Cigna Medical Coverage Policies – Radiology
Pediatric Abdomen Imaging
Effective March 15, 2019

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

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

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

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

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

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

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PEDAB-1.1: Pediatric Abdominal Imaging Age Considerations

Many conditions affecting the abdomen in the pediatric population are different diagnoses than those occurring in the adult population. For those diseases which occur in both pediatric and adult populations, differences may exist in management due to individual age, comorbidities, and differences in disease natural history between children and adults.

- Individuals age < 18 years old should be imaged according to the Pediatric Abdomen Imaging Guidelines, and individuals age ≥ 18 years should be imaged according to the Abdomen Imaging Guidelines, except where directed otherwise by a specific guideline section.

PEDAB-1.2: Pediatric Abdomen Imaging Appropriate Clinical Evaluation and Conservative Treatment

- A recent (within 60 days) face to face evaluation including a detailed history, physical examination, appropriate laboratory studies, and basic imaging such as plain radiography or ultrasound should be performed prior to considering advanced imaging (CT, MR), unless the individual is undergoing guideline-supported scheduled follow-up imaging evaluation.

- These guidelines are based upon using advanced imaging to answer specific clinical questions that will affect individual management. Imaging is not indicated if the results will not affect individual management decisions. Standard medical practice would dictate continuing conservative therapy prior to advanced imaging in individuals who are improving on current treatment programs.

- Unless otherwise stated in a specific guideline section, the use of advanced imaging to screen asymptomatic individuals for disorders involving the abdomen is not supported. Advanced imaging should only be approved in individuals who have documented active clinical signs or symptoms of disease.

- Unless otherwise stated in a specific guideline section, repeat imaging studies of the same body area are not necessary unless there is evidence for progression of disease, new onset of disease, and/or documentation of how repeat imaging will affect individual management or treatment decisions.
PEDAB-1.3: Pediatric Abdomen Imaging Modality General Considerations

- **Ultrasound**
  - Ultrasound should be the initial imaging study of choice in most children with abdominal conditions and should be done prior to advanced imaging.
  - For those individuals who do require advanced imaging after ultrasound, ultrasound can be very beneficial in selecting the proper modality, body area, image sequences, and contrast level that will provide the most definitive information for the individual.
  - CPT® codes vary by body area and presence or absence of Doppler imaging and are included in the table at the beginning of this guideline.

- **MRI**
  - MRI Abdomen is generally performed without and with contrast (CPT® 74183) unless the individual has a documented contraindication to gadolinium or otherwise stated in a specific guideline section.
  - Due to the length of time for image acquisition and the need for the individual to lie still, anesthesia is required for almost all infants and young children (age < 7 years), as well as older children with delays in development or maturity. In this individual population, MRI imaging sessions should be planned with a goal of minimizing anesthesia exposure adhering to the following considerations:
    - MRI should be performed without and with contrast unless there is a specific contraindication to gadolinium use and strict criteria for contrast agent use should be applied in all cases when the individual already has intravenous access for anesthesia.
    - Recent evidence-based literature demonstrates the potential for gadolinium deposition in various organs including the brain, after the use of MRI contrast.
    - The U.S. Food and Drug Administration (FDA) has noted that there is currently no evidence to suggest that gadolinium retention in the brain is harmful and restricting gadolinium-based contrast agents (GBCAs) use is not warranted at this time. It has been recommended that GBCA use should be limited to circumstances in which additional information provided by the contrast agent is necessary and the necessity of repetitive MRIs with GBCAs should be assessed.
    - If requesting clinicians indicate that a non-contrast study is being requested with specific concern for gadolinium retention, the exam can be approved.
    - If multiple body areas are supported by eviCore’s guidelines for the clinical condition being evaluated, MRI of all necessary body areas should be obtained concurrently in the same session.
  - The presence of surgical hardware or implanted devices may preclude MRI.
  - The selection of best examination may require coordination between the provider and the imaging service. CT may be the procedure of choice in these cases.

- **CT**
CT Abdomen typically extends from the dome of the diaphragm to the upper margin of the sacroiliac joints, and CT Abdomen and pelvis extends from the dome of the diaphragm through the ischial tuberosities.

- In general, CT Abdomen is appropriate when evaluating solid abdominal organs.
- In general, CT Abdomen and pelvis is appropriate when evaluating inflammatory or infectious processes, hematuria, or conditions which appear to involve both the abdomen and the pelvis.
- In some cases, especially in follow-up of a known finding, it may be appropriate to limit the exam to the region of concern to reduce radiation exposure.

The contrast level in pediatric CT imaging is specific to the clinical indication, as listed in the specific guideline sections.

CT Abdomen or abdomen and pelvis may be indicated for further evaluation of abnormalities suggested on prior US or MRI studies.

CT may be indicated without prior MR or US, as indicated in specific sections of these guidelines.

CT should not be used to replace MRI in an attempt to avoid sedation unless listed as a recommended study in a specific guideline section.

The selection of the best examination may require coordination between the provider and the imaging service.

3D Rendering

- 3D Rendering indications in pediatric abdomen imaging are identical to those for adult individuals. See Preface-4.1: 3D Rendering for imaging guidelines.

The guidelines listed in this section for certain specific indications are not intended to be all-inclusive; clinical judgment remains paramount and variance from these guidelines may be appropriate and warranted for specific clinical situations.

References


PEDAB-2: Generalized Abdominal Pain

- Ultrasound (CPT® 76700 or CPT® 76705) and conservative treatment for initial evaluation of generalized abdominal pain with physical examination and laboratory studies, including stool for blood (and stool culture if diarrhea)
  - Gastroenterology (GI) specialist evaluation is helpful in determining the need for advanced imaging.

- Children with abdominal pain that can be localized to a particular area of the abdomen should be imaged according to the relevant guideline section:
  - PEDAB-3: Right Lower Quadrant Pain.
  - PEDAB-8: Right Upper Quadrant Pain.
  - PEDAB-25: Left Upper Quadrant Pain.
  - PEDAB-29: Left Lower Quadrant Pain.

- CT Abdomen (CPT® 74160) or Abdomen/Pelvis (CPT® 74177) with contrast is indicated unless otherwise specified in a specific guideline section for children with generalized abdominal pain AND any of the following red flag signs or symptoms require additional investigation (which may include advanced imaging):
  - Pain that wakes the child from sleep.
  - Unexplained fever (T > 100.4°F).
  - Dysphagia.
  - GI bleeding.
  - Significant vomiting.
  - Severe chronic diarrhea or nocturnal diarrhea in a toilet-trained child.
  - Failure to thrive, involuntary weight loss, or delay in linear growth or pubertal development.
  - Family history of inflammatory bowel disease, familial polyposis syndrome, celiac disease, or peptic ulcer disease.
  - Abdominal mass, hepatomegaly, and/or splenomegaly on exam.
  - Jaundice.
  - Arthritis.
  - Costovertebral angle tenderness.
  - Perianal disease.
  - Spinal tenderness.

References
PEDAB-3: Right Lower Quadrant Pain

For individuals age ≤ 14 years:
- Ultrasound (CPT® 76700 or CPT® 76705) is indicated as the initial examination. If positive or negative, no further diagnostic imaging is necessary.
  - If the appendix is not visualized on ultrasound and the white blood cell count is not elevated, no further imaging is necessary.
- If insufficient local ultrasound expertise exists or the ultrasound findings are inconclusive, ANY of the following studies are indicated for evaluation of right lower quadrant pain:
  - CT Abdomen/Pelvis with contrast (CPT® 74177).
  - CT Abdomen/Pelvis without contrast (CPT® 74176).
  - MRI Pelvis without contrast (CPT® 72195).
  - MRI Pelvis without and with contrast (CPT® 72197).

For individuals age ≥ 15 years:
- ANY of the following studies are indicated:
  - CT Abdomen/Pelvis with contrast (CPT® 74177).
  - CT Abdomen/Pelvis without contrast (CPT® 74176).
  - MRI Pelvis without contrast (CPT® 72195).
  - MRI Pelvis without and with contrast (CPT® 72197).

If the appendix is absent, follow guidelines in: PEDAB-2: Generalized Abdominal Pain

References
**PEDAB-4: Flank Pain, Renal Stone**

- Flank Pain imaging indications in pediatric individuals are very similar to those for adult individuals. See [AB-4: Flank Pain, Rule Out or Known Renal/Ureteral Stone](pediatric_abdomen_imaging#B4) for imaging guidelines.
  - Ultrasound (CPT® 76770 or CPT® 76775) is the preferred initial study in children
  - CT Abdomen/Pelvis without contrast (CPT® 74176) is indicated if ultrasound is inconclusive.
  - MRI without and with contrast abdomen (CPT® 74183) and pelvis (CPT® 72197) is indicated if CT is inconclusive or if significant concern for radiation exposure from frequent CT use for a particular individual.
  - If hematuria is present, See [PEDAB-7: Hematuria](pediatric_abdomen_imaging#B7) for imaging guidelines.

**References**

PEDAB-5: Urinary Tract Infection (UTI)

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PEDAB-5.1: Upper Urinary Tract

Ultrasound evaluation (CPT® 76770 or CPT® 76775) is initial imaging for all children with first time UTI to diagnose hydronephrosis, pyelonephritis, or congenital renal anomaly.

- If hydronephrosis is present, this should be further evaluated with voiding cystourethrography (VCUG), to evaluate for vesicoureteral reflux.
  - In boys, this is generally accomplished using fluoroscopic imaging and iodinated contrast to exclude urethral abnormalities.
  - In girls, Ureteral Reflux Study (Radiopharmaceutical Voiding Cystogram) (CPT® 78740) is commonly used as urethral abnormalities are rare and this technique results in lower radiation exposure.

- Diuretic renography using Tc-99m MAG 3 (CPT® 78707, CPT® 78708, or CPT® 78909) for:
  - Differentiating a dilated non-obstructed urinary system from a true stenosis (e.g., UPJ obstruction; ureteral-vesical junction [UVJ] obstruction),
  - Quantifying renal parenchymal function.
  - Ultrasound findings that are compatible with a multicystic dysplastic kidney to evaluate function of the affected kidney or a ureteral-pelvic junction (UPJ) obstruction of the contralateral kidney.
  - Diagnostic evaluation of upper tract dilatation when VCUG is negative.
  - Renal function evaluation in individuals with hydronephrosis.

- Post-contrast CT Abdomen (CPT® 71260) has a role in the evaluation of renal abscess or unusual complications such as xanthogranulomatous pyelonephritis, but has no role in the routine evaluation of UTI.

- Magnetic resonance urography (MRU) (CPT® 74183 and CPT® 72197), is not a first line test for the routine evaluation of a UTI, but may be appropriate for investigation of a dilated upper urinary tract.
  - NOTE: MRU requires sedation in young children.
  - MRU can also quantitate renal function.

- Technetium-99m-dimercaptosuccinic acid (Tc-99m DMSA) scintigraphy (CPT® 78700, CPT® 78701, or CPT® 78710), is sensitive for the diagnosis of UTI but there is little benefit in using this after the first episode of a UTI:
  - DSMA is recommended for Detection of post-pyelonephritic renal scarring at least 6 months after the documented upper tract UTI in high risk individuals with recurrent UTIs.
  - Note: According to the U.S. FDA, DMSA is currently not available due to manufacturing delays since 2014. Estimated return to market is 1st Quarter 2020.
PEDAB-5.2: Lower Urinary Tract

- Ultrasound evaluation (CPT® 76770 or CPT® 76775) is initial imaging for all children with first time UTI to diagnose hydronephrosis, pyelonephritis, or congenital renal anomaly.
  - Fluoroscopic Voiding cystourethrography (VCUG) is indicated for detection of possible vesico-ureteral reflux (VUR) in neonates or young children when hydronephrosis is seen on ultrasound.
- The American Academy of Pediatrics clinical practice guidelines no longer recommend routine VCUG for infants and young children from 2 to 24 months of age after the first febrile UTI.
  - The current recommendation is to postpone the VCUG until the second febrile UTI UNLESS there are:
    - Atypical or complex clinical circumstances.
    - Renal/bladder ultrasound reveals hydronephrosis, scarring, or obstructive uropathy.

- Vesicoureteral Reflux (VUR)
  - Fluoroscopic VCUG is typically performed for diagnosis and grading of VUR, and should be the first modality used for diagnosis.
  - Ureteral Reflux Study (Radiopharmaceutical Voiding Cystogram) (CPT® 78740), because of its lower radiation exposure and higher sensitivity for reflux > Grade I, is recommended for follow-up imaging of VUR, and investigation of VUR in siblings of affected individuals.
- Male individuals with first UTI should be evaluated with fluoroscopic VCUG studies rather than radionuclide cystography, to visualize the male urethra for possible abnormalities such as posterior urethral valves, strictures, or diverticula.
- For female individuals, radionuclide cystography (CPT® 78740) may replace fluoroscopic VCUG as the initial study, since urethral anatomy is rarely abnormal except in complex malformations.
- MR urography is indicated for evaluation of ectopic distal ureteral insertion, or other complex lower urinary tract anatomy.
References


PEDAB-6: Pediatric Acute Gastroenteritis

- Imaging is not indicated in pediatric acute gastroenteritis unless there is a concern for diagnosis other than acute gastroenteritis.

- When necessary, imaging in children with suspected gastroenteritis should begin with plain x-rays abdomen, including supine and left lateral decubitus views. The left lateral decubitus view is useful for the detection of air-fluid levels and for detection of gas in the rectum and to exclude obstruction or bowel perforation.

- Ultrasound (CPT® 76700 or CPT® 76705) if there is organomegaly, palpable mass, or suspicion for complications in the form of intussusception. See PEDAB 27: Intussusception
  - While ultrasound (CPT® 76700 or CPT® 76705) may detect findings of gastroenteritis, imaging is not necessary to make the diagnosis of uncomplicated gastroenteritis.

- CT Abdomen/Pelvis with contrast (CPT® 74177) is indicated if abdominal red flag symptoms are present as listed in PEDAB-2: Generalized Abdominal Pain.

References
PEDAB-7: Hematuria

- Ultrasound kidneys (CPT® 76770 or CPT® 76775) and bladder (CPT® 76856 or CPT® 76857) asymptomatic gross hematuria or microscopic hematuria with proteinuria present.

- No imaging is appropriate for asymptomatic microscopic hematuria without proteinuria.

- For 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 CPT® 76775)
  - Ultrasound of bladder (CPT® 76856 or CPT® 76857)

- For 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.

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

References
PEDAB-8: Right Upper Quadrant Pain

Right upper quadrant pain imaging indications in pediatric individuals are very similar to those for adult individuals. See AB-2: Abdominal Pain for imaging guidelines.

- **US abdomen (CPT® 76700) and/or Nuclear medicine imaging of the hepatobiliary system (HIDA scan, CPT® 78226 or CPT® 78227) for complaints of RUQ pain with fever, elevated white blood cell count, positive Murphy sign with suspicion of acute cholecysitis or suspicion of acalculous cholecystitis to confirm or exclude diagnosis.**
  - MRI Abdomen with and without contrast (CPT® 74183) when US or NM is equivocal.
  - CT Abdomen with IV contrast (CPT® 74160) when US or NM is equivocal.
- **US abdomen (CPT® 76700) to confirm diagnosis when complaints of RUQ pain with no fever and normal white blood cell count where a diagnosis of stones and bile duct obstruction are suspected,**
  - MRI Abdomen with and without contrast (CPT® 74183) when US or NM is equivocal.
  - CT Abdomen with IV contrast (CPT® 74160) when US or NM is equivocal.
- **MRI Abdomen without IV contrast (CPT® 74181), MRI Abdomen without and with IV contrast (CPT® 74183) in individuals with complaints of RUQ pain with no fever and an ultrasound shows only gallstones.**

References

**PEDAB-9: Inflammatory Bowel Disease, Crohn Disease, or Ulcerative Colitis**

Enterography is the most appropriate advanced imaging study for individuals with inflammatory bowel disease (IBD).

- **MR Enterography** (CPT® 74183 and CPT® 72197) is preferred to avoid radiation exposure for children with suspected IBD.
  - CT Enterography (CPT® 74177) is indicated if MR Enterography is inconclusive or unavailable.

- **MR Enterography** (CPT® 74183 and CPT® 72197), for children with established IBD, is indicated for the following:
  - Monitoring response to disease-modifying treatment on an annual basis or when treatment change is being considered.
  - Individuals with new or worsening symptoms or suspected complications including abscess, perforation, fistula, or obstruction.
  - CT Enterography (CPT® 74177) can be approved if MR Enterography is inconclusive or unavailable.

**References**

PEDAB-10: Abdominal Sepsis (Suspected Abdominal Abscess)

- Abdominal sepsis imaging indications in pediatric individuals are identical to those for adult individuals.
- See AB-3: Abdominal Sepsis (Suspected Abdominal Abscess) for imaging guidelines.
Pediatric Abdomen Imaging

PEDAB-11: Postoperative Pain within 60 Days Following Abdominal Surgery

- CT Abdomen/Pelvis with contrast (CPT® 74177) is indicated in individuals with suspected postoperative complications (e.g. bowel obstruction, abscess, anastomotic leak, etc.).
  - Children can also be evaluated with ultrasound (CPT® 76700 or CPT® 76705) initially (especially in small children or in thin older children) or with MRI Abdomen and pelvis without and with contrast (CPT® 74183 and CPT® 72197).
  - Because MRI may not be practical for the timely evaluation of post-operative abscesses, MRI should only replace CT when the study can be completed in a similar time frame as CT.

- Beyond 60 days postoperatively, See PEDAB-2: Generalized Abdominal Pain.

References

PEDAB-12: Constipation, Diarrhea, and Irritable Bowel Syndrome

- Irritable bowel is rare in young children, but more common in adolescents. The overwhelming majority of individuals do not require advanced imaging for evaluation of irritable bowel syndrome.

- Constipation associated with red flag signs or symptoms may require advanced imaging:
  - Red flag symptoms for abdominal pain (See PEDAB-2: Generalized Abdominal Pain).
  - Clinical suspicion of tethered cord based on abnormal physical findings over the spine or failure of maximal laxative therapy. (See PEDSP-5: Tethered Cord for imaging guidelines).

- Diarrhea that is associated with additional red flag signs or symptoms may require advanced imaging: (See PEDAB-2: Generalized Abdominal Pain).

- Irritable bowel syndrome that is associated with additional red flag signs or symptoms may require advanced imaging: (See PEDAB-2: Generalized Abdominal Pain).

- MRI Pelvis without and with contrast (CPT® 72197) if ALL of the following:
  - Hirschsprung disease
  - Post-operative individuals who have signs of complication

**Background and Supporting Information**

Constipation and diarrhea are extremely common complaints in children. The overwhelming majority of individuals do not require advanced imaging for evaluation of constipation or diarrhea.

**References**


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PEDAB-13.1: Abdominal Wall Mass

For initial imaging of a newly discovered abdominal wall mass, ANY of the following studies are indicated:
- Ultrasound (CPT® 76700 or CPT® 76705).
- MRI Abdomen without contrast (CPT® 74181) or without and with contrast (CPT® 74183).
- MRI Pelvis without contrast (CPT® 72195) or without and with contrast (CPT® 72197) may be added to MRI Abdomen if below the umbilicus.

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).
- CT Abdomen/Pelvis with contrast (CPT® 74177) or without contrast (CPT® 74176) if below the umbilicus.

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-17: Adrenal Lesions.
- PEDAB-26: Spleen.

References
Clinical evaluation for suspected hypertension should include repeated blood pressure measurements (generally ≥ 3 measurements). If these measurements are at or above the age-dependent systolic or diastolic blood pressures requiring further evaluation, as listed in the following table, further evaluation is warranted. Blood pressure may be obtained in-clinic, at home, or by using a wearable ambulatory blood pressure measurement (ABPM) device which records blood pressure at frequent intervals during normal activities and is downloaded later for computer analysis.

<table>
<thead>
<tr>
<th>Age</th>
<th>Boys Systolic</th>
<th>Boys Diastolic</th>
<th>Girls Systolic</th>
<th>Girls Diastolic</th>
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<td>≥13</td>
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<td>80</td>
<td>120</td>
<td>80</td>
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Any of the following studies are indicated for initial evaluation of a pediatric individual with suspected secondary hypertension.

- Doppler or Duplex Ultrasound (CPT® 93975 or CPT® 93976).
- Complete retroperitoneal ultrasound (CPT® 76770).
- Captopril renography (CPT® 78709) has largely been abandoned in clinical practice, replaced by CTA and MRA Abdomen, but may be supported for unusual circumstances. All such requests should be forwarded to Medical Directors for review.

All follow-up requests for pediatric hypertension will go to Medical Directors for review.
**Other considerations for imaging evaluation:**

- Abdominal MRA (CPT® 74185) or CTA (CPT® 74175) may be indicated for pediatric individuals with hypertension to exclude fibromuscular dysplasia or other blood-flow restricting lesions of the renal arteries.

- Echocardiography (CPT® 93306) is indicated at initial evaluation to screen for cardiac abnormalities, coarctation of the aorta, and end-organ damage such as left ventricular hypertrophy.

**References**


PEDAB-15: Liver Lesion Characterization

Liver lesion characterization imaging indications in pediatric individuals are very similar to those for adult individuals. See AB-29: Liver Lesion Characterization for imaging guidelines.

Pediatric-specific imaging considerations includes:

- US abdomen (CPT® 76700 or CPT® 76705) is the initial study of choice in children. MRI is preferred over CT when possible to reduce radiation exposure.

References


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

- Elevated liver function testing imaging indications in pediatric individuals are very similar to those for adult individuals. See **AB-30: Elevated Liver Function (LFT) Levels** for imaging guidelines.

- Liver ultrasound (CPT® 76700) with duplex Doppler (CPT® 93975) is indicated as an initial study for individuals prior to approving CT or MRI for pediatric individuals.
  - 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) with duplex Doppler (CPT® 93975) is indicated in pediatric individuals in the following circumstances:
  - Known chronic liver dysfunction or cirrhosis of any cause may be reimaged on an annual basis in the absence of new or worsening findings.
  - 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 CPT® 93976) is indicated when portal venous congestion or portal hypertension is suspected.

**Background and Supporting Information**

- Causes of liver failure or cirrhosis in pediatric individuals are different from adults, and are frequently idiopathic, but commonly due to one of the following:
  - Biliary dysfunction (biliary atresia, cystic fibrosis, etc.).
  - Metabolic disease.
  - Post-infectious.
  - Idiopathic causes

**References**

**PEDAB-17: Adrenal Lesions**

Abdominal US is the initial imaging study of choice.
- If an adrenal mass is detected, it can often be adequately evaluated with short interval follow-up retroperitoneal ultrasound (CPT® 76770) in 7 to 10 days.
  - MRI Abdomen without and with contrast (CPT® 74183) or CT Abdomen without and with contrast (CPT® 74170) are indicated to confirm the diagnosis if repeat ultrasound is concerning for neuroblastoma or there is high clinical concern for neuroblastoma. MRI is preferred over CT when possible to reduce radiation exposure. If these studies, confirm neuroblastoma $^{123}I$-Metaiodobenzylguanidine (MIBG) scintigraphy is indicated for staging.
- Neuroblastoma is the most common primary adrenal tumor in pediatric individuals between day 1 and 5 years of age. See PEDONC-6: Neuroblastoma for imaging guidelines.

**Background and Supporting Information**

Adrenal masses in infants and young children usually present as palpable abdominal masses or are detected on in utero US. In the neonates, the common masses are adrenal hemorrhage and neuroblastoma.

**References**

### PEDAB-18: Hemochromatosis

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| PEDAB-18.2: Transfusion-Associated (Secondary) Hemochromatosis | 32 |
PEDAB-18.1: Hereditary (Primary) Hemochromatosis

- Hereditary hemochromatosis imaging indications in pediatric individuals are identical to those for adult individuals. See AB-11.2: Hereditary (Primary) Hemochromatosis (HH) and Other Iron Storage Diseases for imaging guidelines.

PEDAB-18.2: Transfusion-Associated (Secondary) Hemochromatosis

- 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:
  - MRI Abdomen without contrast (CPT® 74181) for liver iron evaluation.
  - MRI Cardiac without contrast (CPT® 75557) for cardiac iron evaluation.
  - MRI Chest without contrast (CPT® 71550) can be approved as a single study to evaluate both heart and liver iron burden.
  - CPT® 74181 and CPT® 75557 can be approved alone, or together.
  - 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 individuals at risk of hemochromatosis.

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

Background and Supporting Information

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

References


Pediatric Abdomen Imaging

PEDAB-19: Indeterminate Renal Lesion

Indeterminate renal lesion characterization imaging indications in pediatric patients are very similar to those for adult patients. See AB-35: Indeterminate Renal Lesion for imaging guidelines.

Indeterminate renal lesion imaging indications in pediatric individuals are uncommon and are usually cysts or congenital anomalies.

Pediatric-specific imaging considerations include the following:

- CT Abdomen with contrast (CPT® 74160) is indicated for individuals who have simple cysts but are symptomatic and surgical intervention is being considered.
- CT Abdomen without and with contrast (CPT® 74170) is indicated for pediatric individuals with complex renal cyst identified on ultrasound.
- For individuals with congenital anomalies, nuclear medicine studies with diuretic renography (CPT® 78708 or CPT® 78709) can be performed to determine function and cystography to determine presence of associated reflux.
- Individuals with solid renal masses should be imaged according to guidelines in section PEDONC-7: Pediatric Renal Tumors.

Background and Supporting Information

Pediatric renal cysts have a lower risk of malignant progression than do renal cysts in adults.

References

PEDAB-20: Hydronephrosis

- Retroperitoneal ultrasound (CPT® 76770) for:
  - Prenatal hydronephrosis within the first week of life, and again after 6 weeks of age.
  - Known uncomplicated hydronephrosis every 6 to 12 months

- Hydronephrosis associated with urinary tract infection or vesicoureteral reflux See PEDAB-5: Urinary Tract Infection (UTI) for imaging guidelines.

- Retroperitoneal ultrasound (CPT® 76770) and diuretic renography (CPT® 78707, CPT® 78708, or CPT® 78909) for evaluation of ureteropelvic junction obstruction (UPJO) preoperatively and postoperatively at 6 to 12 months.
  - If hydronephrosis has resolved on postoperative imaging then no further routine imaging is indicated.

- Magnetic resonance urography (MRU) (CPT® 74183 and CPT® 72197) is rarely indicated, but can be approved in individuals with inconclusive ultrasound and diuretic renography.

- CT Abdomen with contrast (CPT® 74160) is rarely indicated, but can be approved in individuals with inconclusive ultrasound and a suspected vascular cause of UPJO.

Background and Supporting Information

Hydronephrosis is a relatively common finding in pediatric individuals.

References

PEDAB-21: Polycystic Kidney Disease

- Abdominal ultrasound (CPT® 76700) or retroperitoneal ultrasound (CPT® 76770) for clinical concern of polycystic kidney disease, or for screening individuals who are at risk for autosomal dominant polycystic kidney disease (ADPCKD).

References

PEDAB-22: Blunt Abdominal Trauma

- Blunt abdominal trauma imaging indications in pediatric individuals are identical to those for adult individuals. See AB-10.1: Blunt Abdominal Trauma for imaging guidelines.
Hernia imaging indications in pediatric individuals are identical to those for adult individuals. See AB-12: Hernias for imaging guidelines.
PEDAB-24: Abdominal Lymphadenopathy

- Abdominal lymphadenopathy imaging indications in pediatric individuals are identical to those for adult individuals. See AB-8: Abdominal Lymphadenopathy for imaging guidelines.
PEDAB-25: Left Upper Quadrant Pain

- Left upper quadrant pain imaging indications in pediatric individuals are identical to those for adult individuals. See AB-2: Abdominal Pain for imaging guidelines.

References
PEDAB-26: Spleen

- Spleen imaging indications in pediatric individuals are very similar to those for adult individuals. See AB-34: Spleen for imaging guidelines.

- Pediatric-specific imaging considerations include the following:
  - MRI is preferred over CT when possible to reduce radiation exposure.

References
PEDAB-27: Intussusception

- Plain x-rays (supine and left lateral decubitus views) should be performed initially to exclude mass or bowel obstruction from other causes and to detect possible bowel perforation which may be an indication for emergent surgical intervention.
  - Ultrasound (CPT® 76700 or CPT® 76705) is indicated as an initial study if there is a strong suspicion for intussusception, but if negative, plain x-rays of the abdomen should follow.
  - In some institutions, Ultrasound guidance (CPT® 76942) may be used for reduction of colonic or ileocolic intussusception. Generally, this is an urgent or emergent procedure and may not require prior authorization. See Health Plan specific guidance for prior authorization requirements.

Background and Supporting Information

Intussusception, telescoping of one bowel loop into another, is a frequent cause of abdominal pain in young children. It may be associated with bloody stool.

References

   https://link.springer.com/article/10.1007%2Fs00247-017-3878-x.
PEDAB-28: Bowel Obstruction

- Bowel obstruction imaging indications in pediatric individuals are identical to those for adult individuals. See AB-20: Bowel Obstruction and Gastroparesis for imaging guidelines.
PEDAB-29: Left Lower Quadrant Pain

Gastroenterologist evaluation is helpful in determining the appropriate diagnostic pathway in individuals with left lower quadrant pain with or without heme-positive stools or rectal bleeding, since advanced imaging is rarely helpful in the initial evaluation of these individuals.

- Pelvic ultrasound (CPT® 76856) is the initial imaging study of choice for children for detecting gynecologic abnormalities that may cause left lower quadrant pain.
- For male individuals or if ultrasound is inconclusive, advanced imaging may be appropriate for management as directed by gastroenterologic evaluation.

Background and Supporting Information
Diverticulitis is the most common cause of left lower quadrant pain in adults but is extremely rare in children.

References
PEDAB-30: Celiac Disease (Sprue)

- Celiac disease imaging indications in pediatric individuals are identical to those for adult individuals. See AB-24: Celiac Disease (Sprue) for imaging guidelines.
PEDAB-31: Transplant

- Liver and kidney transplant imaging indications in pediatric individuals are identical to those for adult individuals. See AB-42: Transplant for imaging guidelines.

- For post-transplant lymphoproliferative disorder in pediatric individuals, See PEDONC-5.3: Pediatric Aggressive Mature B-Cell Non-Hodgkin Lymphomas (NHL) for imaging guidelines.
PEDAB-32: Gaucher Disease

See PEDPN-4: Gaucher Disease for imaging guidelines.
**PEDAB-33: Vomiting Infant, Malrotation, and Hypertrophic Pyloric Stenosis**

- Suspected malrotation is an indication for emergent imaging. If malrotation with mid-gut volvulus is suspected, acute abdominal series (CXR and abdominal views, including supine and upright or supine and left lateral decubitus views), followed by US abdomen, limited (CPT® 76705) and/or UGI series should be performed. If the abdominal X-rays suggest distal bowel obstruction, water soluble contrast enema should be considered.

- Infants with projectile non-bilious vomiting should be evaluated with US abdomen, limited (CPT® 76705). If initial studies are not diagnostic, repeat studies should be performed, as frequently as daily, until the vomiting resolves or the diagnosis is made. UGI series may be useful as a confirmatory test, may be preferred if US expertise is not available for this condition, or if the clinical presentation is atypical for Hypertrophic Pyloric Stenosis. US is preferred when available, as it involves no contrast or ionizing radiation use.

**Background and Supporting Information**

- Vomiting in infants is generally classified as either bilious (implying obstruction distal to the Sphincter of Oddi) or non-bilious.

- Bilious vomiting may be a true emergency, as some of the conditions causing this could result in compromise of blood supply to the intestines, a potentially life-threatening situation.

- Hypertrophic Pyloric Stenosis is an idiopathic condition wherein the circular muscle controlling emptying of the stomach thickens, causing a relative obstruction of the gastric outlet. The condition can occur at any age (including occasionally in adults), but the typical child is male, aged 2 to 6 weeks. Projectile non-bilious vomiting is the most common presenting complaint, but the description of projectile vomiting is subjective. The differential diagnosis for non-bilious vomiting includes common conditions such as viral gastroenteritis and gastro-esophageal reflux.

**References**