if recent surgery, regardless of the metal type.
- MRI should not be used as a replacement for CT for the sole reason of avoidance of ionizing radiation when MRI is not medically necessary in the condition-based guidelines, since it does not solve the problem of overutilization.
- MRI is superior to other imaging modalities in certain conditions including, but not limited to, the following:
  - Imaging the brain and spinal cord
  - Characterizing visceral and musculoskeletal soft tissue masses
  - Evaluating musculoskeletal soft tissues including ligaments and tendons
  - Evaluating inconclusive findings on ultrasound or CT
  - Individuals who are pregnant or have high radiation sensitivity
  - Suspicion, diagnosis, or surveillance of infections
- More specific guidance for MRI usage, including exceptions to this general guidance, can be found throughout the condition-specific guidelines.

Positron Emission Tomography (PET)

- PET is a nuclear medicine study that uses a positron emitting radiotracer to create cross-sectional and volumetric images based on tissue metabolism.
- Conventional imaging (frequently CT, sometimes MRI or bone scan) of the affected area(s) drives much of initial and restaging and surveillance imaging for malignancy and other chronic conditions. PET is not medically necessary for surveillance imaging unless specifically stated in the condition-specific guideline sections.
- PET/MRI is generally not medically necessary, see **PET-MRI (Preface-5.3)**.
- PET is rarely performed as a single modality, but is typically performed as a combined PET/CT.
  - The unbundling of PET/CT into separate PET and diagnostic CT CPT® codes is not medically necessary, because PET/CT is done as a single study.
- PET/CT lacks the tissue definition of CT or MRI but is fairly specific for metabolic activity based on the radiotracer used.
- Indications for PET/CT may include the following:
  - Oncologic Imaging for evaluation of tumor metabolic activity
  - Cardiac Imaging for evaluation of myocardial metabolic activity
  - Brain Imaging for evaluation of metabolic activity for procedural planning
- More specific guidance for PET usage, including exceptions to this general guidance, can be found throughout the condition-specific guidelines.

Overutilization of Advanced Imaging

- A number of reports describe overutilization in many areas of advanced imaging and other procedures, which may include the following:
  - High-level testing without consideration of less invasive, lower cost options which may adequately address the clinical question at hand
  - Excessive radiation and costs with unnecessary testing
  - Defensive medical practice
  - CT without and with contrast (so called "double contrast studies") requests, which have few current indications
  - MRI requested in place of CT to avoid radiation without considering the primary indication for imaging
  - Adult CT settings and protocols used for smaller people and children
  - Unnecessary imaging procedures when the same or similar studies have already been conducted
- A review of the imaging or other relevant procedural histories of all individuals presenting for studies has been recognized as one of the more important processes that can be significantly improved. By recognizing that a duplicate or questionably medically necessary imaging study has been ordered for individuals, it may be possible to avoid exposing them to unnecessary risks. To avoid these unnecessary risks, the precautions below should be considered:
  - The results of initial diagnostic tests or radiologic studies to narrow the differential diagnosis should be obtained prior to performing further tests or radiologic studies.
  - The clinical history should include a potential indication such as a known or suspected abnormality involving the body part for which the imaging study is being requested. These potential indications are addressed in greater detail within the applicable guidelines.
  - The results of the requested imaging procedures should be expected to have an impact on individual management or treatment decisions.
  - Repeat imaging studies are not generally necessary unless there is evidence of disease progression, recurrence of disease, and/or the repeat imaging will affect an individual’s clinical management.
- Pre-operative imaging/pre-surgical planning imaging/pre-procedure imaging is not medically necessary if the surgery/procedure is not medically necessary. Once the procedure has been approved or if the procedure does not require prior authorization, the appropriate pre-procedural imaging may be approved.

Health Equity Considerations

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.

References (Preface-3)

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1. American College of Radiology Committee on Drugs and Contrast Media. ACR Manual on Contrast Media. Published 2025.
2. Andreucci M, Solomon R, Tasanarong A. Side Effects of Radiographic Contrast Media: Pathogenesis, Risk Factors, and Prevention. *BioMed Res Int*. 2014;2014:1-20. doi:10.1155/2014/741018
3. McDonald RJ, McDonald JS, Kallmes DF, et al. Gadolinium Deposition in Human Brain Tissues after Contrast-enhanced MR Imaging in Adult Patients without Intracranial Abnormalities. *Radiology*. 2017;285(2):546-554. doi:10.1148/radiol.2017161595
4. Kanda T, Ishii K, Kawaguchi H, Kitajima K, Takenaka D. High Signal Intensity in the Dentate Nucleus and Globus Pallidus on Unenhanced T1-weighted MR Images: Relationship with Increasing Cumulative Dose of a Gadolinium-based Contrast Material. *Radiology*. 2014;270(3):834-841. doi:10.1148/radiol.13131669
5. Olchowy C, Cebulski K, Łasecki M, et al. The presence of the gadolinium-based contrast agent depositions in the brain and symptoms of gadolinium neurotoxicity - A systematic review. Mohapatra S, ed. *PLOS ONE*. 2017;12(2):e0171704. doi:10.1371/journal.pone.0171704
6. Ryu YJ, Choi YH, Cheon JE, et al. Pediatric Brain: Gadolinium Deposition in Dentate Nucleus and Globus Pallidus on Unenhanced T1-Weighted Images Is Dependent on the Type of Contrast Agent. *Invest Radiol.* 2018;53(4):246-255. doi:10.1097/RLI.0000000000000436
7. Splendiani A, Perri M, Marsecano C, et al. Effects of serial macrocyclic-based contrast materials gadoterate meglumine and gadobutrol administrations on gadolinium-related dentate nuclei signal increases in unenhanced T1-weighted brain: a retrospective study in 158 multiple sclerosis (MS) patients. *Radiol Med*. 2018;123(2):125-134. doi:10.1007/s11547-017-0816-9
8. U.S. Food and Drug Administration. FDA Drug Safety Communication: FDA warns that gadolinium-based contrast agents (GBCAs) are retained in the body; requires new class warnings. Published May 16, 2018.
9. Amis ES Jr, Butler PF; American College of Radiology. ACR white paper on radiation dose in medicine: three years later. *J Am Coll Radiol*. 2010;7(11):865-870. doi:10.1016/j.jacr.2010.04.006
10. Powell AC, Long JW, Kren EM, Gupta AK, Levin DC. Evaluation of a Program for Improving Advanced Imaging Interpretation. *J Patient Saf*. 2019;15(1):69-75. doi:10.1097/PTS.000000000000034.5
11. U.S. Food and Drug Administration. White Paper: Initiative to Reduce Unnecessary Radiation Exposure from Medical Imaging. FDA. Published June 14, 2019
12. Fotenos A. Update on FDA Approach to Safety Issue of Gadolinium Retention after Administration of Gadolinium-Based Contrast Agents. U.S. Food and Drug Administration. Published September 20, 2018
13. Blumfield E, Swenson DW, Iyer RS, Stanescu AL. Gadolinium-based contrast agents — review of recent literature on magnetic resonance imaging signal intensity changes and tissue deposits, with emphasis on pediatric patients. *Pediatr Radiol*. 2019;49(4):448-457. doi:10.1007/s00247-018-4304-8
14. American College of Radiology. ACR – SPR – SRU Practice Parameter for the Performance and Interpretation of Diagnostic Ultrasound Examinations. Revised 2023. (Resolution 32).
15. American College of Radiology. ACR – ACNM – SNMMI – SPR Practice Parameter for Performing FDG-PET/CT in Oncology. Amended 2023. (Resolution 2c, 2d).
16. American College of Radiology. ACR Practice Parameter for Performing and Interpreting Magnetic Resonance Imaging (MRI). Amended 2023. (Resolution 2c).
17. American College of Radiology. ACR – SPR Practice Parameter for Performing and Interpreting Diagnostic Computed Tomography (CT). Amended 2023. (Resolution 2c, 2d).
18. Lohrke J, Frenzel T, Endrikat J, et al. 25 Years of Contrast-Enhanced MRI: Developments, Current Challenges and Future Perspectives. *Adv Ther*. 2016;33(1):1-28. doi:10.1007/s12325-015-0275-4
19. Implementation Guide: Medicaid State Plan Eligibility Eligibility Groups – Mandatory Coverage Infants and Children under Age 19. Centers for Medicare and Medicaid Services.
20. History and Physicals - Understanding the Requirements: What are the key elements organizations need to understand regarding History and Physical Requirements?. The Joint Commission. Reviewed July 12, 2022.

21. Mammarappallil JG, Rankine L, Wild JM, Driehuys B. New Developments in Imaging Idiopathic Pulmonary Fibrosis With Hyperpolarized Xenon Magnetic Resonance Imaging. *J Thorac Imaging*. 2019;34(2):136-150. doi:10.1097/rti.0000000000000392
22. Wang JM, Robertson SH, Wang Z, et al. Using hyperpolarized 129Xe MRI to quantify regional gas transfer in idiopathic pulmonary fibrosis. *Thorax*. 2017;73(1):21-28. doi:10.1136/thoraxjnl-2017-210070
23. Committee Opinion No. 723: Guidelines for Diagnostic Imaging During Pregnancy and Lactation [published correction appears in Obstet Gynecol. 2018 Sep;132(3):786. doi: 10.1097/AOG.0000000000002858.]. *Obstet Gynecol*. 2017;130(4):e210-e216. doi:10.1097/AOG.0000000000002355

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Coding Issues (Preface-4)

Guideline

3D Rendering (Preface-4.1)

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CPT® 76376 and CPT® 76377

- Both codes require concurrent supervision of the image post-processing 3D manipulation of the volumetric data set and image rendering.
  - Concurrent supervision is defined as active physician participation in and monitoring of the reconstruction process including design of the anatomic region that is to be reconstructed; determination of the tissue types and actual structures to be displayed (e.g., bone, organs, and vessels); determination of the images or cine loops that are to be archived; and, monitoring and adjustment of the 3D work product. The American College of Radiology (ACR) recommended that it is best to document the physician's supervision or participation in the 3D reconstruction of images.
- These two codes differ in the need for and use of an independent workstation for post-processing.
  - CPT® 76376 reports procedures not requiring image post-processing on an independent workstation.
  - CPT® 76377 reports procedures that require image post-processing on an independent workstation.
- These 3D rendering codes should not be used for 2D reformatting.
- Two-dimensional reconstruction (e.g., reformatting an axial scan into the coronal plane) is now included in all cross-sectional imaging base codes and is not separately reimbursable.
- The codes used to report 3D rendering for ultrasound and echocardiography are also used to report the 3D post processing work on CT, MRI, and other tomographic modalities.
- Providers may be required to obtain prior authorization on these 3D codes even if prior authorization is not required for the echocardiography and/or ultrasound procedure codes. It may appear that UnitedHealthcare pre-authorizes echocardiography and/or ultrasound when, in fact, it may only be the 3D code that needs the prior authorization.
- CPT® codes for 3D rendering should not be billed in conjunction with computer-aided detection (CAD), MRA, CTA, nuclear medicine SPECT studies, PET, PET/CT, stereotactic localization (CPT® 77011 or CPT® 70486 if used), Mammogram, MRI Breast, US Breast, CT Colonography (virtual colonoscopy), Cardiac MRI, Cardiac CT, or Coronary CTA studies.

- 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) can be considered in the following clinical scenarios:
  - Bony conditions:
    - Evaluation of congenital skull abnormalities in newborns, infants, and toddlers (usually for pre-operative planning)
    - Complex fractures (comminuted or displaced)/dislocations of any joint (for pre-operative planning when conventional imaging is insufficient)
    - Spine fractures, pelvic/acetabulum fractures, intra-articular fractures (for pre-operative planning when conventional imaging is insufficient)
    - Pre-operative planning for other complex surgical cases
    - Complex facial fractures
  - Pre-operative planning for other complex surgical cases
  - Cerebral angiography
  - Pelvis conditions:
    - Uterine intra-cavitary lesion when initial US is equivocal: See **Abnormal Uterine Bleeding (AUB) (PV-2.1)** and **Leiomyoma/Uterine Fibroids (PV-12.1)** in the Pelvis Imaging Guidelines.
    - Hydrosalpinxes or peritoneal cysts when initial US is indeterminate: See **Complex Adnexal Masses (PV-5.3)** in the Pelvis Imaging Guidelines.
    - Lost IUD (inability to feel or see IUD string) with initial US: See **Intrauterine Device (PV-10.1)** in the Pelvis Imaging Guidelines.
    - Uterine anomalies with initial US: See **Uterine Anomalies (PV-14.1)** in the Pelvis Imaging Guidelines.
    - Infertility: See **Initial Infertility Evaluation, Female (PV-9.1)** in the Pelvis Imaging Guidelines.
  - Abdomen conditions:
    - CT Urogram: See **Hematuria and Hydronephrosis (AB-39)** in the Abdomen Imaging Guidelines.
    - MRCP: See **MR Cholangiopancreatography (MRCP) (AB-27)** in the Abdomen Imaging Guidelines.

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CT-, MR-, or Ultrasound-Guided Procedures (Preface-4.2)

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- CT-, MR-, and Ultrasound-guidance procedure codes contain all of the imaging necessary to guide a needle or catheter. It is inappropriate to routinely bill a diagnostic procedure code in conjunction with a guidance procedure code.
- Imaging studies performed as part of a CT-, MR-, or Ultrasound-guided procedure should be reported using the CPT® codes in the following table:

TABLE: Imaging Guidance Procedure Codes

CPT®	Description
19085	Biopsy, breast, with placement of breast localization device(s), when performed, and imaging of the biopsy specimen, when performed, percutaneous; first lesion, including MR guidance
19086	Biopsy, breast, with placement of breast localization device(s), when performed, and imaging of the biopsy specimen, when performed, percutaneous; each additional lesion, including MR guidance
75989	Imaging guidance for percutaneous drainage with placement of catheter (all modalities)
76942	Ultrasonic guidance for needle placement
77011	CT guidance for stereotactic localization
77012	CT guidance for needle placement
77013	CT guidance for, and monitoring of parenchymal tissue ablation
77021	MR guidance for needle placement
77022	MR guidance for, and monitoring of parenchymal tissue ablation

CPT®	Description
C8001	3D anatomical segmentation imaging for preoperative planning, data preparation and transmission, obtained from previous diagnostic CT or MR examination of the same anatomy

CPT® 19085 and CPT® 19086

- The proper way to bill an MRI-guided breast biopsy is CPT® 19085 (Biopsy, breast, with placement of breast localization device(s), when performed, and imaging of the biopsy specimen, when performed, percutaneous; first lesion, including MR guidance). Additional lesions should be billed using CPT® 19086.
  - **CPT® 77021** (MR guidance for needle placement) is not an appropriate code for a breast biopsy.

CPT® 75989

- This code is used to report imaging guidance for a percutaneous drainage procedure in which a catheter is left in place.
- This code can be used to report whether the drainage catheter is placed under fluoroscopy, Ultrasound-, CT-, or MR-guidance modality.

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 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.
  - 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.

CPT® 77012 (CT) and CPT® 77021 (MR)

- These codes are used to report imaging guidance for needle placement during biopsy, aspiration, and other percutaneous procedures.
- They represent the radiological supervision and interpretation of the procedure and are often billed in conjunction with surgical procedure codes.
  - For example, CPT® 77012 is reported when CT guidance is used to place the needle for a conventional arthrogram.
  - Only codes representing percutaneous surgical procedures should be billed with CPT® 77012 and CPT® 77021. It is inappropriate to use with surgical codes for open, excisional, or incisional procedures.
  - **CPT® 77021** (MR guidance for needle placement) is not an appropriate code for breast or prostate biopsy.
    - CPT® 19085 would be appropriate for the first breast biopsy site and CPT® 19086 would be appropriate for additional concurrent biopsies.

CPT® 77013 (CT) and CPT® 77022 (MR)

- These codes include the initial guidance to direct a needle electrode to the tumor(s), monitoring for needle electrode repositioning within the lesion, and as necessary for multiple ablations to coagulate the lesion and confirmation of satisfactory coagulative necrosis of the lesion(s) and comparison to pre-ablation images.
  - **NOTE:** CPT® 77013 should only be used for non-bone ablation procedures.
    - CPT® 20982 includes CT guidance for bone tumor ablations.
  - Only codes representing percutaneous surgical procedures should be billed with CPT® 77013 and CPT® 77022. It is inappropriate to use with surgical codes for open, excisional, or incisional procedures.
- CPT® 77012 and CPT® 77021 (as well as guidance codes CPT® 76942 [US], and CPT® 77002 - CPT® 77003 [fluoroscopy]) describe radiologic guidance by different modalities.
  - Only one unit of any of these codes should be reported per individual encounter (date of service). The unit of service is considered to be the individual encounter, not the number of lesions, aspirations, biopsies, injections, or localizations.

Unlisted Procedures/Therapy Treatment Planning (Preface-4.3)

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Unlisted Procedures

CPT ®	Description
76497	Unlisted CT procedure (e.g., diagnostic or interventional)
76498	Unlisted MR procedure (e.g., diagnostic or interventional)
78999	Unlisted procedure, diagnostic nuclear medicine

- For general information related to unlisted procedures, please refer to **Management of Unlisted Codes**.
- These unlisted codes should be reported whenever a diagnostic or interventional CT or MR study is performed in which an appropriate anatomic site-specific code is not available.
  - A Category III code that describes the procedure performed must be reported rather than an unlisted code if one is available.
- CPT® 76497 or CPT® 76498 (Unlisted CT or MRI procedure) is medically necessary in the following clinical scenarios:
  - Studies done for navigation and planning for neurosurgical procedures (i.e., Stealth or Brain Lab Imaging)
  - Custom joint arthroplasty planning (not as an alternative recommendation): See **Osteoarthritis (MS-12.1)** in the Musculoskeletal Imaging Guidelines.
  - Any procedure/surgical planning if thinner cuts or different positional acquisition (than those on the completed diagnostic study) are needed. These could include navigational bronchoscopy: See **Navigational Bronchoscopy and Biopsy (CH-1.7)** in the Chest Imaging Guidelines.

Therapy Treatment Planning

- Radiation Therapy Treatment Planning: See **Unlisted Procedure Codes in Oncology (ONC-1.5)** in the Oncology Imaging Guidelines.

CPT® 76380 Limited or Follow-up CT (Preface-4.5)

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- CPT® 76380 describes a limited or follow-up CT scan. The code is used to report any CT scan, for any given area of the body, in which the work of a full diagnostic code is not performed.
- Common examples include, but are not limited to, the following:
  - Limited sinus CT imaging protocol
  - Limited or follow-up slices through a known pulmonary nodule
  - Limited slices to assess a non-healing fracture (such as the clavicle)
- Limited CT (CPT® 76380) is not medically necessary for treatment planning purposes. See **Unlisted Procedure Codes in Oncology (ONC-1.5)** in the Oncology Imaging Guidelines.
- It is inappropriate to report CPT® 76380, in conjunction with other diagnostic CT codes, to cover 'extra slices' in certain imaging protocols.
  - There is no specific number of sequences or slices defined in any CT CPT® code definition.
  - The AMA, in *CPT® 2019*, does not describe nor assign any minimum or maximum number of sequences or slices for any CT study.
    - A few additional slices or sequences are not uncommon.
    - CT imaging protocols are often influenced by the individual's clinical situation. Sometimes the protocols require more time and sometimes less.

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SPECT/CT Imaging (Preface-4.6)

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- SPECT/CT involves SPECT (Single Photon Emission Computed Tomography) nuclear medicine imaging and CT for optimizing location, accuracy, and attenuation correction and combines functional and anatomic information.
  - Common studies using this modality include ^{123}I- or ^{131}I-Metaiodobenzylguanidine (MIBG) and octreotide scintigraphy for neuroendocrine tumors.
- Hybrid Nuclear/CT scan can be reported as CPT® 78830 (single area and single day), CPT® 78831 (2 or more days), or CPT® 78832 (2 areas with one day and 2-day study).
- CPT® 78072 became effective January 1, 2013 for SPECT/CT parathyroid nuclear imaging.

CPT® 76140 Interpretation of an Outside Study (Preface-4.7)

PRF.CD.0004.7.UOH

v2.0.2026

- It is inappropriate to use diagnostic imaging codes for interpretation of a previously performed exam that was completed at another facility.
  - If the outside exam is being used for comparison with a current exam, the diagnostic code for the current examination includes comparison to the prior study.
  - CPT® 76140 is the appropriate code to use for an exam which was completed elsewhere and a secondary interpretation of the images is requested.

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Quantitative MR Analysis (Preface-4.8)

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- Category III CPT® codes for quantitative analysis of multiparametric-MR (mp-MRI) data with and without an associated diagnostic MRI have been established. Quantitative mp-MRI uses software to analyze tissue physiology of visceral organs and other anatomic structures non-invasively.
- For criteria associated with these types of studies, please see the condition-specific guidelines.

HCPCS Codes (Preface-4.9)

PRF.CD.0004.9.UOH

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- Healthcare Common Procedure Coding System (HCPCS) codes are utilized by some hospitals in favor of the typical Level-III CPT® codes. These codes are typically 4 digits preceded by a C or S.
  - Many of these codes have similar code descriptions to Level-III CPT® codes (i.e., C8931 – MRA with dye, Spinal Canal; and, CPT® 72159 – MRA Spinal Canal).
  - If cases are submitted with HCPCS codes with similar code descriptions to the typical Level-III CPT® codes, those procedures should be managed in the same manner as the typical CPT® codes.
  - HCPCS code management is discussed further in the applicable guideline sections.
- Requests for many Healthcare Common Procedure Coding System (HCPCS) codes, including non-specific codes such as S8042 (Magnetic resonance imaging [MRI], low-field), should be redirected to a more appropriate and specific CPT® code. Exceptions are noted in the applicable guideline sections.

References (Preface-4)

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1. Intraoperative MRI. Brainlab.com. Published 2024.
2. Neves CA, Vaisbuch Y, Leuze C, et al. Application of holographic augmented reality for external approaches to the frontal sinus. *Int Forum Allergy Rhinol*. 2020;10(7):920-925. doi:10.1002/alr.22546
3. Chung CY, Alson MD, Duszak R, Degnan AJ. From imaging to reimbursement: what the pediatric radiologist needs to know about health care payers, documentation, coding and billing. *Pediatr Radiol*. 2018;48(7):904-914. doi:10.1007/s00247-018-4104-1
4. Centers for Medicare & Medicaid Services. Healthcare Common Procedure Coding System (HCPCS). Cms.gov. Published 2025.

Whole-Body Imaging (Preface-5)

Guideline

Whole-Body CT Imaging (Preface-5.1)

PRF.WB.0005.1.UOH

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- Whole-body CT or LifeScan (CT Brain, Chest, Abdomen, and Pelvis) for screening of asymptomatic individuals is not a covered benefit. The performance of whole-body screening CT examinations in healthy individuals does not meet any of the current validity criteria for screening studies and there is no clear documentation of benefit versus radiation risk.
- Whole-body low-dose skeletal CT is supported for oncologic staging in Multiple Myeloma. See **Multiple Myeloma and Plasmacytomas (ONC-25)** in the Oncology Imaging Guidelines.

Whole-Body MR Imaging (Preface-5.2)

PRF.WB.0005.2.A

v2.0.2026

- Whole-body MRI (WBMRI) is, with the exception of select cancer predisposition syndromes and autoimmune conditions discussed below, generally not medically necessary at this time due to lack of standardization in imaging technique and lack of evidence that WBMRI improves outcome for any individual disease state.
  - While WBMRI has the benefit of whole-body imaging and lack of radiation exposure, substantial variation still exists in the number of images, type of sequences (STIR vs. diffusion weighting, for example), and contrast agent(s) used.
- Coding considerations:
  - There are no established CPT® or HCPCS codes for reporting WBMRI.
  - WBMRI is at present only reportable using CPT® 76498. All other methods of reporting whole-body MRI are inappropriate including the following:
    - Separate diagnostic MRI codes for multiple individual body parts
    - MRI Bone Marrow Supply (CPT® 77084)
- Disease-specific considerations:
  - Cancer screening:
    - Interval WBMRI is recommended for cancer screening in individuals with select cancer predisposition syndromes. Otherwise, WBMRI has not been shown to improve outcomes for cancer screening.
      - For additional information, see **Li-Fraumeni Syndrome (LFS) (PEDONC-2.2)**, **Neurofibromatosis 1 and 2 (NF1 and NF2) (PEDONC-2.3)**, **Rhabdoid Tumor Predisposition Syndrome (PEDONC-2.11)**, **Hereditary Paraganglioma-Pheochromocytoma (HPP) Syndromes (PEDONC-2.13)**, **Constitutional Mismatch Repair Deficiency (CMMRD or Turcot Syndrome) (PEDONC-2.15)**, **Infantile Myofibromatosis (PEDONC-2.18)**, or **Bloom Syndrome (PEDONC-2.19)** in the Pediatric and Special Populations Oncology Imaging Guidelines.
  - Cancer staging and restaging:
    - Whole-body MRI has limited indications in staging and restaging of multiple myeloma. See **Multiple Myeloma and Plasmacytomas (ONC-25)** in the Oncology Imaging Guidelines for additional details.
    - Evidence has not been published establishing WBMRI as a standard evaluation for any other type of cancer.
  - Autoimmune disease:
    - WBMRI can be approved in some situations for individuals with chronic recurrent multifocal osteomyelitis.

- For additional information, see **Chronic Recurrent Multifocal Osteomyelitis (PEDMS-10.2)** in the Pediatric Musculoskeletal Imaging Guidelines.

PET/MRI (Preface-5.3)

PRF.WB.0005.3.A

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- PET/MRI is generally not medically necessary for a vast majority of oncologic and neurologic conditions due to lack of standardization in imaging technique and interpretation. However, it is medically necessary in select circumstances when the following criteria are met:
  - The individual meets condition-specific guidelines for PET/MRI OR
  - The individual meets ALL of the following:
    - The individual meets guideline criteria for PET/CT, **AND**
    - PET/CT is not available at the treating institution, **AND**
    - The provider requests PET/MRI in lieu of PET/CT
- When the above criteria are met, PET/MRI is reported using the code combination of PET Whole-Body (CPT® 78813) and MRI Unlisted (CPT® 76498). All other methods of reporting PET/MRI are inappropriate.
  - When clinically appropriate, diagnostic MRI codes can be medically necessary at the same time as the PET/MRI code combination.
- For more information, please see the appropriate condition-based guideline.

References (Preface-5)

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1. Bojadzieva J, Amini B, Day SF, et al. Whole body magnetic resonance imaging (WB-MRI) and brain MRI baseline surveillance in TP53 germline mutation carriers: experience from the Li-Fraumeni Syndrome Education and Early Detection (LEAD) clinic. *Fam Cancer.* 2018;17(2):287-294. doi:10.1007/s10689-017-0034-6
2. Li J, Zhou H, Zhang X, Song F, Pang X, Wei Z. A two-way comparison of whole-body 18FDG PET-CT and whole-body contrast-enhanced MRI for distant metastasis staging in patients with malignant tumors: a meta-analysis of 13 prospective studies. *Ann Palliat Med*. 2020;9(2):247-255. doi:10.21037/apm.2020.02.30
3. Zhang C, Liang Z, Liu W, Zeng X, Mo Y. Comparison of whole-body 18F-FDG PET/CT and PET/MRI for distant metastases in patients with malignant tumors: a meta-analysis. *BMC Cancer*. 2023;23(1):37. Published 2023 Jan 10. doi:10.1186/s12885-022-10493-8
4. Petralia G, Padhani AR. Whole-Body Magnetic Resonance Imaging in Oncology: Uses and Indications. *Magn Reson Imaging Clin N Am*. 2018;26(4):495-507. doi:10.1016/j.mric.2018.06.003
5. Sato TS, Watal P, Ferguson PJ. Imaging mimics of chronic recurrent multifocal osteomyelitis: avoiding pitfalls in a diagnosis of exclusion. *Pediatr Radiol.* 2020;50(1):124-136. doi:10.1007/s00247-019-04510-5
6. Krout JC, Rees AB, Goldin AN, et al. Chronic Recurrent Multifocal Osteomyelitis: A Review of the Noninfectious Inflammatory Bone Disease and Lessons for More Timely Diagnosis. *Orthopedics*. 2023;46(3):e149-e155. doi:10.3928/01477447-20220719-08
7. National Comprehensive Cancer Network® (NCCN®). NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®): Genetic/Familial High-Risk Assessment: Breast, Ovarian, Pancreatic, and Prostate. Version 2.2026. October 10 10, 2025. Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Genetic/Familial High-Risk Assessment: Breast, Ovarian, Pancreatic, and Prostate V2.2026. ©2025 National Comprehensive Cancer Network, Inc. All rights reserved. The NCCN Guidelines® and illustrations herein may not be reproduced in any form for any purpose without the express written permission of the NCCN. To view the most recent and complete version of the NCCN Guidelines®, go online to NCCN.org.
8. National Comprehensive Cancer Network® (NCCN®). NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®): Multiple Myeloma. Version 4.2026 - November 26, 2025. Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Multiple Myeloma V4.2026. ©2024 National Comprehensive Cancer Network, Inc. All rights reserved. The NCCN Guidelines® and illustrations herein may not be reproduced in any form for any purpose without the express written permission of the NCCN. To view the most recent and complete version of the NCCN Guidelines®, go online to NCCN.org.

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References (Preface-6)

Guideline

References (Preface-6.1)

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References (Preface-6.1)

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- Complete reference citations for the journal articles are embedded within the body of the guidelines and/or may be found on the Reference pages at the end of some guideline sections.

General Guidelines (PEDHD-1)

Guideline

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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

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

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

Nuclear Medicine	**CPT®**
PET Brain Metabolic Evaluation	78608
PET Brain Perfusion Evaluation	78609
PET with concurrently acquired CT; limited area (this code rarely used in pediatrics)	78814
PET with concurrently acquired CT; whole body	78816
Brain Scintigraphy Static Limited	78600
Brain Scintigraphy Limited with Vascular Flow	78601
Brain Scintigraphy Complete Static	78605
Brain Scintigraphy Complete with Vascular Flow	78606
Brain Imaging Vascular Flow	78610
Cisternogram	78630
Cerebrospinal Ventriculography	78635
Shunt Evaluation	78645
CSF Leakage Detection	78650

Radiopharmaceutical Dacryocystography	78660
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
Transcranial Doppler study of the intracranial arteries; limited study	93888

General Guidelines (PEDHD-1.0)

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- 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 not medically necessary. Advanced imaging of the head is only 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 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.

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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 18 years old or younger and 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 >18 years old 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.

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

- 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 (e.g., 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 may be performed/done 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 must be substituted when both CTA Head and Neck may be 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 Survivors (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.
- Nuclear Medicine
    - Nuclear medicine studies other than metabolic PET imaging on the pediatric brain or head are rarely performed in an elective outpatient setting, but the following studies are medically necessary for the following indications:
        - Brain Scintigraphy with or without vascular flow (any one of CPT® codes: CPT® 78600, CPT® 78601, CPT® 78605, or CPT® 78606)
            - Establish brain death
        - Radiopharmaceutical Localization Imaging SPECT (CPT® 78803)
            - Immunocompromised individuals with mass lesion detected on CT or MRI for differentiation between lymphoma and infection

        - Radiopharmaceutical Localization Imaging SPECT (CPT® 78803) with vasodilating agent acetazolamide (Diamox) challenge when surgery or other vascular intervention is being considered (i.e., Moyamoya)
    - Brain Imaging Vascular Flow (CPT® 78610)
        - Cerebral ischemia
        - Establish brain death (rarely done in outpatient setting)
    - CSF Leakage Detection (CPT® 78650)
        - Evaluation of CSF rhinorrhea or otorrhea, or refractory post-lumbar puncture headache
    - Radiopharmaceutical Dacryocystography (CPT® 78660)
        - Suspected obstruction of nasolacrimal duct due to excessive tearing
- 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.

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General Guidelines-Other Imaging Situations (PEDHD-1.4)

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- 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.

References (PEDHD-1)

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1. Siegel MJ. Brain. In: Pediatric sonography. 5th ed. Philadelphia, Wolters Kluwer. 2018. 75-178
2. Prabhu SP, Young-Poussaint T. Pediatric central nervous system emergencies. *Neuroimaging Clin N Am*. 2010;20(4):663-683. doi:10.1016/j.nic.2010.07.008
3. Patra KP, Lancaster JD, Hogg J, et al. Pediatric MRI of the Brain: a primer. *Pediatr Rev*. 2014 Mar; 35 (3):106-113
4. Reighard C, Junaid S, Jackson WM, et al. Anesthetic Exposure During Childhood and Neurodevelopmental Outcomes. *JAMA Netw Open*. 2022;5(6):e2217427. doi:10.1001/jamanetworkopen.2022.174
5. Nakagawa TA, Ashwal S, Mathur M, Mysore M. the Committee for Determination of. Guidelines for the determination of brain death in infants and children: An Update of the 1987 Task Force Recommendations-Executive Summary. *Annals of Neurology*. 2012;71(4):573-585. doi:10.1002/ana.23552
6. Donohoe KJ, Agrawal G, Frey KA, et al. SNMPractice Guideline for Brain Death Scintigraphy 2.0 *Journal of Nuclear Medicine Technology*. 2012;40(3):198-203. doi:10.2967/jnmt.112.105130
7. MacDonald A, and Burrell S. Infrequently performed studies in nuclear medicine: Part 2. *J Nucl Med Technol*. 2009 Mar; 37: 1-13
8. Fraum TJ, Ludwig DR, Bashir MR, et al. Gadolinium-based contrast agents: a comprehensive risk assessment. *J Magn Reson Imaging*. 2017; 46:338–353
9. FDA Drug Safety Communication: FDA warns that gadolinium-based contrast agents (GBCAs) are retained in the body; requires new class warnings. 5-16-2018 Update https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-warns-gadolinium-based-contrast-agents-gbcas-are-retained-body
10. AIUM Practice Parameter for the Performance of Neurosonography in Neonates and Infants, 2024 Revision.*J Ultrasound Med*. 2024;43(11):E50-E55. doi:10.1002/jum.16551
11. Gupta P, Sodhi KS, Saxena AK, Khandelwal N, Singhi P. Neonatal cranial sonography: A concise review for clinicians[AGM1].*J Pediatr Neurosci*. 2016;11(1):7-13. doi:10.4103/1817-1745.181261
12. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance of Computed Tomography (CT) of the extracranial head and neck. 2021; Available at: https://gravitas.acr.org/PPTS/
13. Stern BJ, Royal W, Gelfand JM, et al. Definition and Consensus Diagnostic Criteria for Neurosarcoidosis. *JAMA Neurology*. 2018;75(12):1546. doi:10.1001/jamaneurol.2018.2295
14. Shosha E, Dubey D, Palace J, et al. Area postrema syndrome. *Neurology*. 2018;91(17). doi:10.1212/wnl.0000000000006392
15. Hornby PJ. Central neurocircuitry associated with emesis. *The American Journal of Medicine*. 2001;111(8):106-112. doi:10.1016/s0002-9343(01)00849-x
16. American College of Radiology. ACR–ASNR–SPR practice parameter for the performance of Computed Tomography (CT) perfusion in neuroradiologic imaging. 2022; Available at: https://gravitas.acr.org/PPTS/
17. Blumfield E, Swenson DW, Iyer RS, Stanescu AL. Gadolinium-based contrast agents — review of recent literature on magnetic resonance imaging signal intensity changes and tissue deposits, with emphasis on pediatric patients. *Pediatric Radiology*. 2019;49(4):448-457. doi:10.1007/s00247-018-4304-8
18. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance and interpretation of cervicocerebral Computed Tomography Angiography (CTA). 2020; Available at: https://gravitas.acr.org/PPTS/
19. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance and interpretation of Magnetic Resonance Imaging (MRI) of the brain. 2024; Available at: https://gravitas.acr.org/PPTS/
20. American College of Radiology. ACR-ASNR-SNIS-SPR Practice Parameter for the performance of cervicocerebral Magnetic Resonance Angiography (MRA). 2020; Available at: https://gravitas.acr.org/PPTS/
21. Soares BP, Lequin MH, Huisman TAGM. Safety of Contrast Material Use in Children. *Magn Reson Imaging Clin N Am*. 2017;25(4):779-785. doi:10.1016/j.mric.2017.06.009
22. Graham MR. Clinical update regarding general anesthesia-associated neurotoxicity in infants and children. *Curr Opin Anaesthesiol*. 2017;30(6):682-687. doi:10.1097/ACO.0000000000000520
23. Drug Safety Communication: FDA review results in new warnings about using general anesthetics and sedation drugs in young children and pregnant women. 12/14/2016. https://www.fda.gov/drugs/drug-safety-and-

availability/fda-drug-safety-communication-fda-review-results-new-warnings-about-using-general-anesthetics-and?source=govdelivery&utm_medium=email&utm_source=govdelivery

24. Drug Safety Communication: FDA approves label changes for use of general anesthetic and sedation drugs in young children. 4-27-2017 Update. https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-approves-label-changes-use-general-anesthetic-and-sedation-drugs
25. Society for Pediatric Anesthesia. SPA Response to the FDA Med Watch December 16, 2016. Society for Pediatric Anesthesia. https://pedsanesthesia.org/fda-response/
26. Artunduaga M, Liu CA, Morin CE, et al. Safety challenges related to the use of sedation and general anesthesia in pediatric patients undergoing magnetic resonance imaging examinations. *Pediatr Radiol*. 2021;51(5):724-735. doi:10.1007/s00247-021-05044-5
27. American College of Radiology. ACR–AIUM–SPR–SRU Practice Parameter for the performance of neurosonography in neonates and infants. 2024; Available at: https://gravitas.acr.org/PPTS/
28. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance of Computed Tomography (CT) of the Head. 2020; Available at: https://gravitas.acr.org/PPTS/
29. History and Physicals - Understanding the Requirements at https://www.jointcommission.org/en-us/knowledge-library/support-center/standards-interpretation/standards-faqs/000002272. Last updated July 12, 2022
30. Aylward SC, Reem RE. Pediatric Intracranial Hypertension. *Pediatr Neurol*. 2017 Jan;66:32-43. doi: 10.1016/j.pediatrneurol.2016.08.010
31. Implementation Guide: Medicaid State Plan Eligibility Groups Mandatory Coverage Infants and Children under Age 19 Guidance Portal. https://www.hhs.gov/guidance/document/implementation-guide-medicaid-state-plan-eligibility-eligibility-groups-aeu-mandatory-2. Issue Date July 14, 2017.
32. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance of intracranial magnetic resonance perfusion imaging. 2022; Available at: https://gravitas.acr.org/PPTS/
33. American Medical Association. CPT—Current Procedural Terminology. American Medical Association. https://www.ama-assn.org/practice-management/cpt. Published 2026. Copyright 1995 – 2026

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Specialized Imaging Techniques (PEDHD-2)

Guideline

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

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- 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 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)

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- fMRI is 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.

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

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

References (PEDHD-2)

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1. Hertz-Pannier L, Noulhaine M, Rodrigo S, et al. Pretherapeutic functional magnetic resonance imaging in children. *Neuroimag Clin N Am.* 2014 Nov; 24 (4): 639-653
2. Patra KP, Lancaster JD, Hogg J, et al. Pediatric MRI of the brain: a primer. *Pediatr Rev*. 2014 Mar; 35 (3):106-111
3. Schneider JF. MR Spectroscopy in children: protocols and pitfalls in non-tumorous brain pathology. *Pediatr Radiol.* 2016 Jun; 46 (7): 963-982
4. Expert Panel on Pediatric Imaging, Trofimova A, Milla SS, et al. ACR Appropriateness Criteria® Seizures-Child. *J Am Coll Radiol*. 2021;18(5S):S199-S211. doi:10.1016/j.jacr.2021.02.020
5. Ramey WL, Martirosyan NL, Lieu CM, et al. Current management and surgical outcomes of medically intractable epilepsy. *Clin Neurol Neurosurg.* 2013 Dec; 115 (12): 2411-2418
6. Ghei SK, Zan E, Nathan JE, et al. MR Imaging of Hypoxic-Ischemic Injury in Term Neonates: Pearls and Pitfalls. *RadioGraphics*. 2014;34(4):1047-1061. doi:10.1148/rg.344130080
7. Schwartz ES, Barkovich AJ. Brain and spine injuries in infancy and childhood. In: Barkovich AJ, Raybaud C, eds. *Pediatric Neuroimaging*, 6th ed. Philadelphia PA. Wolters Kluwer. 2019; 263-404
8. Boerwinkle VL, Cediel EG, Mirea L, et al. Network-targeted approach and postoperative resting-state functional magnetic resonance imaging are associated with seizure outcome. *Annals of Neurology*. 2019;86(3):344-356. doi:10.1002/ana.25547
9. Szaflarski JP, Gloss D, Binder JR, et al. Practice guideline summary: Use of fMRI in the presurgical evaluation of patients with epilepsy. *Neurology*. 2017;88(4):395-402. doi:10.1212/wnl.0000000000003532

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Pediatric Headache (PEDHD-3)

Guideline

Pediatric Headache (PEDHD-3.1)

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- 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 not medically necessary for pediatric individuals with headache in the absence of supported indications.

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)**.

References (PEDHD-3)

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1. Expert Panel on Pediatric Imaging: Hayes LL, Palasis S, et al. ACR Appropriateness Criteria® Headache-Child. *J Am Coll Radiol*. 2018;15(5S):S78-S90. doi:10.1016/j.jacr.2018.03.017
2. Expert Panel on Pediatric Imaging, Ryan ME, Pruthi S, et al. ACR Appropriateness Criteria® Head Trauma-Child. *J Am Coll Radiol*. 2020;17(5S):S125-S137. doi:10.1016/j.jacr.2020.01.026
3. De Vries A, Young PC, Wall E, et al. CT scan utilization patterns in pediatric patients with recurrent headache. *Pediatrics*. 2013;132(1);e1-e8. doi:10.1542/peds.digest1321
4. Trofimova A, Vey BL, Mullins ME, Wolf DS, Kadom N. Imaging of Children With Nontraumatic Headaches. *AJR Am J Roentgenol.* 2018;*210*(1):8-17. doi:10.2214/AJR.17.18561
5. Dao JM, Qubty W. Headache Diagnosis in Children and Adolescents. *Curr Pain Headache Rep*. 2018;22(3). doi:10.1007/s11916-018-0675-7
6. Bear JJ, Gelfand AA, Goadsby PJ, Bass N. Occipital headaches and neuroimaging in children. *Neurology*. 2017;89(5):469-474. doi:10.1212/WNL.0000000000004186
7. Loder E, Weizenbaum E, Frishberg B, Silberstein S. Choosing Wisely in Headache Medicine: The American Headache Society's List of Five Things Physicians and Patients Should Question. *Headache.* 2013;53(10):1651-1659. doi:10.1111/head.12233
8. Gofshteyn JS, Stephenson DJ. Diagnosis and Management of Childhood Headache. *Curr Probl in Pediatr and Adolesc Health Care*. 2016;46(2):36-51. doi:10.1016/j.cppeds.2015.11.003
9. Dalvi N, Sivaswamy L. Life-Threatening Headaches in Children: Clinical Approach and Therapeutic Options. *Pediatric Annals*. 2018;47(2). doi:10.3928/19382359-20180129-04
10. Klein J, Koch T. Headache in Children. *Pediatr Rev*. 2020;41(4):159-171. doi:10.1542/pir.2017-0012.
11. Sarma A, Poussaint TY. Indications and Imaging Modality of Choice in Pediatric Headache. *Neuroimaging Clin N Am*. 2019;29(2):271-289. doi:10.1016/j.nic.2019.01.007
12. Kadom N. Imaging of Headaches: Appropriateness and Differential Diagnosis. *Pediatr Ann*. 2020;49(9):e389-e394. doi:10.3928/19382359-20200819-01

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Pediatric Head and Face Trauma (PEDHD-4)

Guideline

Head Trauma (PEDHD-4.1)

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- 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 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.
- 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.

Facial Trauma (PEDHD-4.2)

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- 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.

References (PEDHD-4)

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1. Expert Panel on Pediatric Imaging, Ryan ME, Pruthi S, et al. ACR Appropriateness Criteria® Head Trauma-Child. *J Am Coll Radiol*. 2020;17(5S):S125-S137. doi:10.1016/j.jacr.2020.01.026
2. Osmond MH, Klassen TP, Wells GA, et al. CATCH: a clinical decision rule for the use of computed tomography in children with minor head injury. *CMAJ.* 2010 Mar 9; 182 (4): 341-348. doi:10.1503/cmaj.091421
3. Nigrovic LE, Stack AM, Mannix RC, et al. Quality improvement effort to reduce Cranial CTs for children with minor blunt head trauma. *Pediatrics.* 2015; 136 (1): e227-e233
4. Homme J(JL. Pediatric Minor Head Injury 2.0. *Emergency Medicine Clinics of North America*. 2018;36(2):287-304. doi.10.1542/peds.2014-3588
5. Lumba-Brown A, Yeates KO, Sarmiento K, et al. Centers for Disease Control and Prevention Guideline on the Diagnosis and Management of Mild Traumatic Brain Injury Among Children. *JAMA Pediatr*. 2018;172(11):e182853. doi:10.1001/jamapediatrics.2018.2853
6. Babl FE, Borland ML, Phillips N, et al. Accuracy of PECARN, CATCH, and CHALICE head injury decision rules in children: a prospective cohort study. *Lancet*. 2017;389(10087):2393-2402.doi:1016/S0140-6763(17)30555-X
7. O'Brien WT, Caré MM, Leach JL. Pediatric Emergencies: Imaging of Pediatric Head Trauma. *Semin Ultrasound CT MR*. 2018;39(5):495-514. doi:10.1053/j.sult.2018.01.007
8. Schachar JL, Zampolin RL, Miller TS, Farinhas JM, Freeman K, Taragin BH. External validation of the New Orleans Criteria (NOC), the Canadian CT Head Rule (CCHR) and the National Emergency X-Radiography Utilization Study II (NEXUS II) for CT scanning in pediatric patients with minor head injury in a non-trauma center. *Pediatr Radiol*. 2011;41(8):971-979. doi:10.1007/s00247-011-2032-4
9. Kuppermann N, Holmes JF, Dayan PS, et al. Identification of children at very low risk of clinically-important brain injuries after head trauma: a prospective cohort study. *Lancet*. 2009;374(9696):1160-1170. doi:10.1016/s0140-6736(09)61558-0
10. Easter JS, Bakes K, Dhaliwal J, Miller M, Caruso E, Haukoos JS. Comparison of PECARN, CATCH, and CHALICE Rules for Children With Minor Head Injury: A Prospective Cohort Study. *Ann Emerg Med*. 2014;64(2). doi:10.1016/j.annemergmed.2014.01.030
11. Harmon KG, Clugston JR, Dec K, et al. American Medical Society for Sports Medicine position statement on concussion in sport. *Br J of Sports Med*. 2019;53(4):213-225. doi:10.1136/bjsports-2018-100338.
12. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance of Computed Tomography (CT) of the extracranial head and neck. 2021; Available at: https://gravitas.acr.org/PPTS
13. Gelineau-Morel RN, Zinkus TP, Le Pichon JB. Pediatric Head Trauma: A Review and Update. *Pediatr Rev*. 2019;40(9):468-481. doi:10.1542/pir.2018-0257
14. Maheshwari M, Ho M-L, Bosemani T, et al. ACR Appropriateness Criteria® Orbital Imaging and Vision Loss-Child. Available at https://acsearch.acr.org/docs/3158173/Narrative/. American College of Radiology. New 2023.

Sinusitis and Allergic Rhinitis (PEDHD-5)

Guideline

Sinus And Facial Imaging General Considerations (PEDHD-5.1)

HDP.AR.0005.1.A

v2.0.2026

- Acute sinusitis is a clinical diagnosis, and imaging is 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.

Imaging Indications in Sinusitis (PEDHD-5.2)

HDP.AR.0005.2.A

v2.0.2026

- 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 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 >90 days)
  - Known or suspected fungal sinusitis
    - MRI Orbit/Face/Neck without and with contrast (CPT® 70543) is medically necessary if requested instead of CT Maxillofacial.
  - Pre-operative evaluation to assess surgical candidacy
- CT Maxillofacial with contrast (CPT® 70487) is 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 medically necessary if ANY of the following are present:
  - Focal neurologic findings
  - Altered mental status
  - Seizures
  - Concern for orbital complications
  - Concern for invasive fungal sinusitis

  - MRA Head (CPT® 70544, CPT® 70545, or CPT® 70546) **OR** CTA Head (CPT® 70496) is 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 not medically necessary for individuals who have responded satisfactorily to treatment but is 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

v2.0.2026

- 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 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
v2.0.2026

- 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 not medically necessary in individuals with a normal neurological examination who have headaches associated with sinus symptoms.
- CT or MRI Sinus is not medically necessary for the evaluation of headaches or neurological complaints without a more specific indication pointing to a sinus etiology.

Allergic Rhinitis (PEDHD-5.5)

HDP.AR.0005.5.A

v2.0.2026

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

Other Indications for Sinus Imaging (PEDHD-5.6)

HDP.AR.0005.6.A

v2.0.2026

- 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 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)**.

References (PEDHD-5)

v2.0.2026

1. Wald ER, Applegate KE, Bordley C, et al. Clinical Practice Guideline for the Diagnosis and Management of Acute Bacterial Sinusitis in Children Aged 1 to 18 Years. *PEDIATRICS*. 2013;132(1):e262-e280. doi:10.1542/peds.2013-1071
2. Expert Panel on Pediatric Imaging: Tekes A, Palasis S, et al. ACR Appropriateness Criteria® Sinusitis-Child. *J Am Coll Radiol.* 2018;15(11S):S403-S412. doi:10.1016/j.jacr.2018.09.029
3. Magit A. Pediatric Rhinosinusitis. *Otolaryngol Clin of North Am*. 2014;47(5):733-746. doi:10.1016/j.otc.2014.06.003
4. Siedman MD, Gurgel RK, Lin SY, et al. Clinical Practice Guideline. Allergic Rhinitis Executive Summary. *Otolaryngol Head Neck Surg*. 2015;152(2):197-206. doi:10.1177/0194599814562166
5. AAP Releases Guideline on Diagnosis and Management of Acute Bacterial Sinusitis in Children One to 18 Years of Age. *Am Fam Physician*. 2014 Apr 15;89:676-681
6. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance of

   Computed Tomography (CT) of the extracranial head and neck. 2021; Available at: https://gravitas.acr.org/PPTS/
7. Gallagher ER, Collett BR. Neurodevelopmental and Academic Outcomes in Children With Orofacial Clefts: A Systematic Review. *Pediatrics*. 2019;144(1):e20184027. doi:10.1542/peds.2018-4027
8. Ornoy, A. Craniofacial malformations and their association with brain development: the importance of a multidisciplinary approach for treatment. *Odontology*. 2019;108(1):1-15. doi:10.1007/s10266-019-00433-7
9. Kucukguven A, Calis M, Topaloglu H, Ozgur F. Assessment of Neurologic Disorders and Rare Intracranial Anomalies Associated With Cleft Lip and Palate. *J of Craniofac Surg*. 2018;29(8):2195-2197. doi:10.1097/scs.0000000000004848
10. Brietzke SE, Shin JJ, Choi S, et al. Clinical consensus statement: pediatric chronic rhinosinusitis. *Otolaryngol Head Neck Surg*. 2014;151(4):542-553. doi:10.1177/0194599814549302

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Epilepsy and Other Seizure Disorders (PEDHD-6)

Guideline

Epilepsy and Other Seizure Disorders (PEDHD-6.0)

HDP.EP.0006.0.A

v2.0.2026

- 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).

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

HDP.EP.0006.1.A

v2.0.2026

- MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is 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 medically necessary even with a recent negative CT.
  - Concern for a mass lesion or demyelinating disease
- CT Head without contrast (CPT® 70450) is 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 <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.

Repeat imaging indications (PEDHD-6.2)

HDP.EP.0006.2.A

v2.0.2026

- Repeat MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is 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.

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

HDP.EP.0006.3.A

v2.0.2026

- For individuals with a previous MRI Brain and documentation of intractable epilepsy for which surgical treatment or another interventional modality is under active consideration (see **Background and Supporting Information**), any or all of the following requests can be obtained concurrently and are 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 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.
- For intracranial monitoring with stereo-EEG or grids/strips and electrodes, additional imaging for neuronavigation is 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 medically necessary:
    - CTA Head (CPT® 70496) **OR** MRA Head (CPT® 70544, CPT® 70545 or CPT® 70546)
- Repeat diagnostic head imaging is 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 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).

Febrile Seizures (PEDHD-6.4)

HDP.EP.0006.4.A

v2.0.2026

- 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 medically necessary for febrile seizures in the presence of one or more of the following:
  - Seizure lasting >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 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 febrile seizure is a generalized seizure occurring in the presence of fever (T >100.4°F/38°C) and no central nervous system infection in a child between the age of 6 months and 5 years.

References (PEDHD-6)

v2.0.2026

1. Expert Panel on Pediatric Imaging, Trofimova A, Milla SS, et al. ACR Appropriateness Criteria® Seizures-Child. *J Am Coll Radiol*. 2021;18(5S):S199-S211. doi:10.1016/j.jacr.2021.02.020
2. Gogou M, Cross JH. Seizures and Epilepsy in Childhood. *Continuum (Minneap Minn)*. 2022;28(2):428-456. doi:10.1212/CON.0000000000001087
3. Culler GW 4th, Jobst BC. Surgical Treatments for Epilepsy. *Continuum (Minneap Minn)*. 2022;28(2):536-558. doi:10.1212/CON.0000000000001106
4. Myers KA. Genetic Epilepsy Syndromes. *Continuum (Minneap Minn)*. 2022;28(2):339-362. doi:10.1212/CON.0000000000001077
5. Subcommittee on Febrile Seizures; American Academy of Pediatrics. Neurodiagnostic evaluation of the child with a simple febrile seizure.*Pediatrics*. 2011;127(2):389-394. doi:10.1542/peds.2010-3318
6. Lapalme-Remis S, Nguyen DK. Neuroimaging of Epilepsy. *Continuum (Minneap Minn)*. 2022;28(2):306-338. doi:10.1212/CON.0000000000001080
7. Biassoni L, Easty M. Paediatric nuclear medicine imaging. *British Medical Bulletin*. 2017;123(1):127-148. doi:10.1093/bmb/ldx025
8. Coryell J, Gaillard WD, Shellhaas RA, et al. Neuroimaging of Early Life Epilepsy. *Pediatrics*. 2018;142(3). doi:10.1542/peds.2018-0672
9. Kwan P, Arzimanoglou A, Berg AT, et al. Definition of drug resistant epilepsy: consensus proposal by the ad hoc Task Force of the ILAE Commission on Therapeutic Strategies [published correction appears in Epilepsia. 2010 Sep;51(9):1922]. *Epilepsia*. 2010;51(6):1069-1077. doi:10.1111/j.1528-1167.2009.02397.x
10. Gaillard WD, Chiron C, Cross JH, et al. Guidelines for imaging infants and children with recent-onset epilepsy. *Epilepsia*. 2009;50(9):2147-2153. doi:10.1111/j.1528-1167.2009.02075.x
11. Szaflarski JP, Gloss D, Binder JR, et al. Practice guideline summary: Use of fMRI in the presurgical evaluation of patients with epilepsy: Report of the Guideline Development, Dissemenation, and Implementation Subcommittee of the American Academy of Neurology. *Neurology*. 2017;88(4):395-402. doi:10.1212/wnl.0000000000003532
12. Duez L, Tankisi H, Hansen PO, et al. Electromagnetic source imaging in presurgical workup of patients with epilepsy. *Neurology*. 2019;92(6). doi:10.1212/wnl.0000000000006877
13. Qiu J, Cui Y, Qi B, Sun L, Zhu Z. The application of preoperative computed tomography angiogram for hemispherectomy. *Clinics and Practice*. 2017;7(4). doi:10.4081/cp.2017.992
14. Youngerman BE, Khan FA, Mckhann GM. Stereoelectroencephalography in epilepsy, cognitive neurophysiology, and psychiatric disease: safety, efficacy, and place in therapy. *Neuropsychiatric Disease and Treatment*. 2019;Volume 15:1701-1716. doi:10.2147/ndt.s177804/
15. Iida K, Otsubo H. Stereoelectroencephalography: Indication and Efficacy. *Neurol Med Chir (Tokyo)*. *Neurologia medico-chirurgica*. 2017;57(8):375-385. doi:10.2176/nmc.ra.2017-0008
16. Brigo F, Marson A. Approach to the Medical Treatment of Epilepsy. *Continuum (Minneap Minn)*. 2022;28(2):483-499. doi:10.1212/CON.0000000000001081
17. Orringer DA, Golby A, Jolesz F. Neuronavigation in the surgical management of brain tumors: current and future trends. *Expert review of medical devices*. 2012 Sep 1;9(5):491-500
18. Bernasconi A, Cendes F, Theodore WH, et al. Recommendations for the use of structural magnetic resonance imaging in the care of patients with epilepsy: A consensus report from the International League Against Epilepsy Neuroimaging Task Force. *Epilepsia*. 2019;60(6):1054-1068. doi:10.1111/epi.15612
19. Salamon N, Kung J, Shaw SJ, et al. FDG-PET/MRI coregistration improves detection of cortical dysplasia in patients with epilepsy. *Neurology*. 2008;71(20):1594-1601. doi:10.1212/01.wnl.0000334752.41807.2f
20. Laohathai C, Ebersole JS, Mosher JC, et al. Practical Fundamentals of Clinical MEG Interpretation in Epilepsy. *Front Neurol*. 2021;12:722986. Published 2021 Oct 14. doi:10.3389/fneur.2021.722986
21. American Medical Association. CPT—Current Procedural Terminology. American Medical Association. https://www.ama-assn.org/practice-management/cpt. Published 2026. Copyright 1995 – 2026

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Macrocephaly, Microcephaly, and Hydrocephalus (PEDHD-7)

Guideline

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Macrocephaly (PEDHD-7.1)

HDP.MC.0007.1.A

v2.0.2026

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 not medically necessary in this age group since uncomplicated hydrocephalus is less likely after early infancy.*

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 (cdc.gov).

Microcephaly (PEDHD-7.2)

HDP.MC.0007.2.A

v2.0.2026

- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) is 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 (cdc.gov).

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

HDP.MC.0007.3.A
v2.0.2026

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 not otherwise medically necessary)	• One-time CT Head without contrast (CPT® 70450) **OR** • Rapid MRI Brain without contrast (CPT® 70551)

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

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 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)

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 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 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 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.
- 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)**.

References (PEDHD-7)

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1. Boyle TP, Paldino MJ, Kimia AA, et al. Comparison of Rapid Cranial MRI to CT for Ventricular Shunt Malfunction. *Pediatrics*. 2014 July; 134 (1): e47-e54
2. Orrù E, Calloni SF, Tekes A, Huisman TAGM, Soares BP. The Child With Macrocephaly: Differential Diagnosis and Neuroimaging Findings. *American Journal of Roentgenology*. 2018;210(4):848-859
3. Feng Z, Li Q, Gu J, Shen W. Update on Endoscopic Third Ventriculostomy in Children. *Pediatric Neurosurgery*. 2018;53(6):367-370. doi:10.1159/000491638
4. Wright Z, Larrew TW, Eskandari R. Pediatric Hydrocephalus: Current State of Diagnosis and Treatment. *Pediatrics in Review*. 2016;37(11):478-490. doi:10.1542/pir.2015-0134
5. Sanyal S, Duraisamy S, Garga UC. Magnetic Resonance Imaging of Brain in Evaluation of Floppy Children: A Case Series. *Iran J Child Neurol*. 2015 Fall;9(4):65-74
6. Ali AS. Magnetic Resonance Imaging (MRI) Evaluation of Developmental Delay in Pediatric Patients. *Journal Of Clinical And Diagnostic Research*. 2015. doi:10.7860/jcdr/2015/11921.5478
7. Khalatbari H, Parisi MT. Complications of CSF Shunts in Pediatrics: Functional Assessment With CSF Shunt Scintigraphy—Performance and Interpretation. *American Journal of Roentgenology*. 2020;215(6):1474-1489. doi:10.2214/ajr.20.22899
8. Zahl SM, Egge A, Helseth E, Wester K. Benign external hydrocephalus: a review, with emphasis on management. *Neurosurgical Review*. 2011;34(4):417-432. doi:10.1007/s10143-011-0327-4
9. Zahl SM, Egge A, Helseth E, Wester K. Clinical, Radiological, and Demographic Details of Benign External Hydrocephalus: A Population-Based Study. *Pediatr Neurol*. 2019;96:53-57. doi:10.1016/j.pediatneurol.2019.01.015
10. Patel SK, Zamorano-Fernandez J, Nagaraj U, Bierbrauer KS, Mangano FT. Not all ventriculomegaly is created equal: diagnostic overview of fetal, neonatal and pediatric ventriculomegaly. *Child's Nervous System*. 2019;36(8):1681-1696. doi:10.1007/s00381-019-04384-w
11. Nair P, Vachharajani AJ. Newborn with Microcephaly. *Neoreviews*. 2022;23(4):e279-e283. doi:10.1542/neo.23-4-e279
12. Centers for Disease Control and Prevention. National Center for Health Statistics. Published May 30, 2000. Modified October 16, 2000. www.cdc.gov/growthcharts

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Craniofacial Anomalies (PEDHD-8)

Guideline

Craniosynostosis Imaging (PEDHD-8.1)

HDP.CS.0008.1.A

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- 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 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 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 not medically necessary to evaluate individuals with craniosynostosis, but are 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 medically necessary in certain types of craniosynostosis and is/are medically necessary when ordered by surgical specialties or in consultation with surgical specialties during surgical evaluation and planning.
- Ultrasound Head (CPT® 76506) is 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 medically necessary as discussed previously in this section.
- CT Head without contrast (CPT® 70450) is 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.
- Abnormal head shape is the common clinical feature.

Facial Anomalies (PEDHD-8.2)

HDP.CS.0008.2.A
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- 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 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

References (PEDHD-8)

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1. Hall KM, Besachio DA, Moore MD, et al. Effectiveness of screening for craniosynostosis with ultrasound: a retrospective review. *Pediatr Radiol*. 2017;47: 606-612
2. Rozovsky K, Udjus K, Wilson N, Barrowman NJ, Simanovsky N, Miller E. Cranial Ultrasound as a First-Line Imaging Examination for Craniosynostosis. *Pediatrics*. 2016;137(2):e20152230. doi:101542/peds.2015-2230
3. Fearon JA. Evidence-based medicine: craniosynostosis. *Plast Reconstr Surg*. 2014 May; 133 (5): 1261-1275
4. Khanna P, Thapa M, Iyer R, Prasad S. Pictorial essay: The many faces of craniosynostosis. *Indian Journal of Radiology and Imaging*. 2011;21(1):49. doi:10.4103/0971-3026.76055
5. Mathijssen IM. Guideline for Care of Patients With the Diagnoses of Craniosynostosis. *Journal of Craniofacial Surgery*. 2015;26(6):1735-1807. doi:10.1097/scs.0000000000002016
6. Kim HJ, Roh HG, Lee IW. Craniosynostosis : Updates in Radiologic Diagnosis. *Journal of Korean Neurosurgical Society*. 2016;59(3):219. doi:10.3340/jkns.2016.59.3.219
7. AIUM Practice Parameter for the Performance of Neurosonography in Neonates and Infants. *J Ultrasound Med*. 2020;39(5):E57-E61. doi:10.1002/jum.15264
8. AIUM Practice Parameter for the Performance of Neurosonography in Neonates and Infants, 2024 Revision. *J Ultrasound Med*. 2024;43(11):E50-E55. doi:10.1002/jum.16551
9. Massimi L, Bianchi F, Frassanito P, Calandrelli R, Tamburrini G, Caldarelli M. Imaging in craniosynostosis: when and what?. *Childs Nerv Syst*. 2019;35(11):2055-2069. doi:10.1007/s00381-019-04278-x
10. Flannery AM, Tamber MS, Mazzola C, et al. Congress of Neurological Surgeons Systematic Review and Evidence-Based Guidelines for the Management of Patients With Positional Plagiocephaly: Executive Summary. *Neurosurgery*. 2016;79(5):623-624. doi:10.1227/NEU.0000000000001426
11. Linz C, Collmann H, Meyer-Marcotty P, et al. Occipital plagiocephaly: unilateral lambdoid synostosis versus positional plagiocephaly. *Arch Dis Child*. 2015;100(2):152-157. doi:10.1136/archdischild-2014-305944
12. Linz C, Kunz F, Böhm H, Schweitzer T. Positional Skull Deformities. *Dtsch Arztebl Int*. 2017;114(31-32):535-542. doi:10.3238/arztebl.2017.0535
13. Mazzola C, Baird LC, Bauer DF, et al. Congress of Neurological Surgeons Systematic Review and Evidence-Based Guideline for the Diagnosis of Patients With Positional Plagiocephaly: The Role of Imaging. *Neurosurgery*. 2016;79(5):E625-E626. doi:10.1227/NEU.0000000000001427
14. Schweitzer T, Böhm H, Meyer-Marcotty P, Collmann H, Ernestus RI, Krauß J. Avoiding CT scans in children with single-suture craniosynostosis. *Childs Nerv Syst*. 2012;28(7):1077-1082. doi:10.1007/s00381-012-1721-0
15. Wenger T, Miller D, Evans K. FGFR Craniosynostosis Syndromes Overview. 1998 Oct 20 [Updated 2020 Apr 30]. In: Adam MP, Ardinger HH, Pagon RA, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2022. https://www.ncbi.nlm.nih.gov/books/NBK1455/pdf/Bookshelf_NBK1455.pdf
16. Abramson ZR, Peacock ZS, Cohen HL, Choudhri AF. Radiology of Cleft Lip and Palate: Imaging for the Prenatal Period and throughout Life. *Radiographics*. 2015;35(7):2053-2063. doi:10.1148/rg.2015150050
17. Šebová I, Vyrvová I, Barkociová J. Nasal Cavity CT Imaging Contribution to the Diagnosis and Treatment of Choanal Atresia. *Medicina (Kaunas)*. 2021;57(2):93. Published 2021 Jan 21. doi:10.3390/medicina57020093
18. Chen J, Kanekar S. Imaging of Congenital Craniofacial Anomalies and Syndromes. *Clin Perinatol*. 2022;49(3):771-790. doi:10.1016/j.clp.2022.04.005

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Chiari and Skull Base Malformations (PEDHD-9)

Guideline

Chiari Malformations (PEDHD-9.1)

HDP.CH.0009.1.A

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- 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)

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 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.

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.

Basilar Impression/Basilar Invagination (PEDHD-9.4)

HDP.CH.0009.4.A

v2.0.2026

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

Platybasia (PEDHD-9.5)

HDP.CH.0009.5.A

v2.0.2026

- See **Platybasia (HD-5.5)** in the Head Imaging Guidelines.

References (PEDHD-9)

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1. Strahle J, Muraszko KM, Kapurch J, et al. Chiari malformation Type I and syrinx in children undergoing magnetic resonance imaging. *J Neurosurg Pediatr*. 2011 Aug; 8 (2): 205-213
2. Strahle J, Muraszko KM, Kapurch J, et al. Natural history of Chiari malformation Type I following decision for conservative treatment. *J Neurosurg Pediatr.* 2011 Aug; 8 (2): 214-221
3. Strahle J, Muraszko KM, Garton HJL, et al. Syrinx location and size according to etiology: identification of Chiari-associated syrinx. *J Neurosurg Pediatr.* 2015 July; 16 (1): 21-9 Epub 2015 Apr 3
4. Strahle J, Smith BW, Martinez M, et al. The association between Chiari malformation Type I, spinal syrinx, and scoliosis. *J Neurosurg Pediatr.* 2015 Jun; 15 (6): 607-611
5. Victorio MC, Khoury CK. Headache and Chiari I Malformation in Children and Adolescents. *Seminars in Pediatric Neurology*. 2016;23(1):35-39
6. Radic JAE, Cochrane DD. Choosing Wisely Canada: Pediatric Neurosurgery Recommendations. *Paediatrics & Child Health*. 2018;23(6):383-387. doi:10.1093/pch/pxy012
7. Smoker WRK and Khanna G. Imaging the craniocervical junction. *Childs Nerv Syst*. 2008 Oct; 24 (10): 1123-1145
8. D'Arco F, Ganau M. Which neuroimaging techniques are really needed in Chiari I? A short guide for radiologists and clinicians. *Childs Nerv Syst*. 2019 Oct;35(10):1801-1808. doi: 10.1007/s00381-019-04210-3

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Intracranial Aneurysms and AVM (PEDHD-10)

Guideline

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

Pediatric Intracranial Aneurysms and Subarachnoid Hemorrhage (PEDHD-10.1)

HDP.IA.0010.1.A

v2.0.2026

- 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 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 aneurysym - 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**
  - 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 **HD-21.7** in the Head Imaging Guidelines)) is/are 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 **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 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 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)

HDP.IA.0010.2.A
v2.0.2026

- 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.

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)

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)

Additional indications

- CT Head without contrast (CPT® 70450) is 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.

References (PEDHD-10)

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1. Montaser A, Smith ER. Intracranial Vascular Abnormalities in Children. *Pediatr Clin North Am*. 2021;68(4):825-843. doi:10.1016/j.pcl.2021.04.010
2. Beez T, Steiger H-J, and Hnggi D. Evolution of management of intracranial aneurysms in children: a systematic review of the modern literature. *J Child Neurol.* 2016; 31 (6): 773-783
3. Alvarez H, and Castillo M. Genetic markers and their influence on cerebrovascular malformations. *Neuroimag Clin N Am.* 2015 Feb; 25 (1): 69-82
4. McDonald J, Stevenson DA. Hereditary Hemorrhagic Telangiectasia. In: Adam MP, Mirzaa GM, Pagon RA, et al., eds.*GeneReviews*®. Seattle (WA): University of Washington, Seattle; June 26, 2000. [Updated 2021 Nov 24]
5. Flemming K, Smith E, Marchuk D, Derry WB. Familial Cerebral Cavernous Malformations. Adam M, Feldman J, Mirzaa G, et al, eds. Published online July 27, 2023. https://www.ncbi.nlm.nih.gov/books/NBK1293/
6. Linscott LL, Leach JL, Jones BV, et al. Developmental venous anomalies of the brain in children—imaging spectrum and update. *Pediatr Radiol.* 2016 Mar; 46 (3): 394-406
7. Ghali MGZ, Srinivasan VM, Cherian J, et al. Pediatric Intracranial Aneurysms: Considerations and Recommendations for Follow-Up Imaging. *World Neurosurgery*. 2018;109:418-431
8. Derdeyn CP, Zipfel GJ, Albuquerque FC, et al. Management of Brain Arteriovenous Malformations: A Scientific Statement for Healthcare Professionals From the American Heart Association/American Stroke Association. *Stroke*. 2017;48(8). doi:10.1161/str.0000000000000134
9. Bober MB, Jackson AP. Microcephalic Osteodysplastic Primordial Dwarfism, Type II: a Clinical Review. *Current Osteoporosis Reports*. 2017;15(2):61-69. doi:10.1007/s11914-017-0348-1
10. Bober MB, Jackson AP. Erratum to: Microcephalic Osteodysplastic Primordial Dwarfism, Type II: a Clinical Review. *Curr Osteoporos Rep*. 2017;15(4):399. doi:10.1007/s11914-017-0389-5
11. Madhuban A, van den Heuvel F, van Stuijvenberg M. Vein of Galen Aneurysmal Malformation in Neonates Presenting With Congestive Heart Failure. *Child Neurol Open*. 2016;3:2329048X15624704. Published 2016 Apr 4. doi:10.1177/2329048X15624704
12. Siegel MJ. Brain. In: pediatric sonography. 5th ed. Philadelphia. Wolters Kluwer. 2018. 75-178.
13. Hoh BL, Ko NU, Amin-Hanjani S, et al. 2023 Guideline for the Management of Patients With Aneurysmal Subarachnoid Hemorrhage: A Guideline From the American Heart Association/American Stroke Association [published online ahead of print, 2023 May 22]. *Stroke*. 2023;10.1161/STR.0000000000000436. doi:10.1161/STR.0000000000000436
14. Faughnan ME, Mager JJ, Hetts SW, et al. Second International Guidelines for the Diagnosis and Management of Hereditary Hemorrhagic Telangiectasia. *Ann Intern Med*. 2020;173(12):989-1001.doi:10.7326/M20-1443
15. Sabeti S, Ball KL, Bhattacharya SK, et al. Consensus Statement for the Management and Treatment of Sturge-Weber Syndrome: Neurology, Neuroimaging, and Ophthalmology Recommendations. *Pediatr Neurol*. 2021;121:59-66. doi:10.1016/j.pediatneurol.2021.04.013
16. Bayrak-Toydemir P, Stevenson DA. Capillary Malformation-Arteriovenous Malformation Syndrome. In: Adam MP, Mirzaa GM, Pagon RA, et al., eds.*GeneReviews*®. Seattle (WA): University of Washington, Seattle; February 22, 2011. Updated: September 12, 2019.
17. Hammill AM, Wusik K, Kasthuri RS. Hereditary hemorrhagic telangiectasia (HHT): a practical guide to management. *Hematology Am Soc Hematol Educ Program*. 2021;2021(1):469-477. doi:10.1182/hematology.2021000281
18. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance of intracranial magnetic resonance perfusion imaging. 2022; Available at: https://gravitas.acr.org/PPTS/
19. Crow YJ. Aicardi-Goutières Syndrome. In: Adam MP, Feldman J, Mirzaa GM, et al., eds. GeneReviews®. Seattle (WA): University of Washington, Seattle; June 29, 2005.
20. Jerele C, Lovrič D, Kuhelj D. Pediatric Interventional Neuroradiology: Opportunities and Challenges. *Children (Basel)*. 2023;10(4):715. Published 2023 Apr 12. doi:10.3390/children10040715
21. American Medical Association. CPT—Current Procedural Terminology. American Medical Association. https://www.ama-assn.org/practice-management/cpt. Published 2026. Copyright 1995 – 2026

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Syncope (PEDHD-11)

Guideline

Syncope (PEDHD-11.1)
References (PEDHD-11)

Syncope (PEDHD-11.1)

HDP.SY.0011.1.A

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- Advanced imaging of the brain is 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).

References (PEDHD-11)

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1. Cannon B, and Wackel P. Syncope. *Pediatr Rev.* 2016 Apr; 37 (4):159-168.
2. Fant C, Cohen A. Syncope In Pediatric Patients: A Practical Approach To Differential Diagnosis And Management In The Emergency Department. *Pediatric emergency medicine practice*. 2017 Apr;14(4):1-28.

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Pediatric Stroke (PEDHD-12)

Guideline

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Pediatric Stroke General Considerations (PEDHD-12.1)

HDP.PS.0012.1.A
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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)

HDP.PS.0012.2.A

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- In the presence of neurological signs and/or symptoms with concern for stroke, **ANY** of the following studies are 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)**

Pediatric Stroke Subsequent Imaging (PEDHD-12.3)

HDP.PS.0012.3.A

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- MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is 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 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 medically necessary.
  - MRA without and with contrast with venous sinus thrombosis to differentiate total from subtotal occlusion

Moyamoya Syndrome/Disease (PEDHD-12.4)

HDP.PS.0012.4.A

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

Sickle Cell Disease (PEDHD-12.5)

HDP.PS.0012.5.A

v2.0.2026

- The following imaging is 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 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 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 medically necessary for any of the following:
  - Two non-imaging Transcranial Doppler (TCD) measurements of ≥200cm/sec or a single measurement of >220cm/sec or 2 assessment TCD measurements ≥185cm/sec or a single measurement >205cm/sec.
  - Persistently abnormal TCD velocities
    - For more regarding TCD, see **Background and Supporting Information**.
  - 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 <30% of total hemoglobin may reduce recurrent stroke and extent of neurologic damage.

CNS Vasculitis (PEDHD-12.6)

HDP.PS.0012.6.A

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- 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 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 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)

HDP.PS.0012.7.A
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- 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

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)

HDP.PS.0012.8.A

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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.

References (PEDHD-12)

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1. Expert Panel on Pediatric Imaging, Robertson RL, Palasis S, et al. ACR Appropriateness Criteria® Cerebrovascular Disease-Child. *J Am Coll Radiol*. 2020;17(5S):S36-S54. doi:10.1016/j.jacr.2020.01.036
2. Ferriero DM, Fullerton HJ, Bernard TJ, et al. Management of Stroke in Neonates and Children: A Scientific Statement From the American Heart Association/American Stroke Association. *Stroke*. 2019;50(3). doi:10.1161/str.0000000000000183
3. Mirsky DM, Beslow LA, Amlie-Lefond C, et al. Pathways for Neuroimaging of Childhood Stroke. *Pediatric Neurology*. 2017;69:11-23. doi:10.1016/j.pediatrneurol.2016.12.004
4. Soliman M, Laxer R, Manson D, et al. Imaging of systemic vasculitis in childhood. *Pediatr Radiol*. 2015 Aug; 45 (8):1110-1125
5. Khalaf A, Iv M, Fullerton H, Wintermark M. Pediatric Stroke Imaging. *Pediatric Neurology*. 2018;86:5-18. doi:10.1016/j.pediatrneurol.2018.05.008
6. American College of Radiology. ACR–ASNR–SPR Practice Parameter for the performance of computed tomography (CT) perfusion in neuroradiologic imaging. 2022; Available at: https://gravitas.acr.org/PPTS/
7. Debaun MR, Jordan LC, King AA, et al. American Society of Hematology 2020 guidelines for sickle cell disease: prevention, diagnosis, and treatment of cerebrovascular disease in children and adults. *Blood Advances*. 2020;4(8):1554-1588. doi:10.1182/bloodadvances.2019001142
8. Panda PK, Sharawat IK, Panda P, Natarajan V, Bhakat R, Dawman L. Neurological Complications of SARS-CoV-2 Infection in Children: A Systematic Review and Meta-Analysis [published online ahead of print, 2020 Sep 10]. *J Trop Pediatr*. 2020;fmaa070. doi:10.1093/tropej/fmaa070
9. Lin JE, Asfour A, Sewell TB, et al. Neurological issues in children with COVID-19. *Neurosci Lett*. 2021;743:135567. doi:10.1016/j.neulet.2020.135567
10. Bernaudin F, Verlhac S, Arnaud C, et al. Long-term treatment follow-up of children with sickle cell disease monitored with abnormal transcranial Doppler velocities. *Blood*. 2016;127(14):1814-1822. doi:10.1182/blood-2015-10-675231
11. Nickel RS, Kamani NR. Ethical Challenges in Hematopoietic Cell Transplantation for Sickle Cell Disease. *Biol Blood Marrow Transplant*. 2018;24(2):219-227. doi:10.1016/j.bbmt.2017.08.034
12. Krishnamurti L. Hematopoietic Cell Transplantation for Sickle Cell Disease. *Frontiers in Pediatrics*. 2021;8. doi:10.3389/fped.2020.551170
13. King AA, McKinstry RC, Wu J, et al. Functional and Radiologic Assessment of the Brain after Reduced-Intensity Unrelated Donor Transplantation for Severe Sickle Cell Disease: Blood and Marrow Transplant Clinical Trials Network Study 0601. *Biol Blood Marrow Transplant*. 2019;25(5):e174-e178. doi:10.106/j.bbmt.2019.01.008
14. Kanter J, Liem RI, Bernaudin F, et al. American Society of Hematology 2021 guidelines for sickle cell disease: stem cell transplantation. *Blood Adv*. 2021;5(18):3668-3689. doi:10.1182/bloodadvances.2021004394C
15. Jordan LC, Kassim AA, Wilkerson KL, Lee CA, Waddle SL, Donahue MJ. Using novel magnetic resonance imaging methods to predict stroke risk in individuals with sickle cell anemia. *Hematol Oncol Stem Cell Ther*. 2020;13(2):76-84. doi:10.1016/j.hemonc.2019.12.009
16. Hirtz D, Kirkham FJ. Sickle Cell Disease and Stroke. *Pediatr Neurol*. 2019;95:34-41. doi:10.1016/j.pediatrneurol.2019.02.018
17. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance of intracranial magnetic resonance perfusion imaging. 2022; Available at: https://gravitas.acr.org/PPTS/
18. Lin JE, Asfour A, Sewell TB, et al. Neurological issues in children with COVID-19. *Neurosci Lett*. 2021;743:135567. doi:10.1016/j.neulet.2020.135567
19. American Medical Association. CPT—Current Procedural Terminology. American Medical Association. https://www.ama-assn.org/practice-management/cpt. Published 2026. Copyright 1995 – 2026

Benign Brain Lesions (PEDHD-13)

Guideline

Arachnoid Cysts (PEDHD-13.1)
Pineal/Colloid Cysts (PEDHD-13.2)
Acoustic Neuromas (PEDHD-13.3)

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Arachnoid Cysts (PEDHD-13.1)

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

Pineal/Colloid Cysts (PEDHD-13.2)

HDP.BL.0013.2.A

v2.0.2026

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

Acoustic Neuromas (PEDHD-13.3)

HDP.BL.0013.3.A

v2.0.2026

- 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

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Pediatric Demyelinating Disease General Considerations (PEDHD-14.1)

HDP.DD.0014.1.A

v2.0.2026

- For evaluation of pediatric demyelinating disease, the following imaging is 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 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** 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)**.

Multiple Sclerosis (MS) (PEDHD-14.2)

HDP.DD.0014.2.A
v2.0.2026

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)

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.

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

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- 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 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 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.

Transverse Myelitis (PEDHD-14.4)

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

References (PEDHD-14)

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1. Weygandt M, Hummel H-M, Schregel K, et al. MRI-based diagnostic biomarkers for early onset pediatric multiple sclerosis. *NeuroImage: Clinical*. 2015;7:400-408. doi:10.1016/j.nicl.2014.06.015
2. Tenembaum SN. Pediatric multiple sclerosis. Distinguishing clinical and MR imaging features. *Neuroimag Clin.* 2017; 27:229-250
3. Van Haren K, Waubant E. Therapeutic Advances in Pediatric Multiple Sclerosis. *The Journal of Pediatrics*. 2013;163(3):631-637. doi:https://doi.org/10.1016/j.jpeds.2013.04.028
4. Ketelslegers IA, Neuteboom RF, Boon M, Catsman-Berrevoets CE, Hintzen RQ. A comparison of MRI criteria for diagnosing pediatric ADEM and MS. *Neurology*. 2010;74(18):1412-1415. doi:https://doi.org/10.1212/wnl.0b013e3181dc138b
5. Banwell B, Arnold DL, Tillema J-M, et al. MRI in the evaluation of pediatric multiple sclerosis. *Neurology*. 2016;87(9 Supplement 2). doi:10.1212/wnl.0000000000002787
6. Marin SE, Callen DJA. The Magnetic Resonance Imaging Appearance of Monophasic Acute Disseminated Encephalomyelitis. *Neuroimaging Clinics of North America*. 2013;23(2):245-266. doi:https://doi.org/10.1016/j.nic.2012.12.005
7. Neuteboom R, Wilbur C, Pelt DV, Rodriguez M, Yeh A. The Spectrum of Inflammatory Acquired Demyelinating Syndromes in Children. *Seminars in Pediatric Neurology*. 2017;24(3):189-200
8. Ruet A. Update on pediatric-onset multiple sclerosis. *Revue Neurologique*. 2018;174(6):398-407. doi:10.1016/j.neurol.2018.04.003
9. Troxell RM, Christy A. Atypical Pediatric Demyelinating Diseases of the Central Nervous System. *Current Neurology and Neuroscience Reports*. 2019;19(12). doi:10.1007/s11910-019-1015-y
10. Thompson AJ, Banwell BL, Barkhof F, et al. Diagnosis of multiple sclerosis: 2017 revisions of the McDonald criteria. *The Lancet Neurology*. 2018;17(2):162-173. doi:10.1016/s1474-4422(17)30470-2
11. Expert Panel on Neurologic Imaging: Kennedy TA, Corey AS, et al. ACR Appropriateness Criteria® Orbits Vision and Visual Loss. *J Am Coll Radiol*. 2018;15(5S):S116-S131. doi:10.1016/j.jacr.2018.03.023
12. Wingerchuk DM et al. International consensus diagnostic criteria for neuromyelitis optica spectrum disorders. *Neurology*. 2015;85(2):177-89. doi:10.1212/WNL.0000000000001729
13. Major EO. Progressive Multifocal Leukoencephalopathy Lesions and JC Virus. *JAMA Neurology*. 2018;75(7):789. doi:10.1001/jamaneurol.2018.0004
14. Vukusic S, Rollot F, Casey R, et al. Progressive Multifocal Leukoencephalopathy Incidence and Risk Stratification Among Natalizumab Users in France. *JAMA Neurology*. 2020;77(1):94. doi:10.1001/jamaneurol.2019.2670
15. Rae-Grant A. Author response: Practice guideline recommendations summary: Disease-modifying therapies for adults with multiple sclerosis: Report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology. *Neurology*. 2019;92(2):110-111. doi:10.1212/WNL.0000000000006735
16. Wattjes MP, Barkhof F. Diagnosis of natalizumab-associated progressive multifocal leukoencephalopathy using MRI. *Current Opinion in Neurology*. 2014;27(3):260-270. doi:10.1097/wco.0000000000000099
17. Barraza G, Deiva K, Husson B, Adamsbaum C. Imaging in pediatric multiple sclerosis. *Clinical Neuroradiology* 2021;31:61-71
18. Wattjes MP, Ciccarelli O, Reich DS, et al. 2021 MAGNIMS-CMSC-NAIMS consensus recommendations on the use of MRI in patients with multiple sclerosis. *The Lancet Neurology*. 2021;20(8):653-670. doi:10.1016/S1474-4422(21)00095-8
19. Tillema JM. Imaging of Central Nervous System Demyelinating Disorders. *Continuum (Minneap Minn)*. 2023;29(1):292-323. doi:10.1212/CON.0000000000001246

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Pituitary Dysfunction (PEDHD-15)

Guideline

Pituitary Dysfunction General Considerations (PEDHD-15.1)

HDP.PD.0015.1.A

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- 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 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 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)

HDP.PD.0015.2.A
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- 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 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.

Isolated Growth Hormone Deficiency (PEDHD-15.3)

HDP.PD.0015.3.A

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- 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 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.

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

HDP.PD.0015.4.A

v2.0.2026

- Laboratory testing should be performed initially. Diabetes insipidus is characterized by serum osmolality >300mOsm/kg and urine osmolality <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 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 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 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 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.
- 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.

Precocious Puberty (PEDHD-15.5)

HDP.PD.0015.5.A

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- 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 >0.3U/L on a random blood sample is the most reliable screening test for central precocious puberty. If LH <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 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.

- 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.

Benign Pituitary Tumors (PEDHD-15.6)

HDP.PD.0015.6.A

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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.

Pituitary Malignancies (PEDHD-15.7)

HDP.PD.0015.7.A

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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.

References (PEDHD-15)

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1. Expert Panel on Neurologic Imaging: Burns J, Policeni B, et al. ACR Appropriateness Criteria® Neuroendocrine Imaging. *J Am Coll Radiol*. 2019;16(5S):S161-S173. doi:10.1016/j.jacr.2019.02.017
2. Kaplowitz P, Bloch C. Evaluation and Referral of Children With Signs of Early Puberty. *Pediatrics*. 2015;137(1). doi:10.1542/peds.2015-3732
3. Grimberg A, Divall SA, Polychronakos C, et al. Guidelines for Growth Hormone and Insulin-Like Growth Factor-I Treatment in Children and Adolescents: Growth Hormone Deficiency, Idiopathic Short Stature, and Primary Insulin-Like Growth Factor-I Deficiency. *Hormone Research in Paediatrics*. 2016;86(6):361-397. doi:10.1159/000452150
4. Thompson CJ et al. Posterior Pituitary. Textbook of Endocrinology. Chapter 10, eds. Melmed S, et al, 14th edition. 2019. pp 303-330.
5. Cooke DW et al. Normal and Aberrant Growth in Children. Textbook of Endocrinology. Chapter 25, eds. Melmed S, et al, 14th edition. 2019. pp 937-1022.
6. Styne DM et al. Physiology and Disorders of Puberty. Textbook of Endocrinology. Chapter 26, eds. Melmed S, et al, 14th edition. 2019. pp 1023-1164.
7. IGFB3 - Clinical: Insulin-Like Growth Factor-Binding Protein 3, Serum. www.mayocliniclabs.com. https://www.mayocliniclabs.com/test-catalog
8. IGFMS - Clinical: Insulin-Like Growth Factor-1, LC-MS, Serum. www.mayocliniclabs.com. https://www.mayocliniclabs.com/test-catalog

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Pediatric Ear Disorders (PEDHD-16)

Guideline

Hearing Loss (PEDHD-16.1)

HDP.ED.0016.1.A

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- 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 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 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 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)

Ear Pain (PEDHD-16.2)

HDP.ED.0016.2.A

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- 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 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)

Cholesteatoma (PEDHD-16.3)

HDP.ED.0016.3.A

v2.0.2026

- ONE of the following studies is 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 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.

Vertigo (PEDHD-16.4)

HDP.ED.0016.4.A

v2.0.2026

- 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 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.

Tinnitus (PEDHD-16.5)

HDP.ED.0016.5.A

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- 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 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.

References (PEDHD-16)

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1. Expert Panel on Neurologic Imaging: Sharma A, Kirsch CFE, et al. ACR Appropriateness Criteria® Hearing Loss and/or Vertigo. *J Am Coll Radiol*. 2018;15(11S):S321-S331. doi:10.1016/j.jacr.2018.09.020
2. Minovi A, and Dazert S. Diseases of the middle ear in childhood. *GMS Curr Top Otorhinolaryngol Head Neck Surg*. 2014 Dec; 13:1-29
3. Kerr R, Kang E, Hopkins B, Anne S. Pediatric tinnitus: Incidence of imaging anomalies and the impact of hearing loss. *International Journal of Pediatric Otorhinolaryngology*. 2017;103:147-149
4. Jahn K. Vertigo and dizziness in children. *Handbook of Clinical Neurology Neuro-Otology*. 2016:353-363. doi:10.1016/b978-0-444-63437-5.00025-x
5. Shekdar KV, Bilaniuk LT. Imaging of Pediatric Hearing Loss. *Neuroimaging Clinics of North America*. 2019;29(1):103-115. doi:10.1016/j.nic.2018.09.011
6. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance of Computed Tomography (CT) of the extracranial head and neck. 2021; Available at: https://gravitas.acr.org/PPTS/
7. Rosenfeld RM, Shin JJ, Schwartz SR, et al. Clinical Practice Guideline: Otitis Media with Effusion (Update). *Otolaryngology–Head and Neck Surgery*. 2016;154(1_suppl). doi:10.1177/0194599815623467
8. Rosenfeld RM, Schwartz SR, Cannon CR, et al. Clinical Practice Guideline. *Otolaryngology–Head and Neck Surgery*. 2014;150(1_suppl). doi:10.1177/0194599813517083
9. Rosenfeld RM, Tunkel DE, Schwartz SR, et al. Clinical Practice Guideline: Tympanostomy Tubes in Children (Update). *Otolaryngol Head Neck Surg*. 2022;166(1_suppl):S1-S55. doi:10.1177/01945998211065662
10. Expert Panel on Neurological Imaging, Jain V, Policeni B, et al. ACR Appropriateness Criteria® Tinnitus: 2023 Update. *J Am Coll Radiol.* 2023;20(11S):S574-S591. doi:10.1016/j.jacr.2023.08.017
11. Lieu JEC, Kenna M, Anne S, Davidson L. Hearing Loss in Children: A Review. *JAMA*. 2020 Dec 1;324(21):2195-2205. doi: 10.1001/jama.2020.17647
12. Aylward SC, Reem RE. Pediatric Intracranial Hypertension. *Pediatr Neurol*. 2017 Jan;66:32-43. doi: 10.1016/j.pediatrneurol.2016.08.010
13. Ropers FG, Pham ENB, Kant SG, et al. Assessment of the Clinical Benefit of Imaging in Children With Unilateral Sensorineural Hearing Loss: A Systematic Review and Meta-analysis. *JAMA Otolaryngol Head Neck Surg*. 2019;145(5):431-443. doi:10.1001/jamaoto.2019.0121
14. Campion T, Taranath A, Pinelli L, et al. Imaging of temporal bone inflammations in children: a pictorial review. *Neuroradiology*. 2019;61(9):959-970. doi:10.1007/s00234-019-02258-1
15. American Medical Association. CPT—Current Procedural Terminology. American Medical Association. https://www.ama-assn.org/practice-management/cpt. Published 2026. Copyright 1995 – 2026

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Autism Spectrum Disorders (PEDHD-17)

Guideline

Autism Spectrum Disorders (PEDHD-17.1)
References (PEDHD-17)

Autism Spectrum Disorders (PEDHD-17.1)

HDP.AS.0017.1.A

v2.0.2026

- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) is 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 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.

References (PEDHD-17)

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1. Baker E, and Jeste SS. Diagnosis and Management of Autism Spectrum Disorder in the Era of Genomics. *Pediatric Clinics of North America*. 2015;62(3):607-618. doi:10.1016/j.pcl.2015.03.003
2. Zürcher NR, Bhanot A, McDougle CJ, Hooker JM. A systematic review of molecular imaging (PET and SPECT) in autism spectrum disorder: Current state and future research opportunities. *Neuroscience & Biobehavioral Reviews*. 2015;52:56-73. doi:10.1016/j.neubiorev.2015.02.002

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Behavioral and Psychiatric Disorders (PEDHD-18)

Guideline

Behavioral and Psychiatric Disorders (PEDHD-18.1)
Reference (PEDHD-18)

Behavioral and Psychiatric Disorders (PEDHD-18.1)

HDP.BD.0018.1.A

v2.0.2026

- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) **OR** CT Head without contrast (CPT® 70450) is 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).

Reference (PEDHD-18)

v2.0.2026

1. Pereira-Sanchez V, Castellanos FX. Neuroimaging in attention-deficit/hyperactivity disorder. *Curr Opin Psychiatry*. 2021;34(2):105-111. doi:10.1097/YCO.0000000000000669

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Developmental Disorders (PEDHD-19)

Guideline

Intellectual Disability (PEDHD-19.1)

HDP.ID.0019.1.A

v2.0.2026

- Intellectual disability may be primary or secondary to a variety of heterogeneous disorders. See **Background and Supporting Information**.
- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) is 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.

Cerebral Palsy (PEDHD-19.2)

HDP.ID.0019.2.A

v2.0.2026

- MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) is 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.

Developmental Motor Delay (PEDHD-19.3)

HDP.ID.0019.3.A

v2.0.2026

- MRI Brain without contrast (CPT® 70551) **OR** MRI Brain without and with contrast (CPT® 70553) is 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
v2.0.2026

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

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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1. Noritz GH, and Murphy NA. Motor delays: early identification and evaluation. *Pediatrics*. 2013;131(6)
2. Murias K, Moir A, Myers KA, Liu I, Wei X-C. Systematic review of MRI findings in children with developmental delay or cognitive impairment. *Brain and Development*. 2017;39(8):644-655
3. Haynes KB, Wimberly RL, Vanpelt JM, Jo C-H, Riccio AI, Delgado MR. Toe Walking. *Journal of Pediatric Orthopaedics*. 2018;38(3):152-156
4. Sanyal S, et.al. Magnetic Resonance Imaging of Brain in Evaluation of Floppy Children: A Case Series. *Iran J Child Neurol*. 2015 Autumn; 9(4):65-74. PMCID: PMC4670981PMID: 26664445
5. Ali AS, et al. Magnetic Resonance Imaging (MRI) Evaluation of Developmental Delay in Pediatric Patients. *J Clin Diagn Res*. 2015 Jan; 9(1): TC21-TC24. doi: 10.7860/JCDR/2015/11921.5478
6. Barkovich AJ. Magnetic resonance techniques in the assessment of myelin and myelination. *Journal of Inherited Metabolic Disease*. 2005;28(3):311-343. doi:10.1007/s10545-005-5952-z
7. Bonkowsky JL, Keller S; AAP Section on Neurology, Council on Genetics. Leukodystrophies in Children: Diagnosis, Care, and Treatment. *Pediatrics*. 2021;148(3):e2021053126. doi:10.1542/peds.2021-053126
8. Mankad K, Talenti G, Tan AP, et al. Neurometabolic Disorders of the Newborn. *Top Magn Reson Imaging*. 2018;27(4):179-196. doi:10.1097/RMR.0000000000000176
9. Whitehead MT, Lai LM, Blüml S. Clinical ^{1}H MRS in childhood neurometabolic diseases - part 2: MRS signatures. *Neuroradiology*. 2022;64(6):1111-1126. doi:10.1007/s00234-022-02918-9
10. Aida N. ^{1}H-MR Spectroscopy of the Early Developmental Brain, Neonatal Encephalopathies, and Neurometabolic Disorders. *Magn Reson Med Sci*. 2022;21(1):9-28. doi:10.2463/mrms.rev.2021-0055
11. American Association on Intellectual and Developmental Disabilities. Defining Criteria for Intellectual Disability. Aaidd.org. Published 2019. https://www.aaidd.org/intellectual-disability/definition

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Ataxia (PEDHD-20)

Guideline

Ataxia (PEDHD-20.1)
References (PEDHD-20)

Ataxia (PEDHD-20.1)

HDP.AT.0020.1.A
v2.0.2026

- 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 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)

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 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.

References (PEDHD-20)

v2.0.2026

1. Expert Panel on Pediatric Imaging, Radhakrishnan R, Shea LAG, et al. ACR Appropriateness Criteria® Ataxia-child. *J Am Coll Radiol*. 2022;19(11S):S240-S255.doi:10.1016/j.jacr.2022.09.010
2. Salman MS, Chodirker BN, Bunge M. Neuroimaging Findings and Repeat Neuroimaging Value in Pediatric Chronic Ataxia. *Canadian Journal of Neurological Sciences / Journal Canadien des Sciences Neurologiques*. 2016;43(06):824-832
3. Vedolin L, Gonzalez G, Souza C, Lourenço C, Barkovich A. Inherited Cerebellar Ataxia in Childhood: A Pattern-Recognition Approach Using Brain MRI. *American Journal of Neuroradiology*. 2012;34(5):925-934. doi:10.3174/ajnr.a3055
4. Alves CAPF, Fragoso DC, Gonçalves FG, Marussi VH, Amaral LLFD. Cerebellar Ataxia in Children. *Topics in Magnetic Resonance Imaging*. 2018;27(4):275-302. doi:10.1097/rmr.0000000000000175

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Epistaxis (PEDHD-21)

Guideline

Epistaxis Imaging (PEDHD-21.1)
References (PEDHD-21)

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Epistaxis Imaging (PEDHD-21.1)

HDP.ET.0021.1.A

v2.0.2026

- 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 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)

References (PEDHD-21)

v2.0.2026

1. Tunkel DE, Anne S, Payne SC, et al. Clinical Practice Guideline: Nosebleed (Epistaxis). *Otolaryngology–Head and Neck Surgery*. 2020;162(1_suppl). doi:10.1177/0194599819890327
2. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance of

   Computed Tomography (CT) of the extracranial head and neck. 2021; Available at: https://gravitas.acr.org/PPTS/
3. Kuan EC, Wang EW, Adappa ND, et al. International Consensus Statement on Allergy and Rhinology: Sinonasal Tumors. *Int Forum Allergy Rhinol*. 2024; 14(2):149-608. doi:10.1002/alr.23262

Papilledema/Pseudotumor Cerebri (PEDHD-22)

Guideline

Papilledema/Pseudotumor Cerebri (PEDHD-22.1)

Papilledema/Pseudotumor Cerebri (PEDHD-22.1)

HDP.PC.0022.1.A

v2.0.2026

- 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.

Cranial Neuropathies (PEDHD-23)

Guideline

Cranial Neuropathies (PEDHD-23.1)

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Cranial Neuropathies (PEDHD-23.1)

HDP.CN.0023.1.A
v2.0.2026

- See **Cranial Neuropathies (HD-31.1)** in the Head Imaging Guidelines.

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Pediatric Sleep Disorders (PEDHD-24)

Guideline

Pediatric Sleep Disorders (PEDHD-24.1)
References (PEDHD-24)

Pediatric Sleep Disorders (PEDHD-24.1)

HDP.SD.0024.1.A

v2.0.2026

- 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 not medically necessary.
  - Initially, endoscopic examination of the upper airway should be performed.
    - CT Maxillofacial without contrast (CPT® 70486) is 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 medically necessary:
  - MRI Brain without contrast (CPT® 70551) OR
  - MRI Brain without and with contrast (CPT® 70553)
- Advanced imaging is NOT 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)**.

References (PEDHD-24)

v2.0.2026

1. Mitchell RB, Archer SM, Ishman SL, et al. Clinical Practice Guideline: Tonsillectomy in Children (Update). *Otolaryngology–Head and Neck Surgery*. 2019;160(1_suppl). doi:10.1177/0194599818801757
2. Baldassari CM, Lam DJ, Ishman SL, et al. Expert Consensus Statement: Pediatric Drug-Induced Sleep Endoscopy. *Otolaryngol Head Neck Surg*. 2021;165(4):578-591. doi:10.1177/0194599820985000
3. Aurora RN, Lamm CI, Zak RS, et al. Practice parameters for the non-respiratory indications for polysomnography and multiple sleep latency testing for children. *Sleep*. 2012;35(11):1467-1473. Published 2012 Nov 1. doi:10.5665/sleep.2190

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

Guideline

Temporomandibular Joint Imaging (PEDHD-25.1)
Dental/Periodontal/Maxillofacial Imaging (PEDHD-25.2)
References (PEDHD-25)

Temporomandibular Joint Imaging (PEDHD-25.1)

HDP.TJ.0025.1.A

v2.0.2026

- 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 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 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 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)

HDP.TJ.0025.2.A

v2.0.2026

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

References (PEDHD-25)

v2.0.2026

1. Zwir LM, Terreri MT, Sousa SA, et al. Are temporomandibular joint signs and symptoms associated with magnetic resonance imaging finings in juvenile idiopathic arthritis patients? A longitudinal study. *Clin Rheumatol*. 2015 Dec; 34 (12) 057-2063
2. Navallas M, Inarejos EJ, Iglesias E, Lee GYC, Rodríguez N, Antón J. MR Imaging of the Temporomandibular Joint in Juvenile Idiopathic Arthritis: Technique and Findings. *RadioGraphics*. 2017;37(2):595-612. doi:10.1148/rg.2017160078
3. Stoll ML, Kau CH, Waite PD, Cron RQ. Temporomandibular joint arthritis in juvenile idiopathic arthritis, now what? *Pediatric Rheumatology*. 2018;16(1)
4. Miller E, Clemente EJI, Tzaribachev N, et al. Imaging of temporomandibular joint abnormalities in juvenile idiopathic arthritis with a focus on developing a magnetic resonance imaging protocol. *Pediatric Radiology*. 2018;48(6):792-800. doi:10.1007/s00247-017-4005-8
5. Hammer MR, Kanaan Y. Imaging of the Pediatric Temporomandibular Joint. *Oral and Maxillofacial Surgery Clinics of North America*. 2018;30(1):25-34. doi:10.1016/j.coms.2017.08.008
6. Lee YH, Hong IK, Chun YH. Prediction of painful temporomandibular joint osteoarthritis in juvenile patients using bone scintigraphy. *Clin Exp Dent Res*. 2019;5(3):225-235. doi:10.1002/cre2.175
7. Schmidt C, Ertel T, Arbogast M, et al. The Diagnosis and Treatment of Rheumatoid and Juvenile Idiopathic Arthritis of the Temporomandibular Joint. *Dtsch Arztebl Int*. 2022;119(4):47-54.doi:10.3238/arztebl.m2021.0388

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Movement Disorders including Tourette Syndrome (PEDHD-26)

Guideline

Tourette Syndrome (PEDHD-26.1)

HDP.MD.0026.1.A

v2.0.2026

- The diagnosis of Tourette syndrome is made clinically and advanced neuroimaging is not 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.

Movement Disorders (PEDHD-26.2)

HDP.MD.0026.2.A

v2.0.2026

- MRI Brain without contrast (CPT® 70551), **OR** MRI Brain without and with contrast (CPT® 70553) is 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 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 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
  - 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.

References (PEDHD-26)

v2.0.2026

1. Serajee FJ, Mahbubul Huq AH. Advances in Tourette syndrome: diagnoses and treatment. *Pediatr Clin North Am*. 2015;62(3):687-701. doi:10.1016/j.pcl.2015.03.007
2. Zinner SH, Mink JW. Movement Disorders I: Tics and Stereotypies. *Pediatrics in Review*. 2010;31(6):223-233. doi:10.1542/pir.31-6-223
3. Frankovich J, Swedo S, Murphy T, et al. Clinical Management of Pediatric Acute-Onset Neuropsychiatric Syndrome: Part II—Use of Immunomodulatory Therapies. *Journal of Child and Adolescent Psychopharmacology*. 2017;27(7):574-593. doi:10.1089/cap.2016.0148
4. Cooperstock MS, Swedo SE, Pasternack MS, Murphy TK, Consortium FTP. Clinical Management of Pediatric Acute-Onset Neuropsychiatric Syndrome: Part III—Treatment and Prevention of Infections. *Journal of Child and Adolescent Psychopharmacology*. 2017;27(7):594-606. doi:10.1089/cap.2016.0151
5. Thienemann M, Murphy T, Leckman J, et.al. Clinical Management of Pediatric Acute-Onset Neuropsychiatric Syndrome: Part 1-Psychiatric and Behavioral Interventions. *Journal of Child and Adolescent Psychopharmacology*. 2017;27(7):556-573. doi:10.1089/cap.2016.0145
6. Prato A, Gulisano M, Scerbo M, Barone R, Vicario CM, Rizzo R. Diagnostic Approach to Pediatric Autoimmune Neuropsychiatric Disorders Associated With Streptococcal Infections (PANDAS): A Narrative Review of Literature Data. *Front Pediatr*. 2021;9:746639. Published 2021 Oct 27. doi:10.3389/fped.2021.746639
7. Tourette Syndrome. National Institute of Neurological Disorders and Stroke. Last reviewed January 31, 2025. https://www.ninds.nih.gov/health-information/disorders/tourette-syndrome

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Tuberous Sclerosis (PEDHD-27)

Guideline

Tuberous Sclerosis (PEDHD-27.1)

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Tuberous Sclerosis (PEDHD-27.1)

HDP.TS.0027.1.A

v2.0.2026

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

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

Guideline

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

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

HDP.VL.0028.1.A

v2.0.2026

- 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

CNS Infection (PEDHD-29.1)
References (PEDHD-29)

CNS Infection (PEDHD-29.1)

HDP.CI.0029.1.A

v2.0.2026

- 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 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.

References (PEDHD-29)

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1. De Vries LS, and Volpe JJ. Viral, protozoan, and related intracranial infections. In: Volpe JJ, ed. *Volpe's Neurology of the Newborn*. 6th ed. Philadelphia: Elsevier. 2018;973-1049
2. Melo AS, Aguiar RS, Amorim MM, et al. Congenital Zika Virus Infection: Beyond Neonatal Microcephaly. *JAMA Neurol*. 2016;73(12):1407-1416. doi:10.1001/jamaneurol.2016.3720
3. Levine D, Jani JC, Castro-Aragon I, et al. How does imaging of congenital Zika compare with imaging of other TORCH infections? *Radiology*. 2017;285:744-761
4. Rabe I, Meaney-Delman D, and Moore CA. "Zika Virus – What Clinicians Need to Know." clinician outreach and communication activity call. Centers for Disease Control and Prevention. 26 Jan. 2016. Available at: http://coursewareobjects.elsevier.com/objects/elr/ExpertConsult/Kliegman/nelson20e/updates/CDC_presentation_01262016.pdf
5. American College of Radiology. ACR-ASNR-SPR Practice Parameter for the performance of Computed Tomography (CT) of the extracranial head and neck. 2021; Available at: https://gravitas.acr.org/PPTS/
6. Wong A, Toh CH. Spectrum of neuroimaging mimics in children with COVID-19 infection [published online ahead of print, 2021 Nov 15]. *Biomed J*. 2021;S2319-4170(21)00151-7. doi:10.1016/j.bj.2021.11.005
7. Lindan CE, Mankad K, Ram D, et al. Neuroimaging manifestations in children with SARS-CoV-2 infection: a multinational, multicentre collaborative study. *Lancet Child Adolesc Health*. 2021;5(3):167-177 doi:10.1016/S2352-4642(20)30362-X
8. Probasco JC, Solnes L, Nalluri A, et al. Abnormal brain metabolism on FDG-PET/CT is a common early finding in autoimmune encephalitis. *Neurology - Neuroimmunology Neuroinflammation*. 2017;4(4). doi:10.1212/nxi.0000000000000352
9. Hwee TP, Koh Cheng T. Imaging of Congenital/Childhood Central Nervous System Infections. *Neuroimaging Clin N Am*. 2023;33(1):207-224. doi:10.1016/j.nic.2022.07.017

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Scalp and Skull Lesions (PEDHD-30)

Guideline

Scalp and Skull Lesions (PEDHD-30.1)
References (PEDHD-30)

Scalp and Skull Lesions (PEDHD-30.1)

HDP.SL.0030.1.A

v2.0.2026

- 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 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.

References (PEDHD-30)

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1. Siegel MJ. Brain. In: *Pediatric sonography.* 5th ed. Philadelphia. Wolters Kluwer. 2018 75-178.
2. Bansal AG, Oudsema R, Masseaux JA, Rosenberg HK. US of Pediatric Superficial Masses of the Head and Neck. *RadioGraphics*. 2018;38(4):1239-1263. doi:10.1148/rg.2018170165
3. Carratalá RM, Cabezuelo MEC, Herrera IH, et al. Nontraumatic Lesions of the Scalp: Practical Approach to Imaging Diagnosis: Neurologic/Head and Neck Imaging. *RadioGraphics*. 2017;37(3):999-1000. doi:10.1148/rg.2017160112
4. Kollipara R, Dinneen L, Rentas KE, et al. Current Classification and Terminology of Pediatric Vascular Anomalies. *American Journal of Roentgenology*. 2013;201(5):1124-1135. doi:10.2214/ajr.12.10517
5. Robinson AJ, Blaser S and Fink AM. Prenatal Imaging. Caffey's Pediatric Diagnostic Imaging, Chapter 19. Coley BR, et al. 13th edition. 2019, pp 158-161.
6. Tobler JF, Slovis, TL and Rozzelle AA. Selected Craniofacial Syndromes, and Other Abnormalities of the Skull. Caffey's Pediatric Diagnostic Imaging, Chapter 20. Coley BR, et al. 13th edition. 2019, pp 162-180.
7. Barnett RR, Piazza MG, Elton SW. Pediatric Neurosurgery in Primary Care: Masses of the Scalp and Skull in Children. *Pediatr Clin North Am*. 2021;68(4):743-757. doi:10.1016/j.pcl.2021.04.003

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Eye Disorders (PEDHD-31)

Guideline

Eye Disorders (PEDHD-31.1)
References (PEDHD-31)

Eye Disorders (PEDHD-31.1)

HDP.EY.0031.1.A

v2.0.2026

- 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 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.

References (PEDHD-31)

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1. Dumitrescu AV, Scruggs BA, Drack AV. Clinical Guidelines: Childhood Nystagmus Workup. American Academy of Ophthalmology. https://www.aao.org/disease-review/clinical-guidelines-childhood-nystagmus-workup. Published February 13, 2020.
2. Ganau M, Huet S, Syrmos N, Meloni M, Jayamohan J. Neuro-Ophthalmological Manifestations Of Septo-Optic Dysplasia: Current Perspectives Eye and Brain. 2019;Volume 11:37-47. doi:10.2147/eb.s186307
3. Costello F, Scott JN. Imaging in Neuro-ophthalmology. *CONTINUUM (MINNEAP MINN).* 2019;25(5, NEURO-OPHTHALMOLOGY):1438–1490.
4. Bhat R, Al-Samarraie M, Nada A, Leiva-Salinas C, Whitehead M, Mahdi E. Spotlight on the pediatric eye: a pictorial review of orbital anatomy and congenital orbital pathologies. *Neuroradiol J.* 2021;34(1):21-32. doi: 10.1177/1971400920949232
5. Kuchalska K, Derwich K, Gotz-Więckowska A. Ophthalmologic Manifestations of Neuroblastoma: A Systemic Review. *J Pediatr Hematol Oncol*. 2023;45(2):47-56. doi:10.1097/MPH.0000000000002543K

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Policy History and Instructions for Use

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Policy History and Instructions for Use

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Instructions for Use

This Medical Policy provides assistance in interpreting United HealthCare Services, Inc. standard benefit plans. When deciding coverage, the federal, state (Ohio Administrative Code [OAC]) or contractual requirements for benefit plan coverage must be referenced as the terms of the federal, state (OAC) or contractual requirements for benefit plan coverage may differ from the standard benefit plan. In the event of a conflict, the federal, state (OAC) or contractual requirements for benefit plan coverage govern.

Before using this policy, please check the federal, state (OAC) or contractual requirements for benefit plan coverage. United HealthCare Services, Inc. reserves the right to modify its Policies and Guidelines as necessary. This Medical Policy is provided for informational purposes. It does not constitute medical advice.

United HealthCare Services, Inc. uses InterQual® for the primary medical/surgical criteria, and the American Society of Addiction Medicine (ASAM) for substance use, in administering health benefits. If InterQual® does not have applicable criteria, United HealthCare Services, Inc. may also use United HealthCare Services, Inc.'s Medical Policies, Coverage Determination Guidelines, and/or Utilization Review Guidelines that have been approved by the Ohio Department for Medicaid Services. The United HealthCare Services, Inc.'s Medical Policies, Coverage Determination Guidelines, and Utilization Review Guidelines are intended to be used in connection with the independent professional medical judgment of a qualified health care provider and do not constitute the practice of medicine or medical advice.

Policy History/Revision Information

Date	Summary of Changes
02/01/2024	Annual evidence-based updates
07/01/2024	Interim evidence-based updates
05/01/2025	Annual evidence-based updates
11/06/2025	Annual evidence-based updates
05/07/2026	Interim evidence-based updates