Executive Summary: Radiology

Material Changes to the 2016 Clinical Guidelines

The eviCore evidence-based, proprietary clinical guidelines evaluate a range of advanced imaging and procedures, including CT, MRI, PET, and Radiation Oncology, Sleep Studies and Cardiac and Spine interventions.

The eviCore guidelines undergo a formal internal review annually. To facilitate this process, eviCore’s Clinical Knowledge team collaborates with the internal medical directors to ensure that the guidelines reflect the latest medical evidence. The medical directors represent a comprehensive range of specialties, including: Cardiology, General Surgery, Internal Medicine, Oncology, Pediatric Oncology, Radiation Oncology, Orthopedics, Neurology, Neurosurgery, Radiology, Sleep Medicine, and Obstetrics and Gynecology.

Upon completion of the internal review, the guidelines undergo review by an external panel of experts. eviCore’s guidelines are based upon major national and international association and society guidelines and criteria, peer-reviewed literature, major treatises and, input from health plans, practicing academic and community-based physicians.

This executive summary represents the results of the most recent annual revision process. Presented are the material changes that were made to the eviCore radiology clinical guidelines for 2016. “Material changes” are defined as changes that could greatly impact the approval or denial rate of specific, common requests.
Key Highlights for 2016

- Two new gastric emptying CPT codes were added to the Abdomen Imaging Guidelines (AB 44: Nuclear Medicine)
  - Gastric emptying study with small bowel transit (CPT® 78265) is indicated for evaluation of suspected abnormalities in both total and regional times for gastrointestinal transit in small bowel
  - Gastric emptying study with small bowel and colon transit (CPT® 78266) is indicated for evaluation of suspected abnormalities in both total and regional times for gastrointestinal transit to the colon
- Two new fetal MRI CPT codes were added to the Obstetric Ultrasound Guidelines (OB 28.13: Fetal MRI) and Pelvis Imaging Guidelines (PV 15: Fetal MRI)
  - Magnetic resonance imaging, fetal, including placental and maternal pelvic imaging when performed; single or first gestation (CPT® 74712); each additional gestation (CPT® 74713)
- G0297 (low-dose CT for lung cancer screening) was added to the Oncology Imaging Guidelines (ONC 8: Non-Small Cell Lung Cancer) and Chest Imaging Guidelines (CH 1.3: General Guidelines)
- Nuclear Medicine codes and criteria were added to every set of Adult and Pediatric Imaging Guidelines.
- Spine Imaging Guidelines no longer require a Face-to-Face visit with providers for clinical re-evaluation. Instead, meaningful contact with the providers' office will suffice for clinical re-evaluation.
- Pediatric Guidelines were restructured and updated to reflect ever increasing pediatric case volume.
- Surveillance imaging criteria were expanded for esophageal cancer, rectal cancer, and melanoma
- Surveillance imaging criteria were updated with more focused indications for Hodgkin lymphoma and several Non-Hodgkin lymphoma subtypes
- PET/CT criteria were updated with additional indications for follicular lymphoma and marginal zone lymphoma
- PET/CT criteria were updated with more focused indications for diffuse large B cell lymphoma
- PET and Magnetic Resonance Spectroscopy (MRS) indications were broadened for pediatric CNS tumors

(Note: In the following summary, all new language for 2016 is presented in blue font. Language that has been removed for 2016 is crossed through).
Abdomen Imaging Guidelines

AB 5: Gastroenteritis

To align with standard practice for the evaluation of gastroenteritis and to improve patient-centricity, conservative management for gastroenteritis was changed from 4 weeks to 2 weeks.

- CT abdomen and pelvis with contrast (CPT®74177) if:
  - Acute abdomen suggesting bowel obstruction, toxic megacolon (abdominal swelling, fever, tachycardia, elevated white blood cell count), or perforation
  - Persistent abdominal pain with failure of conservative treatment for 4 weeks

AB 8.2: Inguinal Lymphadenopathy

Inguinal Lymphadenopathy is a new indication. Many requests are received for advanced imaging for Inguinal Lymphadenopathy, yet advanced imaging is not indicated with a prior biopsy.

There is no evidence-based support for advanced imaging of clinically evidenced inguinal lymphadenopathy without biopsy.

- Localized inguinal lymphadenopathy should prompt:
  - Search for adjacent extremity injury or infection;
  - 3 to 4 weeks of observation if clinical picture is benign;
  - Excisional biopsy of most abnormal lymph node if condition persists or malignancy suspected;
  - No advanced imaging indicated.

- Generalized inguinal lymphadenopathy should prompt:
  - Diagnostic work-up, including serological tests, for systemic diseases and
  - Excisional biopsy of most abnormal lymph node if uncertainty persists.


AB 11.2: Hereditary (Primary) Hemochromatosis (HH) and Other Iron Storage Diseases

An indication was added to Gaucher’s Disease and Hemochromatosis.

- MRI abdomen to assess iron storage in the liver has not been sufficiently validated to endorse its use for this purpose at the current time. Current AASLD diagnosis and treatment algorithms for hemochromatosis do not include MRI either for the diagnosis or follow-up of hepatic iron storage.
Patients with HH who have been determined to have cirrhosis should be imaged according to AB-26.1 Cirrhosis and Liver Screening for HCC.


AB 11.3: Transfusion-Associated (Secondary) Hemochromatosis

An indication was added to Gaucher’s Disease and Hemochromatosis to align with the pediatric guidelines.

- Transfusion-associated hemochromatosis imaging indications in adult patients are identical to those for pediatric patients. See PEDAB-18.2 Transfusion-Associated (Secondary) Hemochromatosis for imaging guidelines.

AB 17.1: Abdominal Aortic Aneurysm (AAA), Iliac Artery Aneurysm (IAA), and Visceral Artery Aneurysms

New onset of back pain was added as an indication for imaging in patients with a known AAA.

- CT of the abdomen and pelvis with contrast (CPT®74177), CT of the abdomen and pelvis without and with contrast (CPT®74178), or CTA (CPT®74175 and CPT®72191).
  - Preoperative imaging if endovascular or open repair of AAA is being considered
  - New onset of back and/or abdominal pain in a patient with a known AAA


AB 23.2: Special Considerations (IBD)

To align with standard practice evaluation of Inflammatory Bowel Disease (IBD), an indication was added to allow CT of the abdomen and pelvis prior to endoscopy.
• CT of the abdomen and pelvic either with or without contrast (CPT®74177 or CPT®74176) can be performed prior to endoscopy if requested by the physician who will be performing the endoscopy, especially if there is suspected inflammatory bowel disease.

**AB 25.1: CT Colonography (CTC)**

For diagnostic CTC, a contraindication was added. This indication was adopted from legacy CareCore National (CCN) as part of the harmonization effort between MedSolutions (MSI) and CCN.

• **Diagnostic CTC** (CPT®74261, without contrast or CPT®74262, with contrast, including noncontrast images if performed) can be used in:
  - Failed conventional colonoscopy (e.g. due to a known colonic lesion, structural abnormality or technical difficulty), and/or
  - Conventional colonoscopy is medically contraindicated. Contraindications may include:
    • Coagulopathy
    • Intolerance to sedation
    • Elderly greater than or equal to 80 years of age
    • Recent (within the last 60 days) myocardial infarction (MI)

**AB 43: Hepatic and Abdominal Arteries**

Three new sections were added as part of the harmonization effort between legacy MedSolutions and legacy CareCore National (CCN); imaging guidelines and references for hepatic and abdominal arteries were adopted from CCN.

**AB 43.1: Hepatic Arteries and Veins**

• For the evaluation of the hepatic arteries and veins (including portal vein), CTA abdomen and pelvis (CPT®74174), or CTA abdomen (CPT®74175) or MRA abdomen (CPT®74185) may be considered if one of the following:
  - Evaluation of portal and hepatic veins prior to or following TIPS (transjugular intrahepatic portosystemic shunt)
  - Evaluation of portal and hepatic veins prior to or following surgical intervention for portal hypertension
  - Evaluation of hepatic vasculature prior to and following embolization procedure
  - Evaluation of hepatic vasculature prior to planned hepatectomy
  - Evaluation of liver donor
  - Suspected hepatic vein thrombosis or Budd Chiari syndrome [One of the following]:
    • Ascites
    • Hepatomegaly
• Inadequate Doppler ultrasound of hepatic veins
  o Possible portal vein thrombosis with negative or inadequate Doppler study of the portal vein [One of the following]:
    • Hypercoagulable state
    • Abdominal malignancy
  o Preoperative evaluation for pancreatic cancer

**AB 43.2: Abdominal Veins other than Hepatic and Portal Veins**

• For the evaluation of abdominal veins other than hepatic and portal veins CTA abdomen and pelvis (CPT®74174), or CTA abdomen (CPT®74175) or MRA abdomen (CPT®74185) may be considered if one of the following:
  o Nephrotic syndrome
  o Suspicion of iliac vein thrombus
  o Suspicion of inferior vena cava thrombus
  o Renal vein thrombosis
  o Mesenteric vein thrombosis

**AB 43.3. Renal Vein Thrombosis**

• For suspected renal vein thrombosis MRA abdomen (CPT®74185) may be considered if one of the following:
  o Nephrotic syndrome
  o Proteinuria – 3 grams or more in 24 hours
  o Lupus nephritis
  o Hypercoagulable state [One of the following]
    • Antiphospholipid antibodies
    • Behçet’s syndrome
    • Protein C deficiency
    • Protein S deficiency

Cardiac Imaging Changes

**CD 1.7: Cardiac Transplant Patients**

Although this is an infrequent request, annual imaging guidance was added for post-cardiac transplant assessment of transplant CAD to align with standard practice.

- Post-cardiac transplant assessment of transplant CAD:
  - One of the following imaging studies may be performed annually:
    - MPI
    - Stress Echo
    - Stress MRI
    - Cardiac PET perfusion **with** coronary flow quantitation (CPT® 78491 or CPT® 78492)

**CD 6.3: Cardiac MRI - Indications for Stress MRI**

To align with standard practice, an indication was added to allow a stress MRI if a nuclear perfusion stress test was performed and was equivocal.

- If a nuclear perfusion (MPI) stress test was performed and was equivocal, a stress MRI is appropriate

**CD 7.2: Cardiac PET - Perfusion**

A frequency recommendation was provided for the routine use of PET perfusion in post heart transplant assessment of transplant CAD.

- Meets all of the criteria for an imaging stress test and additionally any one of the following:
  - Individual is morbidly obese (for example BMI>35 kg/m²) or has large breasts or implants
  - Equivocal nuclear perfusion (MPI) stress test
  - Routine use in post heart transplant assessment of transplant CAD
    - May image every 2 years

**CD 8.5: CT Heart for Congenital Heart Disease**

New indications were for congenital heart disease were added to guideline.

- Coronary artery anomaly evaluation
  - A cardiac catheterization was performed and not all coronary arteries were identified
• Thoracic arteriovenous anomaly evaluation
  o A cardiac MRI or chest CT angiogram was performed and suggested congenital heart disease

• Complex adult congenital heart disease evaluation
  o No cardiac CT or cardiac MRI has been performed and there is a contraindication to cardiac MRI
  o A cardiac CT or cardiac MRI was performed one year ago or more

Chest Imaging Changes

CH 25.10: Suspected Breast Cancer in Men

An indication was added for the evaluation of suspected breast cancer in men.

- For men <25 years of age with an indeterminate palpable mass, ultrasound is recommended as initial imaging followed by mammography if ultrasound is inconclusive or suspicious.
- For men >25 years of age with an indeterminate palpable mass or with a concerning physical examination, mammography is recommended initially followed by ultrasound if mammography is inconclusive or suspicious.
- There is limited evidence on the use of MRI in the evaluation of male breast disease.


Head Imaging Changes

HD 1.1: General Guidelines - Anatomic Issues

For pituitary gland imaging, a statement was added to allow a repeat MRI with dedicated pituitary protocol if a previous routine MRI head showed a possible pituitary tumor.

- **Pituitary Gland:** one study (either MRI head [CPT®70553] or MRI Orbit, Face, Neck [CPT®70543]) is adequate to report the imaging of the pituitary. If a previous routine MRI head was reported to show a possible pituitary tumor, a repeat MRI with dedicated pituitary protocol may be performed.

HD 6.1: Facial Palsy

A new indication was added to allow MRI head for suspected neurosarcoid/sarcoid. This indication was adopted from legacy CCN as part of the harmonization effort between legacy MedSolutions and legacy CareCore National (CCN).

- MRI head without and with contrast (CPT® 70553) may be considered for suspected neurosarcoid/sarcoid

Head CTA (CPT\textsuperscript{®}70496) or Head MRA (CPT\textsuperscript{®}70544) can be performed in any of the following clinical scenarios:

- Posterior communicating artery aneurysm compressing cranial nerve III exhibiting fixed, dilated pupil and severe ipsilateral headache.
  - CT head without contrast (CPT\textsuperscript{®}70450) or MRI head without contrast (CPT\textsuperscript{®}70551) can be added
- Mycotic Aneurysm (bacterial from intravenous drug abuse [IVDA]) with thunderclap headache (but not all with endocarditis)
  - MRI head without and with contrast (CPT\textsuperscript{®}70553) can be added
- Preoperative planning for cerebral aneurysm management (surgical or interventional)
- Screening or further evaluations in the following scenarios:
  - Two first degree relatives with subarachnoid hemorrhage (SAH) or an intracranial aneurysm, in which screening begins at age 20 and is repeated at five year intervals\textsuperscript{1,4}
  - One first degree relative affected by aneurysm based on a higher risk of unruptured aneurysms in this setting.*
  - Autosomal dominant polycystic kidney disease, in which screening begins at age 20 to 65 and is repeated at ten year intervals\textsuperscript{3,5}
  - History of aneurysmal subarachnoid hemorrhage\textsuperscript{3}
  - Anyone in any of these screening categories with headache: head CT without contrast (CPT\textsuperscript{®}70450) or MRI head without contrast (CPT\textsuperscript{®}70551) can be added
  - Uncertain lesion, which has aneurism in the differential diagnosis, found with a previous head MRI, head CT, head CTA (CPT\textsuperscript{®}70496) or head MRA.
• MRA head without contrast (CPT® 70544 or CTA head (CPT® 70496 can be performed for uncertain lesion, which has aneurysm in the differential diagnosis
  o CTA head (CPT® 70496) can be performed if possible aneurysm is seen on a previous MRA head
  o CTA head (CPT® 70496) may be repeated at some interval for possible aneurysm on a previous CTA head. These requests require Medical Director review.

• Other genetic syndromes** and at risk populations have been described to have increased rates of SAH or intracranial aneurysm. Screening for these groups is not supported by national guidelines\(^8\)

HD 12.1: Intracranial Aneurysms

A change was made to the imaging frequency of CTA head or MRA head for Known incidentally discovered aneurysms which have never bled. This change is depicted in the table below:

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
</tr>
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<tbody>
<tr>
<td>Interval: 6 months and then every 5 years after stable</td>
<td>Interval: 6 months and then annually until determined to be stable</td>
</tr>
<tr>
<td>Follow-up: Every 5 years after stable</td>
<td>Follow-up: Every 5 to 10 years after stable</td>
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HD 14.1: CNS Infection

Standard practice signs of intracranial infection were added for additional guidance on this indication.

• Signs of intracranial infection include 1) headaches, seizures or new focal deficits in a setting of fever or elevated white blood cell count (WBC); 2) known infection elsewhere; 3) or immunosuppression. The following studies may be considered for suspected intracranial infection1-4 if any of these signs of infection are present:
  o MRI head without and with contrast (CPT®70553), or
  o MRI head without contrast (CPT®70551), or
  o CT head without contrast (CPT®70450), or
  o CT head without and with contrast (CPT®70470)
HD 27.1: Hearing Loss

An operational change was made to the hearing loss guideline.

- MRI head with attention to internal auditory canal without and with contrast (CPT®70553), or MRI head with attention to internal auditory canal without contrast or CT temporal bone without contrast (CPT®70480) can be considered for hearing loss. Clinical information provided should include evaluation of hearing either by bedside testing or by formal audiology.

HD 29.1: Sinus Imaging in Adults and Children

The following indication was removed as a consideration for CT maxillofacial or limited sinus CT without contrast (CPT®76380):

- Persistent acute (≥ 4 weeks) sinusitis not responding to treatment


HD 29.1: Sinus Imaging in Adults and Children

Indications for repeat imaging were added to guideline.

- One time repeat imaging may be approved in the following scenarios:
  - An ENT specialist requests the imaging AND:
  - There is no improvement after an additional 4 weeks of conservative treatment after initial imaging was completed; AND
  - There has been a follow-up visit since the previous imaging; OR
  - If there is a new abnormality on exam such as obstructing mass


HD 32.1: Eye Disorders

A new indication was added for the evaluation of third nerve palsy.

- Evaluation of a third nerve palsy may be accomplished with an MRI head
without and with contrast (CPT®70553) and/or MRA brain without contrast
  o CT head without and with contrast (CPT®70470) and/or CT orbit with contrast (CPT® 70481) can be approved if there is a clinical question of blood in the subarachnoid space.


HD 33.1: Acoustic Neuroma

An operational change was made to the hearing loss guideline.
- Initial diagnosis can be accomplished with MRI head without and with contrast (CPT®70553) which should be done with attention to the internal auditory canals. Clinical information provided should include evaluation of hearing either by bedside testing or by formal audiology.

Musculoskeletal Imaging Changes

MS 5.1 Acute (Fracture and Dislocation)

The following indication was deleted from the imaging guideline to account for patient-centricity; patients may have exceeded this timeframe at initial presentation.

- CT or MRI without contrast is appropriate, if one of the following is present:
  o Complex (comminuted or displaced) fracture/dislocation on plain film
    - CT is preferred unless it is associated with neoplastic disease when MRI without/with contrast is preferred unless MRI contraindicated
  o 10-14 days of symptoms with a history of trauma with suspected occult/stress/insufficiency fracture with negative plain x-ray. (See below in MS-5.2)
  o Suspected osteochondral fracture can also be considered for MRI arthrogram, or CT arthrogram

MS 9.2 Septic Joint

A new section, Septic Joint, was added to the Infection/Osteomyelitis guidelines.

- Analysis of joint fluid is most often sufficient to diagnose a septic joint. An MRI of the joint, without/with contrast is appropriate when standard or image guided arthrocentesis is contraindicated or is unsuccessful and the clinical documentation satisfies all of the following criteria:
History and Physical examination findings [One of the following]
- Development of an acutely hot and swollen joint (< 2 weeks)
- Decreased range of motion due to pain
- Documented fever

Laboratory tests [One of the following]
- Leukocytosis
- Elevated ESR or C-reactive protein
- Analysis of the joint fluid is non-diagnostic
- Plain xray of the joint


**MS 16:1 Total Joint Prosthesis**

The contrast level for MRI hip in the diagnosis of pseudotumors was updated based on a new recommendation from the ACR.

- MRI hip without and with contrast (CPT® 73723) MRI hip without contrast (CPT® 73721) and ultrasound (CPT® 76881) are both appropriate for the diagnosis of ALVAL (aseptic lymphocytic-dominated vasculitis-associated lesion) pseudotumors surrounding metal-on-metal (MoM) hip prostheses. One of these two imaging modalities can be approved, but not both.


**Neck Imaging Changes**

A new ultrasound guideline for inflammatory, infective or reactive adenopathy was added to the Neck/Cervical Lymphadenopathy guidelines.

**Neck-5.1 Imaging**

- Ultrasound (CPT® 76536) can be considered for any of the following:
  - Inflammatory, infective or reactive adenopathy is suspected after failure of a 2 week trial of treatment or observation (including antibiotics if appropriate)
  - To further evaluate an ill-defined mass

A new indication was added for neck ultrasound imaging regarding incidental thyroid nodules. Neck MRI (without and with contrast) was also added as an imaging option.
Neck-9.1 Imaging

Structure of 9.1 reorganized and renumbered with updates to ultrasound.

✓ Initial evaluation of Thyroid Nodule should include:
  1. History identifying factors predicting malignancy and physical focusing on neck;
  2. Distinctly palpable or incidentally radiographic;
  3. Serum Thyroid Stimulating Hormone (TSH)
  4. Nuclear medicine thyroid scan if Low TSH (hyperthyroid and toxic nodule treated with Radio Iodine)
  5. Ultrasound (CPT®76536) if:
     o Normal or High TSH, or Low TSH nuclear scan shows non-functioning nodule
     o Incidentally found on nuclear imaging with focal activity *
  6. Fine needle aspiration (FNA) is next if dominant mass on ultrasound.
     o Repeat FNA if the first one is not diagnostic
     o If FNA results are repeatedly non-diagnostic, close observation or surgical excision should be performed

Neck CT without contrast (CPT®70490) or Neck MRI without and with contrast

✓ (CPT®70543) after FNA has been performed for:
  o Known thyroid mass and cervical lymphadenopathy
  o Preoperative planning


Obstetrical Imaging Changes

OB-6.1 No Fetal Heart Tone/Decreased Fetal Movement

A new section on imaging during the first trimester was added.

The following is supported during the first trimester:

- Prior to considering ultrasound for absence of fetal heart tone at less than 12 weeks, fetal heart tone should be repeated at 12 weeks gestation.
- Ultrasound imaging is supported, prior to 12 weeks gestation, in the setting of absent fetal heart tones accompanied by other maternal signs or symptoms (such as cramping, vaginal bleeding, etc.). Report one of the following:
  - CPT®76801 (plus CPT®76802 if more than one fetus) if a complete ultrasound has not yet been performed
  - CPT®76815 or CPT®76816 if a complete ultrasound was performed previously; and/or
- If above imaging (CPT®76801, 76815, and 76816) is equivocal, CPT®76817 for a transvaginal ultrasound

OB-6.1 No Fetal Heart Tone/Decreased Fetal Movement

In the same section, the time frame for imaging during the second and third trimester was changed from 22 to 24 weeks gestation.

The following is supported during the second and third trimester:

If less than 22 24 weeks gestation, report one of the following:
  - CPT®76805 if a complete ultrasound has not yet been performed during this pregnancy [plus CPT®76810 if more than one fetus] and if pregnancy is greater than 14 weeks; or
  - CPT®76816 if a complete ultrasound was done previously; and/or CPT®76817 for a transvaginal ultrasound

OB-7.1 Indications for Fetal Conditions

New indications were added for imaging for fetal conditions (#3, 10). A clarification to gestational time frame was added for screening studies (#8). Additional list of fetal exposures were also added (#14).

3. If a heart abnormality is found, a Fetal ECHO (CPT®76825 and/or CPT®76827) may be approved for preparation of delivery.
8. As a screening study typically performed at 22-26 weeks gestation (may be performed earlier if anomaly is suspected on prior ultrasound) if maternal non-diet-controlled diabetes is present (See: OB-11~High Risk Pregnancy)

10. Single umbilical artery (two vessel cord), abnormality of umbilical cord, placenta or intraabdominal venous anomaly

14. Exposure of fetus to:
   - Lithium
   - Excessive alcohol
   - Anti-seizure medication
   - SSRI
   - Birth control pills
   - Ace inhibitors, NSAIDS third trimester
   - Folate antagonists (methotrexate)
   - Anticonvulsants
   - Retinoic acid
   - Hydantoin
   - Thalidomide
   - Amphetamines
   - Cocaine
   - Indomethacin
   - Ibuprofen
   - Methotrexate
   - Vitamin A greater than 10,000 units per day
   - Exposure to prostaglandin synthetase inhibitors (indomethacin, NSAIDS)
   - Other teratogen exposure to the fetus with a known association for cardiac anomalies

**OB-7.2 Indications for Maternal Conditions**

Additional list of maternal indications have been added for imaging.

- Diabetes
- Rubella infection
- Sjogren’s Syndrome
- Systemic lupus erythematosus
- Collagen vascular diseases
- Phenylketonuria
  - Anti-Ro/SSA or anti-La/SSB antibodies
OB 11.2-OB 11.6: High Risk Groups

Several new sections (OB 11.2 through OB 11.6) were added for additional high risk groups.

OB 11.2: High Risk Group Two

If the following conditions are found upon routine imaging:

- Shortened femur identified in fetus of current pregnancy
- Shortened humerus identified in fetus of current pregnancy

Fetal anatomic scan is ideally performed at 18 to 20 weeks, but must be performed after 16 weeks (CPT 76811)

One follow-up scan (CPT®76816) in third trimester

OB 11.3: High Risk Group Three

If the following conditions are found upon routine imaging:

- Pyelectasis of >4mm at 20 weeks identified in fetus of current pregnancy
  Echogenic bowel identified in fetus of current pregnancy
  - Fetal anatomic scan is ideally performed at 18 to 20 weeks, but must be performed after 16 weeks (CPT ®76811)
  - One follow-up scan (CPT®76816) at 32 weeks

OB 11.4: High Risk Group Four - BMI

OB 11.4a: BMI 30 to 35

If the following conditions are found upon routine imaging:

- Obesity (BMI equal to or greater than 30 to 35)
  - Fetal anatomic scan is ideally performed at 18 to 20 weeks, but must be performed after 16 weeks (CPT®76811)
  - One follow-up scan (CPT®76816) at 30 to 34 weeks

OB 11.4b: BMI Greater than 35

If the following conditions are found upon routine imaging:

- Obesity (BMI greater than 35)
  - Fetal anatomic scan is ideally performed at 18 to 20 weeks, but must
be performed after 16 weeks (CPT® 76811)
  o Growth scan (CPT®768116) at 32 and 36 weeks, and BPP
    (CPT®76818 or 76819) or AFI/NST weekly starting at 36 weeks

**OB 11.5: High Risk Group Five**

If the following conditions are found upon routine imaging:

- Choroid plexus cyst (present in 30% to 50% of all Trisomy 18 fetuses). Follow-up imaging not needed if targeted scan is normal.
- Echogenic intracardiac foci (present in 15% to 30% of all Down Syndrome fetuses). Fetal echo or follow-up ultrasound are not warranted
- Prior pregnancy with a congenital anomaly
  - Chromosomal abnormalities with previous pregnancy
  - Fetal anatomic scan is ideally performed at 18 to 20 weeks, but must be performed after 16 weeks (CPT® 76811)

**OB 11.6: High Risk Group Six – Previous C-Section**

If patient has had a previous Cesarean section

- One ultrasound can be performed to confirm dates
- (CPT®76801 [plus CPT®76802 if more than one fetus] (and/or CPT 76817) if a complete ultrasound has not yet been performed
- CPT®76815 or CPT®76816 if a complete ultrasound was done previously and was inconclusive for confirming pregnancy dates, and/or CPT®76817 for a transvaginal ultrasound)
- One growth scan (CPT®76816) at 32 weeks and one growth scan between 36 and 38 weeks (CPT®76816)

**OB 11.7: High Risk Group Seven – Prior Pregnancy with Macrosomia**

Two additional imaging guidelines added for prior pregnancy with macrosomia.

If the following conditions are found upon routine imaging:

- Prior pregnancy with macrosomia (baby weighing >4000 grams at term or greater than the 90th percentile of expected weight)
  - One targeted scan (CPT®76811) in second trimester
  - One growth scan (CPT®76816) at 32 and 36 weeks
OB-17.1 Multiple Pregnancies

To align with standard practice evaluation of dichorionic multiple pregnancies, the frequency of imaging was expanded.

For known dichorionic multiple pregnancies:

- Ultrasound (CPT®76816) every 2 to 4 week to assess fetal growth starting at 23 to 24 weeks gestation
- Transvaginal ultrasound (CPT®76817) every 2 to 4 weeks to assess cervical length until 32 weeks
- If discordant twins (15% to 25% difference in actual weight between twins), twice weekly BPP plus ultrasound (CPT®76816) every 2 to 4 weeks, AND umbilical artery Doppler (CPT®78620) weekly; for bi-weekly imaging send to MD review.

For known monochorionic-diamniotic or monochorionic-monoamniotic multiple pregnancies:

- Fetal middle cerebral artery (MCA) Doppler (CPT®76821) every 2 to 3 weeks starting at 16 weeks with the diagnosis of twin-twin transfusion syndrome (TTS) and 26 weeks for monitoring TTS and twin anemia polycemia sequence (TAPS). If requested earlier than 26 weeks, send to MD review.

OB-26.1 Unequal Fundal Size and Dates

The definition for unequal fundal size was modified:

Unequal fundal size is defined as more than a 3 week difference in fundal height and gestational age at 16 weeks or greater, 23 weeks gestation or greater.

OB 28.13: Fetal MRI

The AMA introduced two new CPT® codes in 2016 for fetal MRI. These codes were added to the guidelines, along with indications for fetal MRI:

OB-28.13 Fetal MRI

- Fetal MRI (CPT®74712; CPT® 74713 for each additional gestation)
  - Do not report CPT®74712 and CPT®74713 in conjunction with CPT®72195, CPT®72196, CPT®72197
- If only placenta or maternal pelvis is imaged without fetal imaging, use MRI pelvis (CPT®72195)
<table>
<thead>
<tr>
<th>Fetal organs</th>
<th>Indication main category</th>
<th>Indication sub category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain</td>
<td>Congenital anomalies</td>
<td>Ventriculomegaly; corpus callosal dysgenesis; holoprosencephaly; posterior fossa anomalies; malformations of cerebral cortical development</td>
</tr>
<tr>
<td></td>
<td>Screening fetuses with a family risk for brain anomalies</td>
<td>E.g. tuberous sclerosis; corpus callosal dysgenesis; malformations of cerebral cortical development</td>
</tr>
<tr>
<td>Spine</td>
<td>Congenital anomalies</td>
<td>Neural tube defects; sacrococcygeal teratomas; caudal regression/sacral agenesis; sirenomelia; vertebral anomalies</td>
</tr>
<tr>
<td>Skull, face and neck</td>
<td>Masses of the face and neck</td>
<td>Venolymphatic malformations; hemangiomas; goiter; teratomas; facial clefts</td>
</tr>
<tr>
<td>Thorax</td>
<td>Masses</td>
<td>Congenital pulmonary airway malformations (congenital cystic adenomatoid malformation; sequestration, and congenital lobar emphysema); congenital diaphragmatic hernia; effusion</td>
</tr>
<tr>
<td>Abdomen, retroperitoneal and pelvis</td>
<td>Mass</td>
<td>Abdominal–pelvic cyst.; tumors (e.g. hemangiomas, neuroblastomas, sacrococcygeal teratomas, and suprarenal or renal masses); complex genitourinary anomalies (e.g. cloaca); renal anomalies in cases of severe oligohydramnios; and bowel anomalies such as megacystis microcolon</td>
</tr>
<tr>
<td>Complications of monochorionic twins</td>
<td></td>
<td>Delineation of vascular anatomy prior to laser treatment of twins; assessment of morbidity after death of a monochorionic co-twin, and improved delineation of anatomy in conjoined twins</td>
</tr>
<tr>
<td>Fetal surgery assessment</td>
<td></td>
<td>Meningomyelocele; sacrococcygeal teratomas; processes obstructing the airway (e.g. neck mass or congenital high airway obstruction); complications of monochorionic twins needing surgery; and chest masses.</td>
</tr>
</tbody>
</table>
References


Oncology Imaging

**ONC 2.2: Low-Grade Glioma**

Updates were made to this section that expanded the use of Positron Emission Tomography (PET) and Magnetic Resonance Spectroscopy (MRS).

These tumors are defined as having a WHO histologic grade of I or II (out of IV), can occur anywhere in the CNS, and includes the following tumors:

- Pilocytic Astrocytoma
- Fibrillary (or Diffuse) Astrocytoma
- Optic Pathway Gliomas
- Pilomyxoid Astrocytoma
- Oligodendroglioma
- Oligoastrocytoma
- Oligodendrocytoma
- Subependymal Giant Cell Astrocytoma (SEGA)
- Ganglioglioma
- Gangliocytoma
- Dysembryoplastic infantile astrocytoma (DIA)
- Dysembryoplastic infantile ganglioglioma (DIG)
- Dysembryoplastic neuroepithelial tumor (DNT)
- Tectal plate gliomas
- Cervicomedullary gliomas
- Pleomorphic xanthoastrocytoma (PXA)
- Any other glial tumor with a WHO grade of I or II

<table>
<thead>
<tr>
<th>Indication</th>
<th>Imaging Study(ies)</th>
</tr>
</thead>
</table>
| Initial Staging                                              | • MRI Brain without and with contrast (CPT®70553) if not already done  
• MRI Spine without and with contrast (cervical-CPT®72156, thoracic-CPT®72157, lumbar-CPT®72158)  
  o MRI Spine with contrast only (cervical-CPT®72142, thoracic-CPT®72147, lumbar-CPT®72149) can be approved if being performed immediately following a contrast-enhanced MRI Brain |
| After initial resection or other treatment (XRT, etc.)       | • MRI Brain without and with contrast (CPT®70553)                                                                                                                                                 |
| **One of the following:**                                    | • PET Brain Metabolic Imaging (CPT®78608)                                                                                                                                                           |
- Evaluate a brain lesion of indeterminate nature when the PET findings will be used to determine whether biopsy/resection can be safely postponed
- Distinguish low grade from high grade gliomas
- Evaluate a brain lesion of indeterminate nature when the MRS findings will be used to determine whether biopsy/resection can be safely postponed
- Distinguish radiation-induced tumor necrosis from progressive disease within 18 months of completing radiotherapy

**One of the following:**
- MR Spectroscopy (CPT®76390)

**Surveillance**

- MRI Brain without and with contrast (CPT®70553) every 3 months for 2 years, then every 6 months for 3 years, then annually until 10 years after completion of therapy
  - Patients with documented residual masses can have annual imaging until 20 years after completion of therapy due to the risk of late transformation of these tumors
  - Patients with cord involvement at diagnosis can have MRI spine without and with contrast (cervical-CPT®72156, thoracic-CPT®72157, lumbar-CPT®72158) on the same schedule as MRI Brain
ONC 3.4: Squamous Cell Carcinoma Surveillance

Several update the surveillance imaging for squamous cell carcinoma. Imaging was separated into stage and site indications, and a section was added for initial post-treatment imaging.

<table>
<thead>
<tr>
<th>Indications</th>
<th>Imaging Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage III-IV carcinoma with any of the following primary sites:</td>
<td>Once within 6 months of completing all treatment:</td>
</tr>
<tr>
<td>• Nasopharynx</td>
<td>• CT Neck with contrast (CPT® 70491) or MRI Orbits/Face/Neck without and with contrast (CPT® 70543)</td>
</tr>
<tr>
<td>• Oropharynx</td>
<td>• CT with contrast of any other involved body area</td>
</tr>
<tr>
<td>• Hypopharynx</td>
<td></td>
</tr>
<tr>
<td>• Glottic or supraglottic larynx</td>
<td></td>
</tr>
<tr>
<td>Any stage larynx with any of the following primary sites:</td>
<td></td>
</tr>
<tr>
<td>• Sinus</td>
<td></td>
</tr>
<tr>
<td>• Lip</td>
<td></td>
</tr>
<tr>
<td>After initial post-treatment study, for any of the following:</td>
<td>Annually for 3 years:</td>
</tr>
<tr>
<td>• Nasopharyngeal primary site</td>
<td>• CT Neck with contrast (CPT® 70491) or MRI Orbits/Face/Neck without and with contrast (CPT® 70543)</td>
</tr>
<tr>
<td>• Physical exam unable to evaluate primary site for recurrence</td>
<td>• MRI Brain without and with contrast (CPT 70553)</td>
</tr>
<tr>
<td>All other site and stages not listed above</td>
<td>• Routine advanced imaging is not indicated</td>
</tr>
</tbody>
</table>

ONC 5.6: Melanoma Surveillance

Surveillance for melanoma was expanded into three stages, with more focused imaging recommendations for each stage category. Previously, surveillance imaging was presented as IIB or higher and Stage IIB-IV. Imaging for ocular melanoma was also added.

<table>
<thead>
<tr>
<th>Melanoma</th>
<th>Imaging Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I-IIA Melanomas</td>
<td>• No routine advanced imaging indicated</td>
</tr>
<tr>
<td>Stage IIB-IIIB Melanomas</td>
<td>• CT Chest (CPT® 71260) and Abdomen/Pelvis (CPT® 74177) with contrast every 6 months for 5 years</td>
</tr>
<tr>
<td></td>
<td>• MRI Brain without and with contrast (CPT 70553) annually for 5 years</td>
</tr>
<tr>
<td>Stage IIIC-IV Melanomas</td>
<td>• CT Chest (CPT® 71260) and Abdomen/Pelvis (CPT® 74177) with contrast every 3 months for 3 years, then every 6 months for 2 years</td>
</tr>
<tr>
<td></td>
<td>• MRI Brain without and with contrast (CPT 70553)</td>
</tr>
<tr>
<td>Ocular Melanoma</td>
<td>annually for 5 years</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>CT Chest (CPT® 71260) and Abdomen with contrast (CPT® 74160) every 6 months for 2 years, then annually for 3 years</td>
<td></td>
</tr>
</tbody>
</table>

**ONC 9.3: Esophageal Cancer Surveillance**

Previously, advanced imaging was not recommended for esophageal cancer surveillance. This has been modified slightly for 2016 with the following imaging recommendation.

| For T1bN+ or T2 or greater: | CT Chest (CPT® 71260) and Abdomen (CPT® 74160) with contrast every 6 months for 5 years |

**ONC 12.6 through ONC 12.8: Bone Sarcomas**

New content was added to the Oncology Imaging Guidelines for bone sarcomas, including imaging recommendations for initial work-up/staging, recurrence/restaging and surveillance.

**ONC-12.6 BONE SARCOMAS—INITIAL WORKUP/STAGING**

<table>
<thead>
<tr>
<th>Indication</th>
<th>Imaging Study</th>
</tr>
</thead>
</table>
| Chondrosarcoma   | Any or all of the following:  
• MRI without contrast or without and with contrast of involved area  
• CT (contrast as requested) of involved area  
CT Chest with (CPT® 71260) or without contrast (CPT® 71250) |
| Chordoma         | Any or all of the following:  
• MRI without contrast or without and with contrast of involved area  
• CT (contrast as requested) of involved area  
CT Chest with (CPT® 71260) or without contrast (CPT® 71250)  
• CT Abdomen/Pelvis with contrast (CPT® 74177)  
• Bone scan (See ONC-1.3)  
• PET may be approved for inconclusive conventional imaging. |
# ONC-12.7 BONE SARCOMAS—RESTAGING/RECURRENCE

<table>
<thead>
<tr>
<th>Indication</th>
<th>Imaging Study</th>
</tr>
</thead>
</table>
| Chondrosarcoma   | Any or all of the following, after completion of radiotherapy or every 2 cycles of chemotherapy:  
  - MRI without contrast or without and with contrast of involved area  
  - CT (contrast as requested) of involved area  
  - CT Chest with (CPT®71260) or without contrast (CPT®71250) |
| Chordoma         | Any or all of the following, after completion of radiotherapy or every 2 cycles of chemotherapy:  
  - MRI without contrast or without and with contrast of involved area  
  - CT (contrast as requested) of involved area  
  - Bone scan (See ONC-1.3)  
  - PET may be approved for inconclusive conventional imaging |

# ONC-12.8 BONE SARCOMAS—SURVEILLANCE/FOLLOW UP

<table>
<thead>
<tr>
<th>Indication</th>
<th>Imaging Study</th>
</tr>
</thead>
</table>
| Low Grade Chondrosarcoma    | Any or all of the following every 6 months for 2 years, then annually until year 10:  
  - Plain x-ray of primary site  
    - MRI without and with contrast is indicated for new findings on plain x-ray or new/worsening clinical symptoms.  
  - Chest x-ray  
    - CT Chest with (CPT®71260) or without contrast (CPT®71250) for new findings on CXR, or new/worsening signs/symptoms. |
| High Grade Chondrosarcoma   | Any or all of the following every 6 months for 5 years, then annually until year 10:  
  - Plain x-ray of primary site  
    - MRI without and with contrast is indicated for new findings on plain x-ray or new/worsening clinical symptoms.  
  - Chest x-ray  
    - CT Chest with (CPT®71260) or without contrast (CPT®71250) for new findings on CXR, or new/worsening signs/symptoms |
Chordoma

• CT Abdomen with contrast (CPT® 74160) annually until year 10.
  Any or all of the following every 6 months for 5 years, then annually until year 10:
  • Plain x-ray of primary site
    o MRI without and with contrast is indicated for new findings on plain x-ray or new/worsening clinical symptoms.
  • Chest x-ray
    o CT Chest with (CPT® 71260) or without contrast (CPT® 71250) for new findings on CXR, or new/worsening signs/symptoms

ONC 12.8 through ONC 12.12: Benign Bone Tumors

New content was added to the Oncology Imaging Guidelines for benign bone tumors, including imaging recommendations for initial work-up/staging, recurrence/restaging and surveillance.

ONC–12.9 BENIGN BONE TUMORS—GENERAL CONSIDERATIONS

• Variety of diagnoses, including osteoid osteochondroma, chondroblastoma, desmoplastic fibroma, Paget’s disease, osteoid osteoma and others

• Plain X-ray appearance is diagnostic for many benign bone tumors and advanced imaging is generally unnecessary except for preoperative planning

• MRI without and with contrast is the primary modality for advanced imaging of bone tumors, and can be approved to help narrow differential diagnoses and determine whether biopsy is indicated

• Some benign bone tumor types carry a risk of malignant degeneration over time, but routine advanced imaging surveillance has not been shown to improve outcomes for these patients

• MRI without and with contrast can be approved to evaluate new findings on plain X-ray new/worsening clinical symptoms not explained by a recent plain X-ray

• There are no data to support the use of PET in the evaluation of benign bone tumors, and PET requests should not be approved without biopsy confirmation of a malignancy
### ONC-12.10 BENIGN BONE TUMORS—INITIAL WORKUP/STAGING

<table>
<thead>
<tr>
<th>Indication</th>
<th>Imaging Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giant Cell Tumor of Bone (GCTB)</td>
<td>Any or all of the following:</td>
</tr>
<tr>
<td></td>
<td>• MRI without contrast or without and with contrast of involved area</td>
</tr>
<tr>
<td></td>
<td>• CT (contrast as requested) of involved area</td>
</tr>
<tr>
<td></td>
<td>• CT Chest with (CPT®71260) or without contrast (CPT®71250)</td>
</tr>
<tr>
<td></td>
<td>• Bone scan (See ONC-1.3)</td>
</tr>
<tr>
<td>Enchondroma</td>
<td>• MRI without contrast or without and with contrast of primary site</td>
</tr>
</tbody>
</table>

### ONC-12.11 BENIGN BONE TUMORS—RESTAGING/RECURRENCE

<table>
<thead>
<tr>
<th>Indication</th>
<th>Imaging Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giant Cell Tumor of Bone (GCTB)</td>
<td>Any or all of the following, after completion of radiotherapy or every 2 cycles of chemotherapy:</td>
</tr>
<tr>
<td></td>
<td>• MRI without contrast or without and with contrast of involved area</td>
</tr>
<tr>
<td></td>
<td>• CT (contrast as requested) of involved area</td>
</tr>
<tr>
<td></td>
<td>• Bone scan (See ONC-1.3)</td>
</tr>
<tr>
<td>Enchondroma</td>
<td>• Generally no indication for this benign tumor unless symptoms</td>
</tr>
</tbody>
</table>

### ONC-12.12 BENIGN BONE TUMORS—SURVEILLANCE/FOLLOW UP—

<table>
<thead>
<tr>
<th>Indication</th>
<th>Imaging Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giant Cell Tumor of Bone (GCTB)</td>
<td>Any or all of the following every 6 months for 2 years, then annually until year 10:</td>
</tr>
<tr>
<td></td>
<td>• Plain x-ray of primary site</td>
</tr>
<tr>
<td></td>
<td>• MRI without and with contrast is indicated for new findings on plain x-ray or new/worsening clinical symptoms.</td>
</tr>
<tr>
<td></td>
<td>• Chest x-ray</td>
</tr>
<tr>
<td></td>
<td>• CT Chest with (CPT®71260) or without contrast (CPT®71250) for new findings on CXR, or new/worsening signs/symptoms.</td>
</tr>
<tr>
<td>Enchondroma</td>
<td>• Plain films of primary site</td>
</tr>
</tbody>
</table>
### ONC 14.9: Gastric Cancers Surveillance

Routine surveillance imaging is no longer recommended for gastric cancers.

<table>
<thead>
<tr>
<th>Indication</th>
<th>Imaging Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients</td>
<td>• Every 6 months for 2 years</td>
</tr>
<tr>
<td></td>
<td>• No routine imaging unless clinical signs/symptoms of recurrence</td>
</tr>
</tbody>
</table>

### ONC 16.4: Colorectal Cancer Surveillance

New content was added to this section for surveillance imaging of all rectal adenocarcinoma and pseudomyxoma peritonei.

<table>
<thead>
<tr>
<th>Indication</th>
<th>Imaging/Lab Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I and standard risk Stage II</td>
<td>• No routine advanced imaging indicated</td>
</tr>
<tr>
<td>Any one of the following:</td>
<td>• CT Chest (CPT® 71260) and Abdomen/Pelvis (CPT® 74177) with contrast annually for 5 years</td>
</tr>
<tr>
<td>• Lymph node positive colon cancer</td>
<td></td>
</tr>
<tr>
<td>• Perforation or obstruction at diagnosis</td>
<td></td>
</tr>
<tr>
<td>• Inadequate lymph node evaluation (&lt;12 nodes examined) at diagnosis</td>
<td></td>
</tr>
<tr>
<td>All rectal adenocarcinoma</td>
<td>• CT Chest (CPT® 71260) and Abdomen/Pelvis (CPT® 74177) with contrast every 6 months for 2 years then annually for 3 additional years</td>
</tr>
<tr>
<td>Metastatic disease (post resection of all disease or being observed off therapy)</td>
<td>• CT Chest (CPT® 71260) and Abdomen/Pelvis (CPT® 74177) every 3 months for first year, then every 6 months for 4 more years</td>
</tr>
<tr>
<td>Pseudomyxoma peritonei</td>
<td>One of each of the following, every 3 months for first year, then every 6 months for 4 more years:</td>
</tr>
<tr>
<td></td>
<td>• CT Chest with (CPT® 71260) or without contrast(CPT® 71250)</td>
</tr>
<tr>
<td></td>
<td>CT Abdomen/Pelvis with contrast (CPT® 74177) or MRI Abdomen (CPT® 74183) and Pelvis (CPT® 72197) without and with contrast</td>
</tr>
</tbody>
</table>

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**ONC 19.1: Prostate Cancer Suspected/Diagnosis**

For suspected/diagnosis of prostate cancer, the procedure code was changed from a diagnostic MRI pelvis to an MRI guided code.

Changed from diagnostic MRI pelvis to MRI guided procedure code

<table>
<thead>
<tr>
<th>Indication</th>
<th>Imaging Study</th>
</tr>
</thead>
</table>
| At least one negative/non-diagnostic TRUS biopsy with continued increase in PSA | • MRI pelvis contrast as requested  
• MR/US fusion biopsy (CPT® 77021 and 76942) |

**ONC 27: Non-Hodgkin Lymphomas**

Previously, **ONC 27** encompassed all non-Hodgkin and Hodgkin Lymphomas. These lymphomas have been separate into two sections, **ONC 27: Non-Hodgkin Lymphoma** and **ONC 28: Hodgkin Lymphomas**. Both sections now have imaging recommendations that are specific to lymphomas subtypes.

**ONC 27.2: Non-Hodgkin Lymphoma – Diffuse Large B Cell Lymphoma Treatment Response**

Diffuse Large B Cell Lymphoma was expanded with a new indication for treatment response, including PET/CT every 2 cycles of therapy in rare circumstances.

<table>
<thead>
<tr>
<th>Phase of Therapy</th>
<th>Imaging Studies</th>
</tr>
</thead>
</table>
| Treatment Response | Any or all of the following may be approved every 2 cycles of therapy:  
• CT with contrast of previously involved area(s)  
• Requests for PET/CT can be considered in rare circumstances. These cases should be forwarded for Medical Director review. |

**ONC 27.2: Non-Hodgkin Lymphoma – Diffuse Large B Cell Lymphoma Surveillance**

Surveillance imaging is now presented according to stage for Diffuse Large B Cell lymphoma.
## Phase of Therapy

<table>
<thead>
<tr>
<th></th>
<th>Imaging Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surveillance</strong></td>
<td></td>
</tr>
</tbody>
</table>
- **Stage I and II:**  
  - No routine advanced imaging indicated  
- **Stage III and IV:**  
  - CT with contrast of previously involved area(s) every 6 months for two years, then no further routine advanced imaging |

---

**ONC 27.3: Non-Hodgkin Lymphoma – Follicular Lymphoma**

Follicular lymphoma imaging was updated to allow PET/CT for initial staging/diagnosis, end of therapy evaluation and suspected recurrence.

<table>
<thead>
<tr>
<th>Phase of Therapy</th>
<th>Imaging Studies</th>
</tr>
</thead>
</table>
| **Initial Staging/Diagnosis**       | Any or all of the following may be approved:  
  - CT Chest with contrast (CPT® 71260)  
  - CT Abdomen/Pelvis with contrast (CPT® 74177)  
  - PET/CT (CPT® 78815 or 78816) can be approved if XRT is being considered for stage I or II disease |
| **Treatment Response**              | CT with contrast of previously involved area(s) every 2 cycles of therapy       |
| **End of Therapy Evaluation**       | One of the following may be approved:  
  - CT with contrast of previously involved area(s)  
  - PET/CT (CPT® 78815 or 78816) |
| **Suspected Recurrence**            | Any or all of the following may be approved:  
  - CT Chest with contrast (CPT® 71260)  
  - CT Abdomen/Pelvis with contrast (CPT® 74177)  
  - CT with contrast of previously involved area(s)  
  - Requests for PET/CT can be considered in rare circumstances. These cases should be forwarded for Medical Director review. |
| **Suspected transformation (Richter’s) from a low grade lymphoma to a more aggressive type based on one or more of the following:** | PET/CT (CPT® 78815) |
  - New B symptoms  
  - Rapidly growing lymph nodes |
- Extranodal disease develops
- Significant recent rise in LDH above normal range

**Surveillance**

For all stages, every 6 months for two years, then annually:
- CT Chest with contrast (CPT® 71260)
- CT Abdomen/Pelvis with contrast (CPT® 74177)
- CT with contrast of previously involved area(s)
- Requests for PET/CT can be considered in rare circumstances. These cases should be forwarded for Medical Director review.

**ONC 27.4: Non-Hodgkin Lymphoma - Marginal Zone Lymphoma**

Marginal zone lymphoma imaging was updated to allow PET/CT for initial staging/diagnosis, end of therapy evaluation and suspected recurrence

<table>
<thead>
<tr>
<th>Phase of Therapy</th>
<th>Imaging Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Staging/Diagnosis</td>
<td>Any or all of the following may be approved:</td>
</tr>
<tr>
<td></td>
<td>- CT Chest with contrast (CPT® 71260)</td>
</tr>
<tr>
<td></td>
<td>- CT Abdomen/Pelvis with contrast (CPT® 74177)</td>
</tr>
<tr>
<td></td>
<td>- PET/CT (CPT® 78815 or 78816) can be approved if XRT is being considered for stage I or II disease</td>
</tr>
<tr>
<td>Treatment Response</td>
<td>CT with contrast of previously involved area(s) every 2 cycles of therapy</td>
</tr>
<tr>
<td>End of Therapy Evaluation</td>
<td>One of the following may be approved:</td>
</tr>
<tr>
<td></td>
<td>- CT with contrast of previously involved area(s)</td>
</tr>
<tr>
<td></td>
<td>- PET/CT (CPT® 78815 or 78816)</td>
</tr>
<tr>
<td>Suspected Recurrence</td>
<td>Any or all of the following may be approved:</td>
</tr>
<tr>
<td></td>
<td>- CT Chest with contrast (CPT® 71260)</td>
</tr>
<tr>
<td></td>
<td>- CT Abdomen/Pelvis with contrast (CPT® 74177)</td>
</tr>
<tr>
<td></td>
<td>- CT with contrast of previously involved area(s)</td>
</tr>
<tr>
<td></td>
<td>- Requests for PET/CT can be considered in rare circumstances. These cases should be forwarded for Medical Director review.</td>
</tr>
<tr>
<td>Surveillance</td>
<td>For any stage nodal marginal zone lymphoma or stage III or IV marginal zone lymphoma, the</td>
</tr>
</tbody>
</table>
following is indicated every 6 months for two years, then annually:
  - CT Chest with contrast (CPT® 71260)
  - CT Abdomen/Pelvis with contrast (CPT® 74177)
  - CT with contrast of previously involved area(s)
  - Requests for PET/CT can be considered in rare circumstances. These cases should be forwarded for Medical Director review.

- All other patients:
  - No routine advanced imaging indicated

### ONC 27.5: Non-Hodgkin Lymphoma – Mantle Cell Lymphoma Surveillance

Routine advanced imaging is no longer recommended for surveillance of mantle cell lymphoma.

<table>
<thead>
<tr>
<th>Phase of Therapy</th>
<th>Imaging Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveillance</td>
<td>All Stages of Disease:</td>
</tr>
<tr>
<td></td>
<td>• No routine advanced imaging indicated</td>
</tr>
<tr>
<td></td>
<td>• Chest and abdomen/pelvis CT with contrast</td>
</tr>
<tr>
<td></td>
<td>• CT with contrast of other areas if known prior involvement, every 6 months for 2 years</td>
</tr>
</tbody>
</table>

### ONC 27.6: Non-Hodgkin Lymphoma – Burkitt’s Lymphomas – Treatment Response

PET/CT has been added for Burkitt’s lymphoma treatment response, for consideration in rare circumstances.

<table>
<thead>
<tr>
<th>Phase of Therapy</th>
<th>Imaging Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Response</td>
<td>• CT with contrast of previously involved area(s) every 2 cycles of therapy</td>
</tr>
<tr>
<td></td>
<td>• Requests for PET/CT can be considered in rare circumstances. These cases should be forwarded for Medical Director review.</td>
</tr>
</tbody>
</table>
**ONC 27.6: Non-Hodgkin Lymphoma – Burkitt’s Lymphomas – Surveillance**

Routine advanced imaging is no longer recommended for surveillance of Burkitt’s lymphoma.

<table>
<thead>
<tr>
<th>Phase of Therapy</th>
<th>Imaging Studies</th>
</tr>
</thead>
</table>
| Surveillance     | **All Stages of Disease:**  
|                  | • No routine advanced imaging indicated  
|                  | • Chest and abdomen/pelvis CT with contrast  
|                  | • CT with contrast of other areas if known prior involvement, every 6 months for 2 years |

**ONC 27.8: Non-Hodgkin Lymphoma - Cutaneous Lymphoma – Treatment Response**

PET/CT has been added for cutaneous lymphoma treatment response, for consideration in rare circumstances.

<table>
<thead>
<tr>
<th>Phase of Therapy</th>
<th>Imaging Studies</th>
</tr>
</thead>
</table>
| Treatment Response | • CT with contrast of previously involved area(s) every 2 cycles of therapy  
|                  | • Requests for PET/CT can be considered in rare circumstances; these cases should be forwarded for Medical Director review |

**ONC 27.8: Non-Hodgkin Lymphoma - Cutaneous Lymphoma – Surveillance**

Surveillance imaging for cutaneous lymphoma was expanded by stage. Routine advanced imaging is no longer recommended for surveillance of Stage I and II cutaneous lymphoma.

<table>
<thead>
<tr>
<th>Phase of Therapy</th>
<th>Imaging Studies</th>
</tr>
</thead>
</table>
| Surveillance     | • Stage I and II:  
|                  |   o No routine advanced imaging indicated  
|                  | • Stage III and IV:  
|                  |   o CT with contrast of previously involved area(s) every 6 months for two years, then no further |
ONC 28.2: Hodgkin Lymphoma – Classical Hodgkin Surveillance

Previously, Hodgkin lymphoma surveillance recommendations included CT imaging every six months for one year. The updated surveillance recommendations included CT imaging once during the first 12 months after completion of therapy.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Imaging Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveillance</td>
<td>• Chest and abdomen/pelvis CT with contrast every 6 months for 1 year</td>
</tr>
<tr>
<td></td>
<td>• CT with contrast of other areas if known prior involvement, every 6 months for 1 year</td>
</tr>
<tr>
<td></td>
<td>Any or all of the following may be approved once during the first 12 months after completion of therapy:</td>
</tr>
<tr>
<td></td>
<td>• CT Chest with contrast (CPT® 71260)</td>
</tr>
<tr>
<td></td>
<td>• CT Abdomen/Pelvis with contrast (CPT® 74177)</td>
</tr>
<tr>
<td></td>
<td>• CT with contrast of previously involved area(s)</td>
</tr>
<tr>
<td></td>
<td>In addition to the above studies:</td>
</tr>
<tr>
<td></td>
<td>• A single follow-up PET/CT may be approved &gt;12 weeks after the end of radiation therapy if end of therapy PET/CT report documents Deauville 4 or 5 FDG avidity</td>
</tr>
</tbody>
</table>

ONC 31.2: Metastatic Cancer – Liver Metastases

CTA abdomen is now recommended for liver metastases, prior to embolization.

<table>
<thead>
<tr>
<th>Site of Metastases</th>
<th>Imaging Study(ies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring of ablated liver metastases or primary tumors</td>
<td>One of the following, immediately prior to ablation, 1 month post-ablation, then every 3 months:</td>
</tr>
<tr>
<td></td>
<td>• CT Abdomen without and with contrast (CPT® 74178)</td>
</tr>
<tr>
<td></td>
<td>• MRI Abdomen without and with contrast (CPT® 74183)</td>
</tr>
<tr>
<td></td>
<td>• CTA Abdomen (CPT® 74175) can be approved immediately prior to embolization</td>
</tr>
<tr>
<td></td>
<td>Evaluation of hepatic artery catheters for</td>
</tr>
</tbody>
</table>
chemotherapy infusion or Chemoembolization with radioactive spheres (TheraSphere or SIR Spheres):

- Nuclear medicine liver imaging (one of CPT® 78201, 78202, 78205, 78206, 78215, or 78216)
- PET is not indicated for evaluation of ablated liver lesions

Pelvic Imaging Changes

**PV-2.1 Abnormal Uterine Bleeding (AUB)**

More specific language regarding use of imaging for clarification was added:

MRI is not recommended except in the evaluation of leiomyomas. For leiomyomas, MRI pelvis without contrast (CPT®72195) or MRI pelvis without and with contrast (CPT®72197) is appropriate for the following:

- Guide the treatment of myomas in an enlarged uterus with multiple myomas and/or precise myoma mapping is of clinical importance (for surgical planning), or
- When myomectomy is planned, before uterine artery embolization.

**PV-5.2 Complex Adnexal Masses – Pre-Menopausal**

Symptomatic patients often require immediate interventions (antibiotics, surgery, and/or expectant management)

Advanced imaging may be considered for preoperative planning if requested by operating surgeon and if an ultrasound is indeterminate and/or malignancy is suspected: CT pelvis with contrast (CPT® 72193) or MRI pelvis (CPT®72197 or CPT®72195 if pregnant).

**PV-11.1 Pelvic Pain/Dyspareunia, Female**

A new indication was added to allow CTA pelvis. This indication was adopted from legacy CCN as part of the harmonization effort between legacy MedSolutions and legacy CareCore National (CCN).

If pelvic AVM is suspected, and if one of the following is present, then CTA pelvis (CPT®72191) can be considered

- Pulsatile pelvic mass
- Incidental finding on prior imaging including ultrasound
Additional references also added.


**PV-22.4 Fecal Incontinence**

Based on accepted clinical practice, a more complete list of criteria prior to MRI imaging has been included for fecal incontinence.

If the results of a recent ano-rectal manometry demonstrate: 1) weak pressures; and/or 2) an abnormal balloon expulsion test; and 3) a failure of a recent trial of conservative treatment in anticipation of surgical management, MRI pelvis without and with contrast (CPT®72197) can be considered when requested by the operating surgeon.

**Reference**


**PV 24.1: Prostate – Abnormal Screening**

New section for prostate screening added due to increased volume of requests for approval.

If abnormalities are detected on the digital rectal examination (DRE) or prostate-specific antigen (PSA) test, patients should undergo urologic evaluation with transrectal ultrasound-guided prostate biopsy.

**References**

Spine Imaging Guidelines

SP 1.1: General Considerations

The requirement for a face-to-face clinical re-evaluation was removed from the Spine Imaging Guidelines for 2016. Instead, documentation of meaningful contact with the providers’ office will suffice for clinical re-evaluation.

SP-2.2 MRI of the Spine

Updates to indications and contraindications for MRI.

(See SP-1 Procedure Codes Associated with Spine Imaging)

Spine MRI is the procedure of choice to evaluate disc disease, spinal cord and nerve root disorders and most other spinal conditions including evaluation of congenital anomalies of the spine and spinal cord. Spine MRI is performed either without contrast, with contrast or without and with contrast. A “with contrast” study alone is appropriate only to complete a study begun without contrast. Contrast is generally not indicated for most disc and nerve root disorders, fractures and degenerative disease.

Indications for MRI without contrast or without and with contrast. CT Spine without contrast, CT Spine with Contrast, or CT myelography when MRI is contraindicated:

- Suspicion for or surveillance of known spine/spinal canal/spinal cord neoplastic disease
- Suspicion, diagnosis of or surveillance of spinal infections, multiple sclerosis or other causes of myelitis, syringomyelia, cauda equina syndrome or other “red flag” indications (See SP-1.2 Red Flag Indications).
- Spinal imaging for patients having undergone recent spinal surgery e.g., laminectomy, discectomy, spinal decompression, when history and physical examination is suspicious for hematoma, post-surgical infection, or cerebrospinal fluid (CSF) leak.

Positional MRI:

Positional MRI is also referred to as dynamic, weight-bearing or kinetic MRI. Currently, there is inadequate scientific evidence to support the medical necessity of this study. As such, it should be considered experimental or investigational. (See HD-24.6)
Pediatric Abdomen Imaging

PEDAB 7: Hematuria

Hematuria was added as a new section to the Pediatric Abdomen Imaging guidelines, as follows:

Hematuria is a relatively common complaint in pediatric patients, and the imaging considerations are different than those occurring in adult patients.

- For patients with asymptomatic gross hematuria or microscopic hematuria present on separate urinalysis evaluations, ultrasound of the kidneys (CPT®76770 or 76775) and bladder (CPT®76856 or 76857) are indicated.

- For patients with painful hematuria and no recent trauma, any of the following studies can be approved:
  - CT Abdomen/Pelvis without contrast (CPT®74176)
  - Ultrasound of kidneys (CPT®76770 or 76775)
  - Ultrasound of bladder (CPT®76856 or 76857)

- For patients with hematuria and recent trauma, the following studies are indicated:
  - CT Abdomen/Pelvis with contrast (CPT®74177)
  - CT Cystography (CT Pelvis with bladder contrast—CPT®72193), if gross hematuria is present and pelvic fracture or traumatic bladder injury is suspected.

References


PEDAB-13.1 Abdominal Wall Mass

Abdominal Wall Mass was added as a new section to the Pediatric Abdomen Imaging guidelines, as follows:

- For initial imaging of a newly discovered abdominal wall mass, any of the following studies are indicated:
  - Ultrasound (CPT®76700)
  - MRI Abdomen without contrast (CPT®74181) or without and with contrast (CPT®74183)
  - If below the umbilicus, MRI Pelvis without contrast (CPT®72195) or without and with contrast (CPT®72197) may be added to MRI Abdomen.
If ultrasound and/or MRI are inconclusive or insufficient for preoperative planning, any of the following studies are indicated:

- CT abdomen with contrast (CPT®74160) or without contrast (CPT®74150)
- If below the umbilicus, CT Abdomen/Pelvis with contrast (CPT®74177) or without contrast (CPT®74176)

**PEDAB-13.2 Intra-Abdominal Mass**

- Ultrasound (CPT®76700) should be the initial imaging study for children with an intra-abdominal mass.
- Additional imaging studies will be determined by the results of the ultrasound, and will depend on the location and organ involvement associated with the mass as well as history, physical exam, and laboratory findings. See the following sections for additional imaging guidelines:
  - PEDONC-1~General Guidelines
  - PEDONC-5~Pediatric Lymphomas
  - PEDONC-6~Neuroblastoma
  - PEDONC-7~Pediatric Renal Tumors
  - PEDONC-10~Pediatric Germ Cell Tumors
  - PEDONC-11~Pediatric Liver Tumors
  - PEDONC-14~Pediatric Adrenocortical Carcinoma
  - PEDAB-15~Liver Lesion Characterization
  - PEDAB-17~Adrenal Lesions
  - PEDAB-19~Indeterminate Renal Lesion
  - PEDAB-25~Spleen

**References**


**PEDAB 16: Pediatric Liver Failure and Cirrhosis**

Pediatric Liver Failure and Cirrhosis was added as a new section to the Pediatric Abdomen Imaging guidelines, as follows:

- Elevated liver function testing imaging indications in pediatric patients are very similar to those for adult patients. See: **AB-30~Elevated Liver Function (LFT) Levels** for imaging guidelines.
Causes of liver failure or cirrhosis in pediatric patients are different from adults, and are generally due to one of the following:

- Biliary dysfunction (biliary atresia, cystic fibrosis, etc.)
- Metabolic disease
- Post-infectious
- Idiopathic causes

Liver ultrasound (CPT® 76700) is indicated as an initial study for patients prior to approving CT or MRI for pediatric patients

- MRI Abdomen without and with contrast (CPT® 74183) is indicated for evaluation of ultrasound findings that are inconclusive or technically limited, and is preferred over CT when possible to reduce radiation exposure

Repeat liver ultrasound (CPT® 76705) is indicated in pediatric patients in the following circumstances:

- Known chronic liver dysfunction or cirrhosis of any cause
- New or worsening findings on history, physical exam, or laboratory results that suggest progression of liver disease
- Doppler ultrasound of the liver (CPT® 93975 or 93976) is indicated when portal venous congestion or portal hypertension is suspected

References


PEDAB 17: Adrenal Lesions

Adrenal Lesions was added as a new section to the Pediatric Abdomen Imaging guidelines, as follows:

- Adrenal cortical lesion imaging indications in pediatric patients are very similar to those for adult patients. See: AB-16~Adrenal Cortical Lesions for imaging guidelines.

- Pediatric-specific imaging considerations include the following:
  - Neonatal adrenal hemorrhage may be identified on renal ultrasound. The most concerning potential diagnosis is neuroblastoma. This can often be adequately evaluated with short interval follow-up retroperitoneal ultrasound (CPT® 76770) in 7-10 days.
- If repeat ultrasound is inconclusive or there is high clinical concern for neuroblastoma, MRI Abdomen without and with contrast (CPT® 74183) or CT Abdomen without and with contrast (CPT® 74170) is indicated. MRI is preferred over CT when possible to reduce radiation exposure.
  - Neuroblastoma is the most common primary adrenal tumor in pediatric patients. See PEDONC-6~NEUROBLASTOMA for imaging guidelines.

References

PEDAB 18: Hemochromatosis

Hemochromatosis was added as a new section to the Pediatric Abdomen Imaging guidelines, as follows:

**PEDAB-18.1 Hereditary (Primary) Hemochromatosis**
✓ Hereditary hemochromatosis imaging indications in pediatric patients are identical to those for adult patients. See AB-11.2~Hereditary Hemochromatosis and Other Iron Storage Disorders for imaging guidelines.

**PEDAB-18.2 Transfusion-Associated (Secondary) Hemochromatosis**
Transfusion-associated hemochromatosis is a common complication of exposure to repeated red blood cell transfusions. This can occur in any patient with exposure to >20 transfusion episodes, but is most common among sickle cell disease, thalassemia, bone marrow failure (aplastic anemia, Fanconi anemia, etc.), oncology patients, and hematopoietic stem cell transplant patients.

✓ T2* MRI has been well established in the determination of organ iron burden in transfusion-associated hemochromatosis. Contrast use is not necessary for evaluation of iron burden. The following studies are indicated for evaluation of transfusion-associated hemochromatosis:
  o MRI Abdomen without contrast (CPT® 74181) for liver iron evaluation
  o MRI Cardiac without contrast (CPT® 75557) for cardiac iron evaluation
  o MRI Chest without contrast (CPT® 71550) can be approved as a single study to evaluate both heart and liver iron burden
  o CPT® 74181 and 75557 can be approved alone, or both together as clinically indicated for a specific patient
  o If requested, CPT® 71550 will evaluate both heart and liver and should not be approved with any other codes
Screening MRI is indicated every 12 months for chronically transfused patients at risk of hemochromatosis

Imaging is indicated every 3 months for treatment response in patients receiving active treatment (chelation and/or phlebotomy)

References


Pediatric Cardiac Imaging

PEDCD 4: Chest Pain

Chest Pain was added as a new section to the Pediatric Cardiac Imaging guidelines, as follows:

Chest pain in pediatric patients is caused by a cardiac etiology in <5% of cases, yet causes great anxiety for parents resulting in requests for testing.

A recent (within 60 days) face-to-face evaluation including a detailed history, physical examination, EKG, and appropriate laboratory studies should be performed prior to considering advanced imaging.

Echocardiography is indicated for pediatric patients with chest pain and one or more of the following:
  - Exertional chest pain
  - Non-exertional chest pain with abnormal EKG
  - First-degree relative with sudden unexplained death or cardiomyopathy
  - Recent onset of fever
  - Recent illicit drug use
  - Other signs or symptoms of cardiovascular disease

Echocardiography is performed as part of the office visit. When evaluating a patient for the first time, it will not be known whether the patient has congenital heart disease or not. The cardiologist only submits charges for the procedure actually performed.

The following echocardiography code combinations should be approved for evaluation of chest pain:
CPT® 93303, 93306, 93320, and 93325

CPT® 93303, 93306

CPT® 93306

- CPT® 93320 and 93325 are included with 93306 and should not be approved separately

Repeat echocardiography is not indicated if the initial echocardiogram is normal unless one of the following conditions is present:

- Increased severity or change in quality of the chest pain
- New signs or symptoms of cardiovascular disease other than pain
- New abnormality on EKG

References


PEDCD 5: Syncope

Syncope was added as a new section to the Pediatric Cardiac Imaging guidelines, as follows:

Syncope in pediatric patients is common, with up to 15% of patients experiencing at least one episode by age 21. Syncope is caused by neurocardiogenic syndrome (vasovagal syncope) in 75-80% of cases, which is a benign and self-limiting condition. Despite this, syncope causes great anxiety for parents resulting in requests for testing.

- A recent (within 60 days) face-to-face evaluation including a detailed history, physical examination, EKG, and appropriate laboratory studies should be performed prior to considering advanced imaging.

- Echocardiography is not indicated for most patients with isolated syncope

- Echocardiography is indicated for pediatric patients with syncope and one or more of the following:
  - Exertional syncope
  - Unexplained post-exertional syncope
  - Abnormal EKG
  - First-degree relative with any of the following before age 50:
    - Sudden cardiac arrest or death
    - Pacemaker or implantable defibrillator placement
First-degree relative with cardiomyopathy
Known congenital heart disease
History of Kawasaki disease
Pathologic murmur, irregular rhythm, gallop, or click on physical examination

Echocardiography is performed as part of the office visit. When evaluating a patient for the first time, it will not be known whether the patient has congenital heart disease or not. The cardiologist only submits charges for the procedure actually performed.

The following echocardiography code combinations should be approved for evaluation of chest pain:
- CPT® 93303, 93306, 93320, and 93325
- CPT® 93303, 93306
- CPT® 93306
  - CPT® 93320 and 93325 are included with 93306 and should not be approved separately

Repeat echocardiography is not indicated if the initial echocardiogram is normal unless one of the following conditions is present:
- Increased severity or change in quality of the syncope
- New signs or symptoms of cardiovascular disease other than syncope
- New abnormality on EKG

References

PDCD 6: Kawasaki Disease

Kawasaki Disease was added as a new section to the Pediatric Cardiac Imaging guidelines, as follows:

Kawasaki disease is the leading cause of acquired pediatric cardiac disease in the developed world. It is an acute febrile illness characterized by a medium vessel vasculitis, which predominantly affects the coronary arteries.

A recent (within 60 days) face-to-face evaluation including a detailed history, physical examination, and appropriate laboratory studies should be performed prior to considering advanced imaging.
If Kawasaki disease is strongly suspected, treatment will begin even before cardiac evaluation, since early treatment is associated with a lower risk for coronary aneurysm development.

Echocardiography (CPT® 93306) is indicated for all patients with Kawasaki disease
  o Echocardiography is recommended at the time of diagnosis, 1-2 weeks later, and 6 weeks from diagnosis
  o Patients with recurrent or persistent fever or worsening cardiac symptoms should have echocardiogram repeated
  o Patients with no coronary abnormalities on 6 week study should have a repeat echocardiogram 1 year from diagnosis
  o Patients with coronary abnormalities will require more frequent echocardiograms based on severity of disease and need for medical management. These requests should be forwarded for medical director review.

Coronary CTA (CPT® 75574), Cardiac MRI without contrast (CPT® 75557), Cardiac MRI without and with contrast (CPT® 75561), or MRA Chest (CPT® 71555) is indicated for evaluation of inconclusive echocardiogram findings, or for large coronary aneurysms.

Screening of other body areas for aneurysms is not routinely indicated in Kawasaki disease, but MRA or CTA (contrast as requested) of the affected body area can be approved for evaluation of signs or symptoms suggesting aneurysm development.

References

Pediatric Chest Imaging

PEDCH 2: Lymphadenopathy

Lymphadenopathy was added as a new section to the Pediatric Chest Imaging guidelines, as follows:

Axillary lymphadenopathy imaging indications in pediatric patients are identical to those for adult patients. See CH-2.2~Axillary Lymphadenopathy for imaging guidelines.
Supraclavicular adenopathy in pediatric patients is almost always pathologic, and advanced imaging is indicated prior to excisional biopsy. Fine needle aspiration, while common in adults prior to advanced imaging, is inappropriate for evaluating lymphadenopathy in pediatric patients. Any of the following studies may be approved for evaluation of supraclavicular adenopathy in children:
- CT Chest with contrast (CPT® 71260)
- MRI Chest without and with contrast (CPT® 71552)
- Ultrasound of the chest (CPT® 76604)

If malignancy is suspected, see the appropriate imaging guidelines as below:
- Lymphoma: PEDONC-5~Pediatric Lymphomas
- Soft tissue sarcoma: PEDONC-8~Pediatric Soft Tissue Sarcomas
- Neuroblastoma: PEDONC-6~Neuroblastoma

References

PEDCH 4: Hemoptysis

While CT chest with contrast and CT chest without contrast were previously indicated for the evaluation of all pediatric hemoptysis patients, these guidelines have been updated with requirements for a face-to-face evaluation as well as a chest x-ray prior to advanced imaging. These guidelines were also updated with specific criteria for CT chest with contrast as well as CT chest without contrast.

- True hemoptysis is rare in pediatric patients, and a face-to-face evaluation including a detailed history, physical examination, and appropriate laboratory studies should be performed prior to considering advanced imaging
  - Aspirated blood from epistaxis or emesis frequently presents as hemoptysis, and history and physical examination will aid in this assessment

- Chest X-ray is indicated as an initial study for stable patients
  - Advanced imaging is not indicated for patients with epistaxis and a normal chest radiograph and no personal or family history of underlying lung disease or bleeding disorder

- Chest CT with contrast (CPT® 71260) is indicated for all other pediatric patients with hemoptysis
  - Chest CT without contrast (CPT® 71250) can be approved for patients with a documented allergy to CT contrast or significant renal dysfunction

- MRI is not indicated in the evaluation of pediatric hemoptysis

References:

**PEDCH 5: Cystic Fibrosis**

Cystic Fibrosis was added as a new section to the Pediatric Chest Imaging guidelines, as follows:

- Chest x-ray is the primary study for initial evaluation of acute clinical symptoms in patients with cystic fibrosis
- CT Chest without contrast (CPT® 71250) or with contrast (CPT® 71260) is indicated for the following (without initial chest x-ray):
  - Hemoptysis
  - Pneumonia worsening despite antibiotic therapy
  - Pleural effusion or empyema
  - Suspected fungal pneumonia
  - Monitoring treatment changes on bronchiectasis
  - Expiratory CT for evaluating small airways disease
- Low dose CT Chest without contrast (CPT® 71250) is indicated every 2 years for monitoring of bronchiectasis and small airways disease

**PEDCH-5.2 Bronchiectasis Not Associated with Cystic Fibrosis**

- Bronchiectasis not associated with cystic fibrosis is rare in pediatric patients, and imaging indications are identical to those for adult patients. See CH-7~BRONCHIECTASIS for imaging guidelines.

**References:**

**PEDCH 7: Pneumonia**

In general, imaging indications for pneumonia in pediatrics is similar to that of adults, with a few exceptions. The pediatric pneumonia guidelines were updated with additional considerations for this population:

- Pneumonia imaging indications in pediatric patients are very similar to those for adult patients. See CH-13~PNEUMONIA for imaging guidelines.

- Pediatric-specific imaging considerations include the following:
  - Immunocompromised patients with acute pulmonary symptoms should be imaged using CT Chest with contrast (CPT® 71260)
  - Patients with recurrent lower respiratory tract infections should undergo CT Chest without contrast (CPT® 71250) or with contrast (CPT® 71260)
  - Ultrasound of the chest (CPT® 76604) can be approved for evaluation of childhood pneumonia

**References**

**PEDCH 6: Bronchiolitis**

Bronchiolitis was added as a new section to the Pediatric Chest Imaging guidelines, as follows:

Bronchiolitis is a self-limiting viral infection causing lower respiratory tract illness, most common in infants under 12 months of age.

- Advanced imaging is not indicated for routine evaluation or monitoring of bronchiolitis, but can be approved for the following:
  - Pleural effusion or empyema on recent chest x-ray
  - Immunocompromised patient with acute pulmonary symptoms
  - Abnormality on recent chest x-ray suggesting condition other than bronchiolitis

**References**:
**PEDCH 8: Solitary Pulmonary Nodule**

Solitary Pulmonary Nodule was added as a new section to the Pediatric Chest Imaging guidelines, as follows:

The Fleischner Society guidelines for solitary pulmonary nodule management do not apply to pediatric patients. An incidental solitary pulmonary nodule in a child representing a primary lung carcinoma has never been reported in the literature. Similarly, an extrathoracic malignancy presenting with an incidental solitary pulmonary nodule in an otherwise healthy child is very rare.

- All children with a pulmonary nodule incidentally discovered on other imaging should have CT Chest with contrast (CPT® 71260) as a one-time evaluation
- Follow up imaging of incidental solitary pulmonary nodules in asymptomatic healthy children is not necessary.
  - Follow up imaging is indicated for the following:
    - Immunocompromised patients
    - Malignancy (see below)
    - Invasive infection
    - New or worsening pulmonary symptoms
- Children with a malignant solid tumor who have pulmonary nodules of any size should have imaging according to the guideline section for the specific cancer type. See Pediatric Oncology Imaging Guidelines for specific imaging indications.
- This guideline section does not apply to multiple pulmonary nodules, which are imaged according to the underlying disorder in pediatric patients

**References**


**PEDCH 3: Mediastinal Mass**

Mediastinal Mass was added as a new section to the Pediatric Chest Imaging guidelines, as follows:

The causes of mediastinal masses in children are generally different than those in adults, and the imaging considerations are different.
- Chest x-ray is indicated as an initial study for all patients with suspected mediastinal mass.
- CT Chest with contrast (CPT® 71260) is indicated for any pediatric patient with a mediastinal mass:
  - Masses can be very large and anterior masses frequently cause compression of the trachea and/or mediastinal blood vessels.
- MRI Chest without and with contrast (CPT® 71552) is indicated for any pediatric patient with:
  - A posterior (paravertebral) mediastinal mass.
  - CT findings are inconclusive regarding specific anatomy.
  - MRI should not be used for patients with large anterior mediastinal masses if anesthesia is necessary to complete the study.
- If lymphoma is strongly suspected or there is evidence of tracheal compression on CT imaging, PET/CT (CPT® 78815) is indicated prior to biopsy in pediatric patients. See PEDONC-5 Pediatric Lymphoma for imaging guidelines.
- If neuroblastoma is strongly suspected, MIBG (CPT® 78804) is indicated and can be approved prior to biopsy in pediatric patients. See PEDONC-6~Neuroblastoma for imaging guidelines.
- Ultrasound can be approved in children younger than 5 years old to distinguish prominent but otherwise normal thymus from true mediastinal mass.
- A single repeat CT Chest with contrast (CPT® 71260) can be approved to confirm stability and avoid biopsy for patients with NONE of the following features:
  - Anterior mediastinal mass.
  - Enlarged lymph nodes anywhere in the imaging field.
  - Lymphopenia.
  - Pleural effusion.

References

**PEDCH 10: Asthma**

Asthma was added as a new section to the Pediatric Chest Imaging guidelines, as follows:

- Advanced imaging is not indicated for routine evaluation or monitoring of asthma, but CT Chest without (CPT® 71250) or with (CPT® 71260) contrast can be approved for the following:
• Pleural effusion or empyema on recent chest x-ray
• Immunocompromised patient with acute pulmonary symptoms
• Abnormality on recent chest x-ray suggesting condition other than asthma

References:

PEDCH 13: Vascular Ring/Malformations

Additional imaging considerations were added for the evaluation of vascular ring/malformations:

Vascular rings generally present with either respiratory symptoms (stridor, wheezing, tachypnea, cough) or feeding difficulties (dysphagia, slow feeding, hyperextension of the head while feeding, weight loss, failure to thrive) but can also be discovered incidentally on imaging obtained for other purposes.

✓ Chest x-ray is the recommended initial study in patients with respiratory symptoms

✓ Barium esophagram is the recommended initial study in patients with feeding difficulties

✓ Either Chest CTA (CPT®71275) or Chest MRA (CPT®71555) can be approved in patients with known or suspected vascular ring after chest x-ray or barium esophagram

✓ Echocardiogram can be approved to rule out associated congenital heart disease
  o CPT® codes 93303, 93306, 93320, and 93325 can be approved for initial evaluation of patients with vascular ring and no prior echocardiograms
Pediatric Head Imaging

PEDHD 3: Pediatric Headache

Pediatric Headache was updated to require a recent face to face evaluation; however the previous requirement of 4 weeks conservative treatment was removed. The guideline was further updated with language stating that advanced imaging is not indicated for pediatric patients with headache in the absence of red flag symptoms. Additional red flags were added as well:

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.

- A recent (within 60 days) face-to-face evaluation including a detailed headache history, physical examination with a thorough neurologic examination, and appropriate laboratory studies should be performed prior to considering advanced imaging.

- Advanced imaging is not indicated for pediatric patients with headache in the absence of red flag symptoms

- MRI Brain without contrast (CPT®70551) or without and with contrast (CPT®70553) is indicated for children with headaches and at least one of the following red flags:
  - Age ≤5 years
  - Headaches awakening from sleep or always present in the morning
  - Focal findings on neurologic examination including diplopia
  - Clumsiness (common description of gait or coordination problems in young children)
  - Headaches associated with morning nausea/vomiting
  - New onset of seizure activity with focal features
  - Papilledema on physical exam
  - Headache precipitated by coughing, sneezing, or Valsalva
  - Exclusively occipital headache
  - 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 patient
  - Patient with hypercoagulable state or bleeding disorder
  - 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
  - Patients requiring sedation should generally not have noncontrast MRI studies. See PEDHD-1.3 Pediatric Head Imaging Modality General
Considerations

✓ CT Head poorly visualizes the posterior fossa in children and is generally insufficient to evaluate pediatric headaches with red flag symptoms. CT should not be approved in lieu of MRI solely to avoid sedation.

✓ CT Head without contrast is indicated for pediatric headache with one or more of the following:
  o Recent head trauma
  o Suspected skull or other bony involvement
  o Ventriculoperitoneal shunt with suspected shunt malfunction. See PEDHD-7~MACROCEPHALY, MICROCEPHALY, AND HYDROCEPHALUS for additional imaging,
  o Sudden onset (thunderclap) headache with suspected intracranial hemorrhage
  o MRI is contraindicated due to implantable device or rapid clinical deterioration

✓ MRA Brain or CTA Head are not generally medically necessary in the evaluation of headache in children unless a vascular lesion has been seen or suspected on a prior brain MRI Brain or CT Head
  o Concurrent approval of both MRI and MRA is generally not indicated.

✓ MRV Head (CPT®70544) is indicated in pediatric patients with papilledema and headache. See PEDHD-22~Psuedotumor Cerebri for additional imaging guidelines.

References

2. Ryan ME, Palasis S, Saigal G et al, Head Trauma—Child, ACR Appropriateness Criteria®, 2014:1-14,
The Sickle Cell Disease guideline was updated to reflect new evidence that MRI and MRA are no longer recommended for the screening of asymptomatic sickle cell patients. An additional update is the recommendation for annual imaging with Transcranial Doppler Ultrasound for patients, ages 2 to 16, with a severe phenotype:

Patients 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 patients at high risk for stroke and begin a primary stroke prevention program.

The following imaging is indicated for all sickle cell patients with a severe phenotype (Hgb SS or Hgb S0):
- Transcranial Doppler Ultrasound (CPT® 93886 or 93888) annually for all patients age 2-16
  - A short interval repeat study is indicated for patients with conditional (170-199 cm/sec) flow results
- Transcranial Doppler is not indicated for patients with other phenotypes (Hgb SC, Hgb S+)
- Screening of asymptomatic sickle cell patients with MRI or MRA is no longer recommended

Noncontrast brain MRI (CPT® 70551) and brain MRA (CPT® 70544) can be performed once a year for surveillance imaging.

Many centers follow the cerebral circulation of children with sickle cell disease (SS) with transcranial Doppler (CPT® 93886 for complete study, CPT® 93888 for limited study, CPT® 93890 for vasoreactive study). Positive findings are further evaluated with brain MRI/MRA.

References

PEDHD 17: Autism Spectrum Disorders

MRI imaging was added as a recommendation for autism spectrum disorders for evaluation of new or worsening neurological findings:

The group of diagnoses, including Asperger syndrome, 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.

✔ MRI Brain without and with contrast (CPT®70553) is indicated for new or worsening focal neurologic findings documented on a physical examination within 60 days of the imaging request
  o Patients requiring sedation should generally not have noncontrast MRI studies. See PEDHD-1.3 Pediatric Head Imaging Modality General Considerations.

✔ PET imaging is considered investigational in the evaluation of patients with autism spectrum disorders.

References

PEDHD 18: Behavioral and Psychiatric Disorders

MRI imaging was added as a recommendation for behavioral and psychiatric disorders for evaluation of new or worsening neurological findings:

✔ Behavioral and psychiatric disorders of childhood or adolescence generally require no advanced imaging for diagnosis or management.
  o MRI Brain without and with contrast (CPT®70553) is indicated for new or worsening focal neurologic findings documented on a physical examination within 60 days of the imaging request
    ▪ Patients requiring sedation should generally not have noncontrast MRI studies. See PEDHD-1.3 Pediatric Head Imaging Modality General Considerations.
References

PEDHD 23: Cranial Neuropathies

Cranial Neuropathies was added as a new section to the Pediatric Head Imaging guidelines, as follows:

- MRI Brain without and with contrast (CPT® 70553) is indicated for all patients with new or worsening specific cranial nerve abnormalities
- MRI Neck without and with contrast (CPT® 70543) is also indicated for patients with abnormalities in cranial nerves IX, X, XI, or XII

References

PEDHD: Tourette's Syndrome

Advanced imaging is not indicated for the diagnosis or management of Tourette's Syndrome:

The diagnosis of Tourette’s syndrome is made clinically and advanced neuroimaging is not indicated for either diagnosis or management.

If the presentation is atypical and there is an unresolved differential diagnostic issue, MRI brain, generally done without contrast (CPT® 70551) may be helpful. CT is not often helpful and MRA/CTA is generally not indicated unless justified by specific MRI findings

Reference
Pediatric Musculoskeletal Imaging

PEDMS 3: Soft Tissue and Bone Masses

CT imaging is no longer recommended for the evaluation of non-subcutaneous lipomas, instead MRI without and with contrast or ultrasound are the recommended imaging modalities.

✓ Lipomas in other locations (not subcutaneous) should be evaluated by CT-MRI without and with contrast or by ultrasound (CPT® 76881 or 76882)

References:


PEDMS 4: Limping Child

Limping Child was added as a new section to the Pediatric Musculoskeletal Imaging guidelines, as follows:

PEDMS-4.1 General Evaluation of the Limping Child

✓ This guideline primarily applies to children under the age of 6 years. It may also be applied to older children with pre-existing conditions who may not be able to communicate, such as a child with severe intellectual disability. Many of these cases will be urgent, because of the risk of adverse outcomes in delay of diagnosis.

✓ A recent (within 60 days) face-to-face evaluation, including a detailed history and physical examination, should be performed, which will help determine any indication for advanced imaging. Based on this clinical evaluation, the most likely etiology should be determined, usually trauma, infection, or neither trauma nor infection.

PEDMS-4.2 Limping Child with Suspected Trauma

✓ Plain radiographs are indicated. For children under age 4 this may require X-rays of the entire leg from hip to foot. If clinical suspicion is high for “toddler fracture” imaging may start with tibia/fibula radiographs, and if a fracture is demonstrated, additional imaging may not be required.

✓ If initial radiographs are negative, but limping symptoms or avoidance of weight-bearing persist, follow-up radiographs in 7-10 days are indicated.

✓ CT use is limited in the evaluation of the limping child with suspected trauma. Requests should be for Medical Director review.

✓ MRI without contrast of the affected body area is indicated if plain films are negative and suspicion remains high for stress fractures or soft tissue injury.
Radionuclide bone scan may be indicated in setting of a non-focal exam, especially in younger and non-verbal children. Due to relatively high radiation exposure, bone scan is reserved for high suspicion cases with negative radiographs. It is a preferred examination in a child with implanted hardware or devices precluding MRI.

**PEDMS-4.3 Limping Child with Suspected Infection**

- **Pain localized to hip:**
  - It is essential to exclude septic arthritis. Ultrasound of the hip (CPT® 76881 or 76882) is used to exclude hip joint effusion.
    - If hip joint effusion is demonstrated, hip joint fluid aspiration should be performed to distinguish infection from non-infectious etiologies.
    - If no hip joint effusion is demonstrated, plain radiographs should be obtained.
    - If plain films are not diagnostic, MRI without or without and with contrast is indicated.
      - For unilateral hip use CPT® 73721 (without contrast) or CPT® 73723 (without and with contrast)
      - For bilateral hips use a single CPT® 73721 (without contrast) or CPT® 73723 (without and with contrast) and add modifier -50

- **Pain localized distal to hip:**
  - Plain radiographs of the leg should be obtained. If these are not diagnostic, MRI without contrast or without and with contrast of the affected body part is indicated.

- **Nonlocalized pain:**
  - Plain radiographs of the spine, pelvis, and lower extremities may be necessary to localize the abnormality.
  - If plain radiography is not diagnostic and suspicion for infection remains high, whole body bone scan (CPT® 78306) or MRI without contrast or without and with contrast of the affected body area is indicated.

**PEDMS-4.4 Limping Child with No Evidence of Trauma or Infection**

- This differential diagnosis is quite broad.
  - Transient (or toxic) synovitis of the hip:
    - Ultrasound of the hip (CPT® 76881 or 76882) is the preferred initial exam.
      - If no hip effusion is demonstrated, plain radiographs should be obtained.
      - If a hip joint effusion is demonstrated, hip joint fluid aspiration is indicated. This is usually performed with US guidance, though fluoroscopic guidance or blind aspiration may be required.
  - Avascular Necrosis: See PEDMS-2~Avascular Necrosis (AVN/Legg-Calvé-Perthes Disease)
  - Juvenile Idiopathic Arthritis: See PEDMS-6~Juvenile Idiopathic Arthritis
  - Histiocytic Disorders: See PEDONC-18~Pediatric Histiocytic Disorders
  - Neoplasm: See PEDONC-1~General Guidelines, PEDONC-3~Pediatric Leukemias, PEDONC-6, Neuroblastoma, PEDONC-8 Pediatric Soft
PEDMS 5: Developmental Dysplasia of the Hip

Additional imaging indications were added for the evaluation of developmental dysplasia of the hip:

Developmental dysplasia of the hip (DDH) was formerly known as congenital dislocation of the hip. DDH includes a spectrum of abnormalities including abnormal acetabular shape (dysplasia) and malposition of the femoral head ranging from mild subluxation, dislocatable hip to fixed dislocation. 60-80% of abnormalities are identified by physical exam, and more than 90% are identified by ultrasound. Treatment may involve placement in a Pavlik harness, casting, or surgery in extreme or refractory cases.

Screening studies:

- The routine use of ultrasound in screening neonates and infants without risk factors for DDH is not recommended by the American Academy of Pediatrics and the American Academy of Orthopedic Surgeons.
- Screening ultrasound (CPT®76885 or CPT®76886) is recommended for infants 4 to 6 weeks of age with one or more of the following risk factors:
  - Breech presentation
  - Family history of DDH
  - Abnormal hip exam (e.g. positive Ortolani or Barlow maneuvers, asymmetric thigh folds, shortening of the thigh observed on the dislocated side, limitation of hip abduction)
- Indications for follow-up hip ultrasound (CPT®76885 or CPT®76886):
  - Type IIa hip was diagnosed on a previous hip ultrasound using the Graf method and follow-up hip ultrasound is requested to confirm normal development
    - Graf type IIa hip has an alpha angle (bony angle) between 50-59 degrees in a child less than 3 months of age
    - The overwhelming majority of these hips mature spontaneously, but follow-up may be required to ensure that maturation has occurred
  - Prior ultrasound demonstrates abnormal hip and treatment has been applied, such as a Pavlik harness or other device. Follow-up ultrasound is indicated to
document effectiveness of treatment, to ensure the femoral head remains located in the acetabulum or to identify treatment failure. The usual interval for follow-up sonography is monthly, but earlier imaging is indicated for clinical suspicion of treatment failure, subluxation or dislocation of the hip.

✓ MRI without contrast or CT without contrast is indicated to evaluate alignment following reduction. Children in casts or following surgery may require repeated advanced imaging to ensure the reduction remains satisfactory, or to assess incorporation of bone graft material.
  o For unilateral hip MRI use CPT® 73721
  o For bilateral hips MRI use a single CPT® 73721 and add modifier -50
  o For unilateral hip CT use CPT® 73700
  o For bilateral hips CT use a single CPT® 73700 and add modifier -50

✓ Hip ultrasound is NOT indicated for the following:
  o Infants less than 2 weeks of age as hip laxity is normal after birth and usually resolves spontaneously.
  o Infants older than 6 months of age as plain x-ray of the hips become more reliable due to femoral head ossification and should be used in infants over 6 months of age.
  o Type I, IIb, IIc, IId, and III hips diagnosed on a previous hip ultrasound using the Graf method. Type I hip is normal, and Type IIb, IIc, IId, and III require referral for treatment rather than follow-up imaging.
  o Plain x-ray of the hips should be performed rather than ultrasound if there is a clinical suspicion for teratogenic dysplasia.

References

**PEDMS 7: Suspected Physical Child Abuse**

Suspected Physical Child Abuse was added as a new section to the Pediatric Musculoskeletal Imaging guidelines, as follows:

The suspicion of physical abuse of a child often requires imaging, both for clinical management and for forensic purposes. Every effort should be made to support reasonable requests for imaging in these children.

Child abuse injuries may affect any organ or system. Fractures are common, but injuries may also include solid and hollow visceral organs, superficial and deep soft tissue injuries, or burns. Some fracture patterns are highly correlated with non-accidental mechanisms, such as the “classic metaphyseal lesion,” also known as a corner fracture or bucket handle fracture, but fractures may occur in any bone. Unsuspected fractures, multiple fractures at various stages of healing, or fractures of a configuration or distribution inconsistent with the history provided, may raise the suspicion for physical abuse.

**Skeletal Injury**

- The radiographic skeletal survey is the primary imaging procedure for detecting fractures, especially in children age 24 months or younger. In older children, skeletal survey may be indicated, but more tailored radiographic evaluation based on history and physical examination may be preferable to skeletal survey.
- Bone scan is complimentary to plain radiographs, and may be used when the skeletal survey is negative but clinical suspicion remains high.
- Suspected injury to the spine should usually first be evaluated with plain radiographs. CT without contrast and/or MRI without contrast or without and with contrast may be required for complete evaluation of osseous and soft tissue spine injuries. If requested for suspected or known physical abuse, both CT and MRI should be approved.

**Head Injury**

- CT Head without contrast (CPT® 70450) is indicated when there is clinical evidence of head injury or when skull fracture of any age is detected on survey skull x-ray
  - CT Head without contrast (CPT® 70450) is also indicated when known or suspected cervical trauma is present in a pediatric patient
- MRI Brain without contrast (CPT® 70551) or without and with contrast (CPT® 70553) is indicated to further evaluate brain parenchymal injury, or in a child where the clinical signs of brain injury are not sufficiently explained by CT findings.
- Infants may require advanced imaging even if no neurologic symptoms are detected due to the great potential morbidity of abusive head trauma.

**Other Body Area Injuries**

- CT should be performed with IV contrast unless an absolute contraindication exists.
Any of the following imaging studies are indicated for suspected injury to the abdomen or pelvis:
- Abdominal ultrasound (CPT® 76700)
- Pelvic ultrasound (CPT® 76856)
- CT Abdomen with contrast (CPT® 74160)
- CT Pelvis with contrast (CPT® 72193)
- CT Abdomen/Pelvis with contrast (CPT® 74177)

Any of the following imaging studies are indicated for suspected injury to the chest:
- CT Chest without contrast (CPT® 71250)
- CT Chest with contrast (CPT® 71260)

Screening of other children
A skeletal survey, or other imaging, may be requested for siblings of abused children, or for other household members under the age of two due to the high incidence of occult fractures in these children. All such requests should be approved.

References

PEDMS 10: Inflammatory Musculoskeletal Disease

Inflammatory Musculoskeletal Disease was added as a new section to the Pediatric Musculoskeletal Imaging guidelines, as follows:

PEDMS-10.1 Juvenile Idiopathic Arthritis
A recent (within 60 days) face-to-face evaluation including a detailed history, physical examination, and plain radiography should be performed prior to considering advanced imaging.

Inflammatory arthritis imaging indications in pediatric patients are very similar to those for adult patients. See MS-15–Rheumatoid Arthritis and Inflammatory Arthritis for imaging guidelines.

Pediatric-specific imaging considerations include the following:
• MRI without and with contrast of the most symptomatic joint should be approved for evaluation of suspected or known synovitis when MRI findings will result in a change in therapy

**PEDMS-10.2 Inflammatory Muscle Diseases**

✓ A recent (within 60 days) face-to-face evaluation including a detailed history, physical examination, and plain radiography should be performed prior to considering advanced imaging.

**Inflammatory Muscle Diseases:**
These include dermatomyositis, polymyositis, and sporadic inclusion body myositis. MRI without contrast of a single site is indicated in these disorders for the following purposes:
- Selection of biopsy site
- Treatment monitoring
- Detection of occult malignancy

**Juvenile Dermatomyositis:**

✓ MRI without contrast can frequently confirm the diagnosis and thus avoid a biopsy
✓ CT without contrast (CPT® 73700) is indicated to follow progressive calcification in muscles, but MRI (CPT® 73718) is often used instead since it permits assessment of the primary muscle disease as well
  - Both CT and MRI are rarely indicated concurrently, and these requests should be forwarded for medical director review
✓ Contrary to adult dermatomyositis, juvenile dermatomyositis is very rarely paraneoplastic in nature, and routine screening for occult neoplasm is not indicated
  - For patients with palpable lymphadenopathy or hepatosplenomegaly, CT with contrast of the Chest (CPT® 71260) and Abdomen/Pelvis (CPT® 74177) are indicated

**References**

**PEDMS 14: Slipped Capital Femoral Epiphysis (SCFE)**

MRI is now recommended in the evaluation of Slipped Capital Femoral Epiphysis if clinical suspicion remains after negative x-rays.

Slipped capital femoral epiphysis (SCFE) should be considered in young adolescents or preadolescents with groin, anterior thigh, or atraumatic knee pain. Symptoms often include a history of intermittent limp and pain for several weeks or months that are often poorly localized to the thigh, groin, or knee. Any obese adolescent or preadolescent presenting with a history of a limp and thigh, knee, or groin pain for several weeks to one month should be presumed to have a slipped capital femoral epiphysis (SCFE).

- Anteroposterior and lateral x-rays (frog leg or cross table lateral) of both hips will confirm or exclude the diagnosis.
  - Advanced imaging is not generally indicated
    - If clinical suspicion remains after negative plain films, MRI without contrast (CPT® 73721) or without and with contrast (CPT® 73723) is indicated to detect widening of the physis before the femoral head is displaced (pre-slip)
- Because a significant percentage of SCFE is bilateral at presentation, it is reasonable to evaluate the contralateral hip if requested, as some surgeons advocate surgical treatment of pre-slip. All bilateral hip requests should be forwarded for Medical Director review.
  - For unilateral hip use CPT® 73721 (without contrast) or CPT® 73723 (without and with contrast)
  - For bilateral hips use a single CPT® 73721 (without contrast) or CPT® 73723 (without and with contrast) and add modifier -50
- If MRI was not completed for diagnosis, MRI without contrast is indicated for preoperative planning

**References**

Pediatric Neck Imaging

PEDNECK 3: Cervical Lymphadenopathy

Cervical lymphadenopathy was updated with conservative therapy and symptom duration timeframes (4 weeks). Additionally, this guideline was updated to recommend MRI imaging if ultrasound is inconclusive or to further characterize abnormalities seen on ultrasound.

✓ Painful acute lymphadenopathy and other painful neck masses (including neck “swelling”) should be treated with a trial of conservative therapy for at least 4 weeks, including antibiotics if appropriate.
  ○ If there is improvement with conservative treatment, advanced imaging is not indicated.

✓ Ultrasound (CPT®76536) is indicated as an initial evaluation if lymphadenopathy persists for more than 4 weeks

✓ Neck MRI without and with contrast (CPT®70543) or Neck CT with contrast (CPT®70491) can be approved if ultrasound is inconclusive or to further characterize abnormalities seen on ultrasound.

✓ If systemic symptoms or other clinical findings suggest malignancy see PEDONC-5~PEDIATRIC LYMPHOMA

References

PEDNECK 7: Esophagus

Esophagus was added as a new section to the Pediatric Neck Imaging guidelines, as follows:

✓ Esophagus imaging indications in pediatric patients are very similar to those for adult patients. See NECK-4~ESOPHAGUS for imaging guidelines.

✓ Pediatric-specific imaging considerations include the following:
  ○ Esophagram is the study of choice for evaluating congenital atresia or tracheoesophageal fistula
  ○ Neck CT with contrast (CPT® 70491) and Chest CT with contrast (CPT® 71260) are indicated for evaluation of suspected congenital malformations if x-rays are inconclusive.
- 3D rendering on a dedicated workstation may be approvable for preoperative planning in complex cases

References

Pediatric Oncology

PEDONC 4.2: Pediatric CNS Tumors
PET and MRS imaging indications for pediatric CNS tumors were broadened for several different types of tumors:

PEDONC 4.2: Pediatric CNS Tumors – Intracranial Low Grade Gliomas
PET Brain Metabolic Imaging (CPT®78608) can be approved in the following circumstances:
- to determine need for biopsy when transformation to high grade glioma is suspected based on clinical symptoms or recent MRI findings
- to evaluate a brain lesion of indeterminate nature when the PET findings will be used to determine whether biopsy/resection can be safely postponed

PEDONC 4.3: Pediatric CNS Tumors – High Grade Gliomas
PET Brain Metabolic Imaging (CPT®78608) can be approved in the following circumstances:
- to distinguish radiation-induced tumor necrosis from progressive disease within 18 months of completing radiotherapy
- to evaluate inconclusive MRI findings when the PET findings will be used to determine need for biopsy or change in therapy, including a change from active therapy to surveillance
- to evaluate a brain lesion of indeterminate nature when the PET findings will be used to determine whether biopsy/resection can be safely postponed
- PET Brain is not indicated in gliomas occurring in the brain stem due to poor uptake and lack of impact on patient outcomes
PEDONC 4.4: Pediatric CNS Tumors – Medulloblastoma (MDB), Supratentorial Primitive Neuroectodermal Tumors (sPNET), and Pineoblastoma

PET Brain Metabolic Imaging (CPT®78608) can be approved in the following circumstances:
- to distinguish radiation-induced tumor necrosis from progressive disease within 18 months of completing radiotherapy
- to evaluate inconclusive MRI findings when the PET findings will be used to determine need for biopsy or change in therapy, including a change from active therapy to surveillance
- to evaluate a brain lesion of indeterminate nature when the PET findings will be used to determine whether biopsy/resection can be safely postponed

MR Spectroscopy (CPT® 76390) can be approved in the following circumstances:
- to evaluate a brain lesion of indeterminate nature when the MRS findings will be used to determine whether biopsy/resection can be safely postponed

PEDONC 4.5: Pediatric CNS Tumors – Atypical Teratoid/Rhaboid Tumors

MR Spectroscopy (CPT® 76390) can be approved in the following circumstances:
- to evaluate a brain lesion of indeterminate nature when the MRS findings will be used to determine whether biopsy/resection can be safely postponed

PEDONC 4.8: Pediatric CNS Tumors – Ependymoma

MR Spectroscopy (CPT® 76390) can be approved in the following circumstances:
- to evaluate a brain lesion of indeterminate nature when the MRS findings will be used to determine whether biopsy/resection can be safely postponed

PEDONC 4.13: Pediatric CNS Tumors – Choroid Plexus Tumors

MR Spectroscopy (CPT® 76390) can be approved in the following circumstances:
- to evaluate a brain lesion of indeterminate nature when the MRS findings will be used to determine whether biopsy/resection can be safely postponed

Pediatric Peripheral Nerve Disorders

PEDPN 2: Neurofibromatosis 1

Additional PET and MRI imaging indications were added for the surveillance and evaluation of neurofibromatosis 1.
Most cutaneous neurofibromas and deep plexiform neurofibromas do not cause symptoms, and routine surveillance imaging of these lesions has not been shown to improve outcomes.

MRI without and with contrast of a known body area containing a neurofibroma is indicated for any of the following:
- Every 3 months for treatment response in patients receiving active treatment
- New or worsening clinical symptoms suggesting progression
- Preoperative planning

NF1 patients are more susceptible to damaging effects of ionizing radiation, and CT imaging should only be used for patients who have an absolute contraindication to MRI

PET imaging is not supported for PN surveillance in asymptomatic patients at this time as the positive predictive value is only 60-65% even in symptomatic patients.

MRI imaging without and with contrast is appropriate for any clinical symptoms suggestive of change in a known PN in a patient with NF1.

Although PET imaging has a positive predictive value of only 61-63% in NF1 patients with suspected transformation to MPNST, the negative predictive value is high (96-99%)
- PET imaging is indicated for evaluating NF1 patients with clinical symptoms concerning for malignant transformation of a known PN when all of the following conditions exist:
  - Recent MRI is inconclusive regarding transformation or progression
  - Negative PET will result in a decision to avoid biopsy in a difficult or morbid location
- Inconclusive PET findings should lead to biopsy of the concerning lesion
  - Repeat PET studies are not indicated due to the poor positive predictive value in this setting

References

PN 4: Gaucher Disease

Gaucher Disease was updated with more specific imaging indications as well as surveillance imaging indications and timeframes:
Gaucher disease is a group of autosomal recessive inborn errors of metabolism characterized by lack of the enzyme acid β-glucuronidase with destructive ceramide storage in various tissues. Gaucher disease is a treatable disorder (enzyme replacement) in which the liver, spleen, and bone marrow/bones are the most affected organs.

✓ MRI without contrast of the lumbar spine (CPT® 72148) and bilateral femurs (CPT® 73718) is indicated to evaluate bone marrow involvement at initial diagnosis
  - Repeat imaging is indicated every 12 months, to assess treatment response for patients on enzyme replacement therapy or disease progression for patients in surveillance

✓ MRI Abdomen without contrast (CPT® 74181) is indicated to assess liver and spleen involvement at initial diagnosis
  - Repeat imaging is indicated every 12 months, to assess treatment response for patients on enzyme replacement therapy or disease progression for patients in surveillance

✓ Pulmonary involvement is less common, but CT Chest without contrast (CPT® 71250) is indicated for patients with new or worsening pulmonary symptoms
  - For patients with documented pulmonary involvement, repeat imaging is indicated every 12 months, to assess treatment response for patients on enzyme replacement therapy or disease progression for patients in surveillance

✓ PET/CT imaging is considered investigational in the evaluation of Gaucher Disease. ¹⁸F-FDG does not reliably detect Gaucher disease in the marrow, and other isotopes are not yet FDA-approved for clinical use.

This guideline addresses Type I Gaucher disease, which is by far the most common type in North America.

✓ MRI is used to follow progression of disease in order to make treatment decisions, to monitor the results of treatment, and to evaluate complications as they occur. Liver and spleen size may be followed by annual noncontrast abdominal MRI (CPT® 74181).

Annual noncontrast thigh MRI (CPT® 73718) is used to follow marrow replacement by the disease and to monitor response to treatment. MRI of a single thigh should be sufficient. These patients often develop avascular necrosis of the hips and compression fractures of the spine, and relevant noncontrast MRI scans are appropriate when the clinical setting suggests these complications. In addition, many experts routinely perform MRI of the hips in untreated patients.
PEDPVD 2: Vascular Anomalies

Previously titled “Vascular and Lymphatic Malformations,” Vascular Anomalies has been restructured into five new sections:

PEDPVD-2.1 General Information

Vascular and lymphatic malformations encompass a broad variety of conditions, and have very heterogeneous natural history and treatment approaches. Lesions can be divided into low flow lesions (lymphatic and venous malformations), and high flow lesions (arteriovenous malformations)

- Patients with aggressive lesions being treated with systemic therapy can have imaging (see specific sections for details regarding modality and contrast level) approved for treatment response every 3 months during active treatment.

- Annual surveillance imaging of known vascular or lymphatic malformations can be approved for body areas where growth could cause significant organ dysfunction or functional impairment.

PEDPVD-2.2 Lymphatic Malformations

Lymphatic malformations are filled with proteinaceous fluid and may not connect to normal lymphatic channels. They are typically soft, non-pulsatile masses with normal overlying skin.

- Ultrasound is indicated as an initial examination for superficial lesions.
  - Large lesion characterization may be limited by ultrasound imaging window.
  - Ultrasound is also limited in evaluating malformation relationship to airway or bony structures.

- MRI without contrast or without and with contrast of the affected body part is indicated for:
  - Lymphatic malformations involving deep tissues
  - Malformations too large to be completely imaged with ultrasound
  - Inconclusive ultrasound findings
  - Preoperative planning

- CT is of limited value in evaluating lymphatic malformations
  - CT with contrast of the affected body part can be approved for lesions with acute enlargement and concerns for compression when MRI is contraindicated.
**PEDPVD-2.3~Venous Malformations**

Venous malformations are soft, compressible, non-pulsatile lesions that are usually blue to deep purple in color. Lesions can range from very small to large and invasive. Some may change size with Valsalva.

Venous malformations are usually isolated, but they may be seen in multiple syndromes including Klippel Trenaunay (KT) syndrome, Blue Rubber Bleb Nevus syndrome (BRBN), Maffucci’s syndrome, Proteus syndrome, Bannayan-Riley-Ruvalcaba syndrome, and CLOVE/S syndrome.

- ✓ Ultrasound with Doppler is indicated as an initial examination for superficial lesions.
  - ○ Large lesion characterization may be limited by ultrasound imaging window.
  - ○ Ultrasound is also limited in evaluating malformation relationship to airway or bony structures.

- ✓ MRI without contrast or without and with contrast of the affected body part can be approved for venous malformations for preoperative assessment to evaluate the extent of malformation and their relationship to normal structures.

- ✓ MRA or CTA have a limited role in evaluating most venous malformations, but may be approved (contrast as requested of the affected body part) if MRI or CT are equivocal and the results will impact acute management decisions.

- ✓ CT can also be used to characterize venous malformations and their relationship to normal structures, but is generally not as accurate as MRI
  - ○ CT with contrast of the affected body part can be approved when MRI is inconclusive or contraindicated

**PEDPVD-2.4~Arteriovenous Malformations (AVMs)**

Arteriovenous malformations may have an aggressive clinical course and are characterized by firm pink abnormalities which have a thrill or bruit. Though often recognized at birth, these lesions may grow and present near adolescence.

- ✓ Ultrasound with Doppler is indicated as an initial examination for superficial lesions.
  - ○ Large lesion characterization may be limited by ultrasound imaging window.
  - ○ Ultrasound is also limited in evaluating AVM relationship to airway or bony structures.

- ✓ MRI without contrast or without and with contrast of the affected body part is also indicated for evaluation of AVMs, and is useful in evaluating the extent of AVMs and their relationship to normal structures.
✓ MRA (contrast as requested) of the affected body part can be approved for evaluation and surveillance of known AVMs

✓ It is unusual for both MRI and MRA to be necessary for routine treatment response or surveillance imaging of AVMs, but both may be approved for preoperative planning

✓ CT and CTA can also be used to characterize AVMs and their relationship to normal structures, but is generally not better than MRI and has associated radiation risks
  - CT with contrast and/or CTA (contrast as requested) of the affected body part can be approved when MRI and/or MRA is inconclusive or contraindicated

**PEDPVD-2.5~Vascular Tumors**

Vascular tumors include a variety of benign, borderline, and malignant tumors, which have variable clinical courses

✓ Ultrasound with Doppler is indicated as an initial examination for vascular tumors
  - Large lesion characterization may be limited by ultrasound imaging window.
  - Ultrasound is also limited in evaluating malformation relationship to airway or bony structures.

✓ MRI without contrast or without and with contrast of the affected body part is also indicated for evaluation of vascular tumors, and is useful in evaluating the extent of arteriovenous malformations and their relationship to normal structures, as well as response to therapy

✓ MRA (contrast as requested) of the affected body part can be approved for evaluation and surveillance of known vascular tumors

✓ It is unusual for both MRI and MRA to be necessary for routine treatment response or surveillance imaging of vascular tumors, but both may be approved for preoperative planning

✓ CT and CTA can also be used to characterize vascular tumors and their relationship to normal structures, but is generally not better than MRI and has associated radiation risks
  - CT with contrast and/or CTA (contrast as requested) of the affected body part can be approved when MRI and/or MRA is inconclusive or contraindicated
**References**


**PEDPVD 3: Vasculitis**

Vasculitis was added as a new section to the Pediatric PVD Imaging guidelines, as follows:

**PEDPVD-3.1 General Information**

Systemic vasculitis is much less common in children than in adults, although the diagnostic pathways and treatment options are similar.

- **PET/CT is considered investigational for management of pediatric vasculitis at this time**
  - There are limited data suggesting PET may have similar accuracy to MRA in the initial diagnosis of Takayasu arteritis, but is not helpful in assessing treatment response and has not been shown to improve patient outcomes to date
**PEDPVD-3.2 Large Vessel Vasculitis**

Takayasu arteritis is the predominant large vessel vasculitis occurring in children.

- Any of the following are indicated for evaluation of Takayasu arteritis:
  - MRA of the affected body area(s) (contrast as requested)
  - CTA of the affected body area(s) (contrast as requested)
  - Ultrasound with Doppler of the affected body area(s)

- Patients with aggressive disease being treated with systemic therapy can have imaging (see specific sections for details regarding modality and contrast level) approved for treatment response every 3 months during active treatment

- Annual surveillance imaging of known involved body areas can be approved to detect progressive vascular damage that may require intervention

**PEDPVD-3.3 Medium Vessel Vasculitis**

Polyarteritis nodosa and Kawasaki Disease are the primary medium vessel vasculitides occurring in children. See **PEDCD-6-Kawasaki Disease** for imaging guidelines for that disease.

- Any of the following are indicated for evaluation of Polyarteritis nodosa:
  - MRA of the affected body area(s) (contrast as requested)
  - CTA of the affected body area(s) (contrast as requested)
  - Ultrasound with Doppler of the affected body area(s)

- Patients with aggressive disease being treated with systemic therapy can have imaging (see specific sections for details regarding modality and contrast level) approved for treatment response every 3 months during active treatment

- Annual surveillance imaging of known involved body areas can be approved to detect progressive vascular damage that may require intervention

**PEDPVD-3.4 Small Vessel Vasculitis**

- Advanced imaging is not sensitive enough to detect changes in small vessels, and is not indicated for primary assessment of any small vessel vasculitis

- End-organ damage occurs with several of the small vessel vasculitides, and the following advanced imaging is indicated:
  - Granulomatosis with polyangiitis (GPA, formerly known as Wegener's granulomatosis)
    - CT Sinuses (CPT® 70486)
    - CT Chest without contrast (CPT® 71250) or with contrast (CPT® 71260)
  - Eosinophilic granulomatosis with polyangiitis (EGPA, formerly known as Churg-Strauss Syndrome)
    - CT Chest without contrast (CPT® 71250) or with contrast (CPT® 71260)
  - Immune complex associated small-vessel vasculitis (IgAV)
Doppler ultrasound of the affected body part (most commonly abdomen)
- These imaging studies are indicated in the following circumstances:
  - New or worsening clinical symptoms affecting the body area requested
  - Assessment of response to medical therapy when a change in treatment regimen is being considered
  - Annual imaging to evaluate extent of disease

References

Pediatric Spine Imaging

PEDSP 2: Pediatric Back Pain

Pediatric Back Pain was updated with a requirement for a recent face-to-face evaluation prior to advanced imaging. Red flags were added to that suggest the need for advanced imaging for children age 5 and under, and for children 6 years or older. Specific imaging indications are provided for MRI, CT and bone scan.

Spondylolysis was updated with specific imaging indications for MRI, CT and bone scan.

A new section was added to this guideline, “Spine Pain Due to Infectious Causes.”

Back Pain in Children Age 5 and Under

A recent (within 60 days) face-to-face evaluation including a detailed history, physical examination with thorough neurologic examination and documentation of any specific radicular features, and plain radiography should be performed prior to considering advanced imaging.

- Advanced imaging is appropriate in all patients in this age group except those with mild and transient back pain.
  - MRI of the symptomatic spinal region should be approved,
Patients in this age group will require sedation to complete MRI imaging. See PEDSP-1.3 Pediatric Spine Imaging Modality General Considerations for contrast and body area considerations.

- CT without contrast of the symptomatic spinal region may be approved when:
  - Plain X-rays suggest an isolated vertebral bone abnormality without any concern for spinal canal or cord abnormalities (which is rare in this age group)
  - A recent MRI does not provide sufficient detail of the bony anatomy to allow for acute patient care decision making

**Back Pain in Children Age 6 and Over**

Radicular back pain is common in adult patients but is uncommon in adolescents and very rare in children.

A recent (within 60 days) face-to-face evaluation including a detailed history, physical examination with thorough neurologic examination and documentation of any specific radicular features, and plain radiography should be performed prior to considering advanced imaging.

- **Advanced imaging should be approved when one or more of the following pediatric “red flags” are present:**
  - Accompanying systemic symptoms (fever, weight loss, etc.)
  - Functional disability
  - Pain which is extremely severe or worse at night
  - Early morning stiffness
  - Pain which worsens despite an attempt at symptomatic treatment
  - Neurological symptoms or abnormal neurological examination findings
  - An established diagnosis of cancer other than leukemia
  - Abnormal x-rays
  - Spinal imaging for patients having undergone spinal surgery
  - Associated bowel or bladder dysfunction

- **In the absence of any “red flags”, a 4 week trial of provider-supervised conservative treatment should be attempted before advanced imaging can be approved.**
  - It can be assumed that children who are being evaluated by a pediatric spine surgeon have failed a reasonable trial of conservative treatment under the care of the primary care provider as this is by far the most common reason for such referrals

- **MRI without contrast of the symptomatic spinal region is the preferred study for the evaluation of pediatric spine pain, and should be approved unless one of the following conditions applies, in which case MRI without and with contrast should be approved:**
- Fever (100.4°F or higher)
- Clinical suspicion of infection (discitis, osteomyelitis, paraspinous or epidural abscess)
- Physical examination or plain x-ray suggests a mass lesion
- New or worsening pain in a patient with an established diagnosis of cancer

- **CT** without contrast of the symptomatic spinal region may be approved when:
  - The request is for re-evaluation of a known vertebral bony disorder
  - Plain X-rays show spondylotic changes or suggest an isolated vertebral bone abnormality without any concern for spinal canal or cord abnormalities (which is rare in this age group)
  - A recent MRI does not provide sufficient detail of the bony anatomy to allow for acute patient care decision making

- **99mTc-MDP SPECT** bone scan (CPT® 78320) is indicated in patients with negative or inconclusive x-rays when clinical signs or symptoms suggest a bony lesion rather than an intraspinal or paraspinal process

**PEDSP-2.4 Spondylolysis**

Most cases of childhood spondylolysis are believed to be caused by repeated microtrauma, resulting in stress fracture of the pars interarticularis. Heredity is also believed to be a factor in some cases. It is the most common cause of low back pain in children older than age 10.

Activity modification, NSAID treatment, physical therapy, and/or immobilization with various braces are the initial treatments for symptomatic patients.

Surgical treatment is only recommended for patients with disabling symptoms that have not responded to non-surgical care.

- A recent (within 60 days) face-to-face evaluation including a detailed history, physical examination with thorough neurologic examination and documentation of any specific radicular features, and plain radiography should be performed prior to considering advanced imaging.

- Spondylolysis is best recognized on plain x-rays, and advanced imaging is generally not indicated.
  - If additional imaging is needed because of radiological uncertainty or associated spondylolisthesis, 99mTc-MDP SPECT bone scan (CPT® 78320) is indicated to identify stress reaction in early spondylolysis cases which are radiographically occult.
  - CT without contrast of the symptomatic spinal level is indicated to provide detailed evaluation of bony anatomy, if bone scan is negative, or there is a documented need for preoperative planning
  - MRI without contrast of the symptomatic spinal level is indicated to evaluate for stress reaction in bone, visualizing nerve roots, if bone scan is negative, or there is a documented need for preoperative planning.
PEDSP-2.5 Spine Pain Due to Infectious Causes

Entities include discitis and vertebral osteomyelitis, and typically present with sudden onset of back pain, fever, and elevated white blood cell count, occurring most commonly in prepubescent children.

A detailed history and physical examination with thorough neurologic examination and plain x-rays should be performed initially

Initial Imaging Studies

- MRI without and with contrast of the symptomatic spinal level is very sensitive at detecting early changes and can be approved when discitis or osteomyelitis is suspected
- Bone scan (CPT® 78315 or 78320) is very sensitive at detecting early change and can be approved when discitis or osteomyelitis is suspected

Follow-Up Imaging Studies

- Follow-up plain x-rays may show disc space narrowing and bony changes of osteomyelitis
- CT with contrast (including myelography) may be useful in follow-up for evaluating bony changes of osteomyelitis or concern for epidural abscess.

References


PEDSP 4.3: Spina Bifida Occulta

Specific imaging indications for MRI and CT were added to this guideline:

These guidelines apply to adult as well as pediatric patients.

- Unless additional abnormalities are present, routine advanced imaging is not indicated
  - Cutaneous lesions below the gluteal crease are often pilonidal sinuses and need no further evaluation
  - Tracts, pits, or lesions above the gluteal fold can be evaluated further for underlying spinal pathology
Clinically significant dysraphism includes findings ranging from complex vertebral anomalies to meningomyelocele

- MRI of the involved spinal level without contrast or without and with contrast is appropriate
- MRI of the cervical, thoracic, and lumbar spine without contrast or without and with contrast may be approved in patients with open neural tube defects, or when ordered for preoperative planning
- MRI Brain or CT Head without contrast of the brain may be approved in cases with associated hydrocephalus, signs of cerebral involvement, or the presence of multiple hydromyelia (which suggests hydrocephalus)
- MRI of the pelvis without contrast or without and with contrast may be approved if there are clinical signs of pelvic malformation or anorectal anomaly
- The appropriate spinal level, modality, and contrast level of follow-up advanced imaging will depend on the nature of the underlying disease; the underlying abnormality usually requested after specialist consultation

References

PEDSP-6.3 Atlantoaxial Instability in trisomy 21 (Down Syndrome)

Down Syndrome was added as a new section to the Pediatric Spine Imaging guidelines, as follows:

The diagnosis of atlantoaxial instability is a recognized complication of trisomy 21, and patients are routinely screened with lateral x-rays of the cervical spine.

- MRI of the cervical spine without contrast (CPT® 72141) or without and with contrast (CPT® 72156) can be approved in patients where the lateral cervical spine x-ray demonstrates a pre dens interval of ≥5 mm, and a neural canal width of ≤14 mm

- MRI of the cervical spine without contrast (CPT® 72141) or without and with contrast (CPT® 72156) can also be approved when new or worsening clinical symptoms suggest myelopathy in a trisomy 21 patient