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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<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tr>
<td>AAA</td>
<td>abdominal aortic aneurysm</td>
</tr>
<tr>
<td>ACE</td>
<td>angiotensin-converting enzyme</td>
</tr>
<tr>
<td>ACTH</td>
<td>adrenocorticotropic hormone</td>
</tr>
<tr>
<td>AFP</td>
<td>alpha-fetoprotein</td>
</tr>
<tr>
<td>ALT</td>
<td>alanine aminotransferase</td>
</tr>
<tr>
<td>AST</td>
<td>aspartate aminotransferase</td>
</tr>
<tr>
<td>BEIR</td>
<td>Biological Effects of Ionizing Radiation</td>
</tr>
<tr>
<td>BUN</td>
<td>blood urea nitrogen</td>
</tr>
<tr>
<td>CNS</td>
<td>central nervous system</td>
</tr>
<tr>
<td>CT</td>
<td>computed tomography</td>
</tr>
<tr>
<td>CTA</td>
<td>computed tomography angiography</td>
</tr>
<tr>
<td>CTC</td>
<td>computed tomography colonography (aka: virtual colonoscopy)</td>
</tr>
<tr>
<td>DVT</td>
<td>deep vein thrombosis</td>
</tr>
<tr>
<td>ERCP</td>
<td>endoscopic retrograde cholangiopancreatography</td>
</tr>
<tr>
<td>FNH</td>
<td>focal nodular hyperplasia</td>
</tr>
<tr>
<td>GFR</td>
<td>glomerular filtration rate</td>
</tr>
<tr>
<td>GGT</td>
<td>gamma glutamyl transferase</td>
</tr>
<tr>
<td>GI</td>
<td>gastrointestinal</td>
</tr>
<tr>
<td>HCC</td>
<td>hepatocellular carcinoma</td>
</tr>
<tr>
<td>HCPCS</td>
<td>Healthcare Common Procedural Coding System (commonly pronounced: “hix pix”)</td>
</tr>
<tr>
<td>HU</td>
<td>Hounsfield units</td>
</tr>
<tr>
<td>IAA</td>
<td>iliac artery aneurysm</td>
</tr>
<tr>
<td>IV</td>
<td>intravenous</td>
</tr>
<tr>
<td>KUB</td>
<td>kidneys, ureters, bladder (plain frontal supine abdominal radiograph)</td>
</tr>
<tr>
<td>LFT</td>
<td>liver function tests</td>
</tr>
<tr>
<td>MRCP</td>
<td>magnetic resonance cholangiopancreatography</td>
</tr>
<tr>
<td>MRA</td>
<td>magnetic resonance angiography</td>
</tr>
<tr>
<td>MRI</td>
<td>magnetic resonance imaging</td>
</tr>
<tr>
<td>mSv</td>
<td>millisievert</td>
</tr>
<tr>
<td>NAFLD</td>
<td>nonalcoholic fatty liver disease</td>
</tr>
<tr>
<td>PA</td>
<td>posteroanterior projection</td>
</tr>
<tr>
<td>PET</td>
<td>positron emission tomography</td>
</tr>
<tr>
<td>RAS</td>
<td>renal artery stenosis</td>
</tr>
<tr>
<td>RBC</td>
<td>red blood cell</td>
</tr>
<tr>
<td>SBFT</td>
<td>small bowel follow through</td>
</tr>
<tr>
<td>SPECT</td>
<td>single photon emission computed tomography</td>
</tr>
<tr>
<td>VC</td>
<td>virtual colonoscopy (CT colonography)</td>
</tr>
<tr>
<td>PFT</td>
<td>pulmonary function tests</td>
</tr>
<tr>
<td>WBC</td>
<td>white blood cell</td>
</tr>
<tr>
<td>ZES</td>
<td>Zollinger-Ellison Syndrome</td>
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# AB-1~General Guidelines

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ABDOMEN IMAGING GUIDELINES

AB-1.1 Overview

✓ A current clinical evaluation (within 60 days) is required before advanced imaging can be considered. The clinical evaluation may include a relevant history and physical examination, appropriate laboratory studies, and non-advanced imaging modalities such as plain X-ray or ultrasound. Other meaningful contact (telephone call, electronic mail or messaging) by an established patient can substitute for a face-to-face clinical evaluation.

✓ GI Specialist evaluations can be helpful, particularly in determining mesenteric/colic ischemia, diarrhea/constipation, irritable bowel syndrome (IBS), or need for MRCP.

✓ Conservative treatment for abdominal pain can include (list is not exhaustive):
  o Anti-secretory or *H. Pylori* medications
  o Non-steroidal or opiate analgesia
  o Plain abdominal radiography
  o Diet modification
  o Pro- or anti-motility agents

✓ Abdominal imaging begins at the diaphragm and extends to the umbilicus or iliac crest.

✓ Pelvic imaging begins at the iliac crest and extends to the pubis.

✓ Clinical concerns at the dividing line can be providers’ choice (abdomen and pelvis; abdomen or pelvis).
ABDOMEN IMAGING GUIDELINES

AB-1.2 CT Imaging

✓ CT imaging is a more generalized modality. Abdominal CT is usually performed with contrast (CPT®74160):
  o Oral contrast has no relation to the IV contrast administered.
  o Exceptions are noted in these guidelines, and include:
    ▪ Abdominal CT with contrast (CPT®74160) or without and with contrast (CPT®74170) with suspicion of a solid organ lesion (liver, kidney, pancreas, spleen)
    ▪ Abdominal CT without contrast (CPT®74150) or abdomen and pelvis CT (CPT®74176) if there is renal insufficiency/failure, or a documented allergy to contrast. It can also be considered for diabetics or the very elderly.
  o Abdomen with pelvis CT, usually with contrast (CPT®74177), should be considered when signs or symptoms are generalized, or lower quadrant abnormal or pelvic.
  o CT Enterography (CPT®74177) combines CT imaging with large volumes of ingested neutral bowel contrast material to allow visualization of the small bowel
    ▪ Usually, only 2D reformatting is used (coronal reformatted images);
    ▪ If the 3D rendering codes are requested (CPT®76376 or CPT®76377), then the final radiology report should be obtained first to verify that true 3D rendering was performed.
    ▪ Also see AB-23~Inflammatory Bowel Disease
  o CT Enteroclysis
    ▪ A tube is placed through the nose or mouth and advanced into the duodenum or jejunum. Bowel contrast material is infused through the tube and CT imaging is performed either with or without intravenous contrast.
    ▪ CT enteroclysis is used to allow visualization of the small bowel wall and lumen. CT enteroclysis may allow better or more consistent distention of the small bowel than CT enterography.
    ▪ Report by assigning: CPT®74176 or CPT®74177
    ▪ Usually, only 2D reformatting is used (coronal reformatted images).
    ▪ The final radiology report should be obtained first to verify that true 3D rendering was performed when 3D rendering codes are requested (CPT®76376 or CPT®76377).
  o Also see: AB-23~Inflammatory Bowel Disease
ABDOMEN IMAGING GUIDELINES

AB-1.3 MR Imaging

✓ MRI may be preferred as a more targeted study in cases of renal failure; in individuals allergic to intravenous CT contrast; and as noted in these guidelines.
  o MRI of the abdomen with contrast only is essentially never performed. If contrast is indicated, MRI abdomen without and with contrast (CPT®74183) should be performed.
  o For pregnant women ultrasound or MRI without contrast should be used to avoid radiation exposure. The use of gadolinium contrast agents is contraindicated during pregnancy unless the specific need for that procedure outweighs risk to the fetus.¹²

AB-1.4 MR Enterography Coding Notes

✓ MRI Enterography is reported in one of two ways:
  o MRI abdomen without and with contrast (CPT®74183), or
  o MRI abdomen without and with contrast (CPT®74183) and MRI pelvis with and without contrast (CPT®72197)

AB-1.5 Ultrasound

✓ Ultrasound, also called sonography, uses high frequency sounds waves to image body structures.
  o The routine use of 3D and 4D rendering, (post-processing), in conjunction with ultrasound is considered investigational.
  o All ultrasound studies require permanently recorded images either stored on film or in a Picture Archiving and Communication System (PACS).
  o The use of a hand-held or any Doppler device that does not create a hard-copy output is considered part of the physical examination and is not separately billable. This exclusion includes devices that produce a record that does not permit analysis of bi-directional vascular flow.

✓ Duplex scan describes an ultrasonic scanning procedure for characterizing the pattern and direction of blood flow in arteries and veins with the production of real-time images integrating B-mode 2D vascular structures, Doppler spectral analysis, and color flow Doppler imaging.
  o The minimal use of color Doppler alone, when performed for anatomical structure identification during a standard ultrasound procedure, is not separately reimbursable.
ABDOMEN IMAGING GUIDELINES

AB-1.6 Abdominal Ultrasound

✓ Complete abdominal ultrasound (CPT®76700) includes all of the following required elements:
  o Liver, gallbladder, common bile duct, pancreas, spleen, kidneys, upper abdominal aorta, and inferior vena cava.
  o If a particular structure or organ cannot be visualized, the report should document the reason.

✓ Limited abdominal ultrasound (CPT®76705) is without all of these required elements and can refer to a specific study of a single organ, a limited area of the abdomen, or a follow-up study.
  o Further, CPT®76705 should:
    ▪ Be assigned to report follow-up studies once a complete abdominal ultrasound (CPT®76700) has been performed; and
    ▪ Be assigned to report ultrasonic evaluation of diaphragmatic motion; and
    ▪ be reported only once per individual imaging session; and
    ▪ Not be reported with CPT®76700 for the same individual for the same imaging session.

AB-1.7 Retroperitoneal Ultrasound

✓ Complete retroperitoneal ultrasound (CPT®76770) includes all of the following required elements:
  o Kidneys, lymph nodes, abdominal aorta, common iliac artery origins, inferior vena cava
  o For urinary tract indications, a complete study can consist of kidneys and bladder.

✓ Limited retroperitoneal ultrasound (CPT®76775) studies are without all of these required elements and can refer to a specific study of a single organ, a limited area of the abdomen, or a follow-up study.
  o Further, CPT®76775 should:
    ▪ Be assigned to report follow-up studies once a complete abdominal ultrasound (CPT®76770) has been performed; and
    ▪ Be reported only once per individual imaging session; and
    ▪ Not be reported with CPT®76700 for the same individual for the same imaging session.
ABDOMEN IMAGING GUIDELINES

AB-1.8 Special Considerations

✓ CT of the abdomen and pelvis 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.

✓ Persistent unexplained nausea and vomiting:
  o One non-contrast brain MRI (CPT® 70551) can be performed in individuals with persistent, unexplained nausea and vomiting and a negative GI evaluation.
    See: **HD-1.7 Other Imaging Situations** in the Head Imaging Guidelines.

✓ Fever of unknown origin; Unexplained weight loss
  o In the Oncology Imaging Guidelines, refer to:
    **ONC-29–Medical Conditions with Cancer in the Differential Diagnosis**

References

AB-2.1 General Information

The tables in AB-2.2 Abdominal Pain provides imaging guidance for generalized and quadrant specific abdominal pain. The column headers are defined as the following:

<table>
<thead>
<tr>
<th>Pain Location</th>
<th>Initial Ultrasound?</th>
<th>Conservative Treatment?</th>
<th>Advanced Imaging Indicated?</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location/type of abdominal pain</td>
<td>Is an initial US required before advanced imaging?</td>
<td>Is conservative treatment required before advanced imaging?</td>
<td>Advanced imaging indicated for the specific abdominal pain</td>
<td>Additional comments related to indication</td>
</tr>
</tbody>
</table>

Red Flag Signs and Symptoms

✓ In “red flag” situations, the imaging indications may vary from the usual imaging pathway. A red flag situation is described as the following:

- Persistent abdominal pain and at least one of the following:
  - Failure of conservative treatment for 4 weeks
  - Cancer history
  - Fever (101 degrees or greater)
  - Mass
  - GI bleeding
  - Moderate to severe abdominal tenderness
  - Guarding, rebound tenderness, or other peritoneal signs
  - WBC 10,000 or greater

✓ Please note, that when any one red flag is present with abdominal pain, the initial ultrasound is not required. Please proceed to the imaging indications under the “Advanced Imaging” column.

Pregnant Women

✓ For pregnant women, abdominal US (CPT®76700), and/or pelvic US (if below the umbilicus) (CPT®76856) and/or TVUS (CPT®76830) should be performed first. If ultrasound is equivocal or red flags are present, proceed to:

- MRI abdomen without contrast(CPT®74181) and/or MRI pelvis without contrast (CPT®72195) (if below the umbilicus)
# AB-2.2 Abdominal Pain

<table>
<thead>
<tr>
<th>Pain Location</th>
<th>Initial Ultrasound?</th>
<th>Conservative Treatment?</th>
<th>Advanced Imaging Indicated?</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalized, men and also women not of childbearing age</td>
<td>Yes</td>
<td>No*</td>
<td>*If equivocal ultrasound or if pain is accompanied with: any one red flag</td>
<td>See red flags in AB-2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CT of the abdomen and pelvis with contrast</td>
<td></td>
</tr>
<tr>
<td>Complete or limited abdomen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generalized, women of childbearing age, not pregnant,</td>
<td>Yes</td>
<td>No*</td>
<td>*If equivocal ultrasound or if pain is accompanied with any one red flag</td>
<td>See red flags in AB-2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CT abdomen and pelvis with contrast or</td>
<td></td>
</tr>
<tr>
<td>Complete abdomen and/or transvaginal and/or complete pelvis</td>
<td></td>
<td></td>
<td>MRI abdomen and/or pelvis without and with contrast</td>
<td></td>
</tr>
<tr>
<td>Generalized, pregnant</td>
<td>Yes</td>
<td>No</td>
<td>If ultrasound is equivocal with acute pain or any one red flag, MRI abdomen and/or pelvis without contrast</td>
<td>See red flags in AB-2.1 and imaging for pregnant women in AB-2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left Lower Quadrant, rule out diverticulitis – ALL men and non-pregnant women</td>
<td>No</td>
<td>Yes (1 week of antibiotics &amp; follow-up)</td>
<td>CT abdomen and pelvis with contrast if any red flag is present or ONE of the following: 1. failed antibiotic treatment 2. history of diverticulitis 3. CT abdomen and pelvis with contrast prior to endoscopy, if requested by the physician who will be performing the endoscopy</td>
<td>See red flags in AB-2.1 and imaging for pregnant women in AB-2.1</td>
</tr>
<tr>
<td>Left Lower Quadrant, suspected or known intraabdominal abscess – ALL men and non-pregnant women</td>
<td>No</td>
<td>No</td>
<td>If fever or elevated WBC, then CT abdomen and/or pelvis with contrast</td>
<td>See imaging for pregnant women in AB-2.1 See: AB-3</td>
</tr>
<tr>
<td>Pain Location</td>
<td>Initial Ultrasound?</td>
<td>Conservative Treatment?</td>
<td>Advanced Imaging Indicated?</td>
<td>Comments</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>---------------------</td>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Left Lower Quadrant, follow-up known intraabdominal abscess – ALL men and non-pregnant women</td>
<td>No</td>
<td>No</td>
<td>Serial abdominal and/or pelvic ultrasound (CPT®76700 and/or CPT®76856) or CT abdomen and/or pelvis with contrast: ✓ The interval can be days, weeks, or months, but not to exceed 3 follow-up studies based on the clinical course of the individual.</td>
<td>See imaging for pregnant women in: AB-2.1 See: AB-3</td>
</tr>
<tr>
<td>Left Upper Quadrant – ALL men and non-pregnant women</td>
<td>Yes</td>
<td>No</td>
<td>If pain is accompanied with at least 1 red flag then CT of the abdomen with contrast</td>
<td>See imaging for pregnant women in: AB-2.1</td>
</tr>
<tr>
<td>Right Lower Quad, rule out appendicitis in – ALL men and non-pregnant women</td>
<td>No</td>
<td>No</td>
<td>CT of the abdomen and pelvis either with contrast or without contrast</td>
<td>See imaging for pregnant women in: AB-2.1</td>
</tr>
<tr>
<td>Right Upper Quadrant, rule out cholecystitis - ALL men and non-pregnant women</td>
<td>Yes</td>
<td>No</td>
<td>CT abdomen with contrast, or MRI abdomen without contrast or without and with contrast if ultrasound equivocal</td>
<td>See imaging for pregnant women in AB-2.1</td>
</tr>
<tr>
<td>Epigastric pain, dyspepsia, gastritis, &amp; postprandial fullness – ALL men and non-pregnant women</td>
<td>Yes</td>
<td>Yes</td>
<td>If pain persists after failure of conservative treatment, CT abdomen with contrast or MRI abdomen without and with contrast can be performed.</td>
<td>See imaging for pregnant women in AB-2.1</td>
</tr>
<tr>
<td>Acute epigastric pain with any red flag symptoms – ALL men and non-pregnant women</td>
<td>No</td>
<td>No</td>
<td>If pain is accompanied with any one red flag, then CT abdomen with contrast or MRI abdomen without and with contrast</td>
<td>See imaging for pregnant women in AB-2.1</td>
</tr>
</tbody>
</table>
# CPT® Codes for AB 2.2

<table>
<thead>
<tr>
<th>CPT®</th>
<th>Description</th>
<th>CPT®</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>74150</td>
<td>CT abdomen without contrast</td>
<td>76700</td>
<td>Ultrasound, complete abdomen</td>
</tr>
<tr>
<td>74160</td>
<td>CT abdomen with contrast</td>
<td>76705</td>
<td>Ultrasound, limited abdomen</td>
</tr>
<tr>
<td>74176</td>
<td>CT abdomen and pelvis without contrast</td>
<td>76830</td>
<td>Ultrasound, transvaginal</td>
</tr>
<tr>
<td>74177</td>
<td>CT abdomen and pelvis with contrast</td>
<td>76856</td>
<td>Ultrasound, complete pelvis</td>
</tr>
<tr>
<td>74181</td>
<td>MRI abdomen without contrast</td>
<td>72195</td>
<td>MRI pelvis without contrast</td>
</tr>
<tr>
<td>74183</td>
<td>MRI abdomen without &amp; with contrast</td>
<td>72197</td>
<td>MRI pelvis without &amp; with contrast</td>
</tr>
</tbody>
</table>

## References

AB-3.1 Abdominal Sepsis

✓ CT abdomen and/or pelvis with contrast (CPT®74160, or CPT®72193, or
  CPT®74177) for abdominal symptoms associated with fever and/or elevated white
  blood cell count.¹

✓ Intraperitoneal abscess can undergo interval CT abdomen and pelvis with contrast
  (CPT®74177).

✓ Serial Ultrasound (CPT®76705) or CT with contrast (CPT®74160, or CPT®72193,
  or CPT®74177) for follow-up of known fluid collections, especially with catheter
  drainage. The interval can be days, weeks, or months, but not to exceed 3 follow-
  up studies, based on the clinical course of the individual

Reference

   ACR Appropriateness Criteria®. Acute (Nonlocalized) Abdominal Pain and Fever or Suspected
## AB-4~Flank Pain, Rule Out or Known Nephrolithiasis (Renal/Ureteral Stones)

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ABDOMEN IMAGING GUIDELINES

AB-4.1 Flank Pain

✓ Suspected renal stone in non-pregnant adults (flank pain/renal colic),\(^1,2\)
  o CT abdomen and pelvis without contrast (CPT®74176)

✓ Suspected renal stone in pregnant women (flank pain/renal colic)\(^3,4\)
  o Ultrasound (CPT®76770 or CPT®76775) or MRI abdomen and pelvis without contrast (CPT®74181 and CPT®72195).
  ▪ The use of gadolinium contrast agents is contraindicated during pregnancy unless the specific need for that procedure outweighs risk to the fetus.

✓ Suspected renal stone in Children (flank pain/renal colic)\(^4\)
  o In children, ultrasound (CPT®76770 or CPT®76775) or MR urography (MRI abdomen and pelvis, without or with and without contrast [CPT®74181/72195 or CPT®74183/72197]) is the best initial study to avoid radiation exposure.
  o See PACAB-4~Flank Pain, Rule Out Renal Stone

✓ Suspicion of renal stones (Flank pain/renal colic) with Hematuria  CT abdomen and pelvis without contrast (CPT®74176) or CT urogram

AB-4.2 Observation of Known Ureteral Stones

✓ If the stone is radiopaque, the individual is symptomatic, and/or has not passed the stone: should be followed with retroperitoneal ultrasound (CPT®76770 or CPT®76775) and KUB x-ray.

✓ If the individual is asymptomatic and has passed the stone, follow-up imaging is not necessary.

✓ If the individual has not passed the stone, but is asymptomatic and no stone or hydronephrosis is seen with the retroperitoneal US and KUB, follow-up imaging is not necessary.

✓ If the stone is non-radiopaque, the individual is symptomatic, and/or has not passed the stone: should be followed with CT abdomen and pelvis without contrast (CPT®74176).
  o If the individual is not symptomatic and has passed the stone, follow-up imaging is not necessary.

✓ Annual surveillance for stable individuals who have a history of stones may be indicated to assess for stone growth or formation of new stones:
  o Plain x-ray (KUB) should be performed for individuals with radiopaque stones.
  o Retroperitoneal ultrasound (CPT® 76770 or CPT® 76775) is the preferred modality for individuals with non-radiopaque stones.
AB-4.3 Follow-Up of Treated Renal Stones

✔ Post-shock wave lithotripsy (SWL):
  o Retroperitoneal ultrasound (CPT®-76770 or CPT®-76775) is the appropriate initial follow-up imaging.
  o Retroperitoneal ultrasound (CPT®-76770 or CPT®-76775) and/or CT abdomen and pelvis without contrast (contrast as requested) may be indicated for:
    ▪ Individuals who are symptomatic
    ▪ Individuals with hydronephrosis
    ▪ Individuals who have residual fragments
  o Individuals treated by SWL who have passed fragments, are asymptomatic and without hydronephrosis: No further imaging is required.

✔ Post-medical expulsive therapy (MET):
  o Individuals treated by MET who have passed a stone and are symptomatic should undergo retroperitoneal US.
    ▪ If hydronephrosis is demonstrated with US, a CT abdomen/pelvis without and with contrast is indicated.
  o Individuals treated by MET who have passed a stone and are asymptomatic do not usually require follow-up imaging.

✔ Post-ureteroscopic extraction with an intact stone:
  o Individuals without symptoms should have a retroperitoneal US.
  o Individuals with symptoms or hydronephrosis with US should have a CT abdomen and pelvis with contrast.
  o Individuals without symptoms or hydronephrosis with US do not usually require follow-up imaging.

✔ Post-ureteroscopic extraction requiring fragmentation of the stone(s):
  o Individuals without symptoms should have a retroperitoneal US.
    ▪ Individuals without symptoms, but hydronephrosis with US, should have a CT abdomen/pelvis without contrast.
    ▪ Individuals without symptoms or hydronephrosis with US do not usually require follow-up imaging.
  o Individuals with symptoms and a radiopaque stone should have a retroperitoneal US and KUB.
  o Individuals with symptoms and a non-radiopaque stone should have a CT abdomen/pelvis without contrast.

✔ Individuals with persistent symptoms and/or hydronephrosis: Retroperitoneal US and/or CT abdomen and pelvis without contrast (contrast as requested) may be indicated.
**AB-4.4 Ultrasound**

☑ Ultrasound (CPT® or CPT®76775) can be used in place of CT abdomen and pelvis at any of the follow-up indications, if requested by the Provider.

**References**


AB-5.1 Gastroenteritis

- 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
  - Bloody stools
  - Immunocompromised
  - Previous gastric bypass
  - Persistent abdominal pain and at least one of the following:
    - Failure of conservative treatment for 4 weeks
    - History of cancer
    - Fever (101 degrees or greater)
    - Mass
    - GI bleeding
    - Moderate to severe abdominal tenderness
    - Guarding, rebound tenderness, or other peritoneal signs
    - WBC 10,000 or greater

Practice Note
Gastroenteritis is a nonspecific term that denotes a constellation of symptoms including, to a varying degree, nausea, vomiting, diarrhea, and abdominal pain. It is usually caused by infectious agents such as norovirus. The broad differential of such symptoms evades establishing a guideline to evaluate gastroenteritis, as a specific entity, from an imaging standpoint.

Reference
**AB-6.1 Mesenteric Ischemia**

- For suspicion of acute mesenteric ischemia – typical presentation based on severe abdominal pain out of proportion to findings on physical exam, usually in an individual with underlying risk factors including cardiovascular disease, atrial fibrillation, hypertension, etc.:
  - Abdominal and/or pelvic (mesenteric) CTA (CPT®74174 or CPT®74175) (preferable), or
  - Abdominal and/or pelvic MRA (CPT®72198 and/or CPT®74185), or
  - CT abdomen and pelvis with contrast (CPT®74177)

- Routine post-procedure imaging following invasive treatment for mesenteric ischemia (bowel resection, embolectomy, etc.) is not needed in asymptomatic individuals.

- Also, see “Mesenteric Ischemia” in: PVD-6~Aortic Disorders, Renal Vascular Disorders, and Visceral Artery Aneurysms in the Peripheral Vascular Disease Imaging Guidelines.

**AB-6.2 Colonic Ischemia (including ischemic colitis)**

Suspicion of colonic ischemia based on sudden cramping abdominal pain accompanied by urgency to defecate and passage of bright red blood, maroon blood, or bloody diarrhea, with risk factors including cardiovascular disease, diabetes mellitus, kidney disease, previous abdominal surgery, use of constipating medications, COPD, and atrial fibrillation.

- CT abdomen and pelvis with contrast (CPT®74177) is considered the first imaging modality in order to assess the distribution and phase of the colitis, and it can be performed if there is:
  - Abdominal pain; and
  - Lower GI bleed; or
  - Moderate or severe tenderness; or
  - Fever (101 degrees or greater)
  - Guarding, rebound tenderness, or other peritoneal signs
  - WBC above 10,000

- Repeat imaging for symptomatic or changed symptoms includes the following:
  - Abdominal and/or pelvic (mesenteric) CTA (CPT®74174 or CPT®74175) (preferable), or
  - Abdominal and/or pelvic MRA (CPT®72198 and/or CPT®74185) or
  - CT abdomen/pelvis with contrast (CPT®74177)
Repeat imaging for asymptomatic or unchanged symptoms, including routine post-operative imaging, is not needed.

**Practice Note**
Gastroenteritis is a nonspecific term that denotes a constellation of symptoms including, to a varying degree, nausea, vomiting, diarrhea, and abdominal pain. It is usually caused by infectious agents such as norovirus. The broad differential of such symptoms evades establishing a guideline to evaluate gastroenteritis, as a specific entity, from an imaging standpoint.

**References**
AB-7~Post-Operative Pain Within 60 Days Following Abdominal Surgery – Abdominal Procedure

AB-7.1 Post-Op Pain Within 60 Days

✔ CT abdomen and/or pelvis with contrast (CPT® 74177 or CPT® 74160 or CPT® 72193) can be performed for suspected postoperative/post procedure complications (For example bowel obstruction, abscess or anastomotic leak).¹,²

✔ Beyond 60 days postoperatively, see: AB-2~Abdominal Pain

References


AB-8.1 Abdominal Lymphadenopathy

✓ CT abdomen with contrast (CPT® 74160), or CT pelvis with contrast (CPT® 72193), or CT abdomen and pelvis with contrast (CPT® 74177) once following the original imaging study if lymphadenopathy is:
  o Found incidentally on previous imaging

✓ If enlarged lymph node(s) is still a concern after repeat CT, biopsy should be considered to establish a histological diagnosis.1, 2

AB-8.2 Inguinal Lymphadenopathy

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

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

✓ Generalized inguinal lymphadenopathy should prompt:
  o Diagnostic work-up, including serological tests, for systemic diseases and
  o Excisional or image-guided core needle biopsy

See: ONC-27~Lymphomas in the Oncology Imaging Guidelines

See also: ONC-31~Metastatic Cancer and Carcinomas of Unknown Primary

Site Reference

AB-9.1 Bariatric Surgery

☑ CT abdomen and pelvis with contrast (CPT®-74177) for individuals who have had obesity surgery and who present with suspected complications related to the bariatric surgery who presents with any one of the following: fever, abdominal pain, abdominal distention, frequent vomiting or suspected hernia.

☑ See AB-7~Post-Operative Pain Within 60 Days Following Abdominal Surgery

References
AB-10~Blunt Abdominal Trauma

AB-10.1 Blunt Abdominal Trauma

- Ultrasound (CPT® 76700 and/or CPT® 76856) initially for trauma with low probability of intra-abdominal injury (minimal pain, no peritoneal irritation on physical examination, no hemodynamic instability, no elevated AST/ALT)

- To determine whether individuals need hospitalization for observation as a result of blunt renal trauma with hematuria, CT abdomen and pelvis without and with contrast (CPT® 74178) should be used initially1,2

- CT abdomen and/or pelvis with contrast (CPT® 74160, or CPT® 72193, or CPT® 74177):
  - High probability intra-abdominal injury
  - If ultrasound demonstrates any positive finding(s)

References

AB-11~Gaucher’s Disease and Hemochromatosis

See also: PN-6.3 Gaucher’s Disease in the Peripheral Nerve Disorders Imaging Guidelines

AB-11.1 Gaucher’s Disease

✓ MRI abdomen without contrast (CPT® 74181) and MRI lower extremity without contrast (CPT® 73718) as follows:
  o Individuals not on enzyme therapy -every 12 to 24 months
  o Individuals on enzyme therapy every 12 months:
    ▪ For change in dose of medication, complication from medication specific for treatment of Gaucher’s disease or clinical complication, individuals with active bone disease may require more frequent monitoring than once a year.

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

✓ 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.

✓ Individuals 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

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

Practice Notes

Gaucher’s Disease is a lysosomal storage disease characterized by glucosylceramide accumulation in the spleen, liver, kidneys, lung, brain and bone marrow.
References
### AB-12~Hernias

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<tr>
<td>AB-12.4 Indeterminate Groin Pain</td>
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</tbody>
</table>
ABDOMEN IMAGING GUIDELINES

AB-12.1 Inguinal or Femoral Hernia

✓ Ultrasound (pelvic limited (CPT®76857) or pelvic complete) ultrasound and/or a limited (or complete abdomen ultrasound) is the initial imaging for known or suspected primary or recurrent inguinal or femoral hernia
  o Limited (CPT®76857) or complete (CPT®76856) pelvic ultrasound; and/or
  o Limited (CPT®76705) or complete (CPT®76700) abdominal ultrasound

✓ CT pelvis with contrast (CPT®72193) or without contrast (CPT®72192) if there is suspected incarceration or strangulation of inguinal or femoral hernia or if requested by a specialist or surgeon

AB-12.2 Spigelian, Ventral, Umbilical, or Incisional Hernia

✓ Known or suspected primary or recurrent Spigelian hernia (anterior abdominal wall hernia through the semilunar line), ventral hernia, umbilical, or incisional hernia:

✓ CT of the abdomen and/or pelvis (if below the umbilicus) with contrast (CPT®74160 or CPT®72193 or CPT®74177) or without contrast (CPT®74150 or CPT®72192 or CPT®74176)

AB-12.3 Hiatal Hernia

✓ Chest and/or Abdomen CT with contrast (CPT®71260 and/or CPT®74160) to evaluate any of the following:
  o GI specialist or surgeon request for treatment/pre-operative planning
  o Suspected complication of primary disease or surgery

AB-12.4 Indeterminate Groin Pain

✓ Occurs after intra-abdominal/genitourinary causes have been ruled out and musculoskeletal evaluation does not identify a specific cause
  o Plain X-ray of the pelvis is the initial study
  o Further advanced imaging can then be considered with pelvis MRI without contrast
  o Pelvic Ultrasound (CPT®76856 or CPT®76857) can be considered in the evaluation of sports hernia (athletic pubalgia)

Practice Note

Sports hernia, also referred to as athletic pubalgia, is not a true hernia. Sports hernia is a term used to describe a condition characterized by groin pain, often in an athlete, in which there is no identifiable hernia.
References
ABDOMEN IMAGING GUIDELINES

AB-13-Abdominal Mass

AB-13.1 Abdominal Wall Mass

✓ Ultrasound (CPT® 76700 or CPT® 76705) or CT abdomen and/or pelvis (if below the umbilicus) with contrast (CPT® 74160 or CPT® 72193 or CPT® 74177) or without contrast (CPT® 74150 or CPT® 72192 or CPT® 74176)
✓ MRI abdomen without and with contrast (CPT® 74183) or MRI abdomen without contrast (CPT® 74181) can be considered if ultrasound and/or CT are equivocal, or for preoperative planning

AB-13.2 Intra-Abdominal Mass

✓ If the physical exam suggests a palpable mass or a mass is seen on prior imaging, imaging can include one of the following:
  o CT abdomen and/or pelvis (if mass palpated below the umbilicus) with contrast (CPT® 74160 or CPT® 72193 or CPT® 74177) OR
  o CT abdomen and/or pelvis (if mass palpated below the umbilicus) without contrast (CPT® 74150 or CPT® 72192 or CPT® 74176) OR
  o MRI abdomen and/or pelvis (if mass palpated below the umbilicus) without contrast (CPT® 74181 and/or CPT® 72195) OR
  o MRI abdomen and/or pelvis (if mass palpated below the umbilicus) without and with contrast (CPT® 74183 and/or CPT® 72197)

✓ Pregnant individual:
  o Initial Imaging: Abdominal and/or pelvic and/or transvaginal ultrasound (CPT® 76700 and/or CPT® 76856 and/or CPT® 76830) is appropriate
  o Follow-up Imaging if ultrasound findings are indeterminate: See AB-2.1

✓ Subcutaneous mass: Abdominal and/or pelvic ultrasound (CPT® 76700 and/or CPT® 76856) is appropriate

References

AB-14~Lower Extremity Edema

See: PVD-7.5 Lower Extremity, Deep Venous Thrombosis (DVT) and/or Lower Extremity Edema in the Peripheral Vascular Disease Imaging Guidelines.
AB-15.1 Zollinger-Ellison Syndrome (ZES)

✓ For known CT abdomen with contrast (CPT®74160) or MRI abdomen without and with contrast (CPT®74183)

Practice Notes

Zollinger-Ellison Syndrome is a complex condition in which one or more tumors form in the pancreas or upper part of the small intestine (duodenum).

Imaging is sometimes combined with Somatostatin Receptor Scintigraphy in the evaluation of suspected gastrinoma (elevated serum gastrin (normal value is <100 pg/ml) and/or abnormal gastric acid secretory test).1,2,3

References

## AB-16.1 Adrenal Cortical Lesions

### Imaging Decision Tree: Incidentally Discovered Adrenal Mass

<table>
<thead>
<tr>
<th>Mass Details</th>
<th>Primary Study</th>
<th>Additional Studies</th>
</tr>
</thead>
</table>
| 1) 1 to 4 cm | CT abdomen without contrast | ✓ If primary CT without is not diagnostic or concerning for malignancy:  
- CT abdomen without and with contrast*; or  
(*delayed imaging obtained to calculate washout)  
- MRI abdomen without contrast**  
(**also appropriate for iodinated contrast allergy) |
| 2) No history malignancy | | |
| 3) Initial | | |
| 1) 1-4 cm | CT abdomen without contrast | ✓ MRI abdomen without contrast to assess for size change in 12 months  
✓ No further imaging if:  
- Initial determines benign adenoma, myelolipoma, hematoma or simple cyst or  
- No change in size after 12 months follow-up. |
| 2) No history malignancy | | |
| 3) Follow-up indeterminate lesions in 12 months | | |
| 1) >4 cm | CT abdomen with contrast* | ✓ For pre-op:  
✓ CT abdomen with contrast or MRI abdomen without and with contrast |
| 2) No history of malignancy | | |
| 1) <4 cm | CT abdomen without contrast | ✓ CT abdomen without and with contrast*; or (*delayed imaging obtained to calculate washout)  
✓ MRI abdomen without contrast**; or (**also appropriate for iodinated contrast allergy; chemical shift)  
✓ PET  
✓ Biopsy/resection if suspicious imaging and can’t be determined benign  
✓ MIBG if suspect pheochromocytoma |
| 2) History of malignancy | | |

### CPT Codes

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>74150</td>
<td>CT abdomen without contrast</td>
</tr>
<tr>
<td>74160</td>
<td>CT abdomen with contrast</td>
</tr>
<tr>
<td>74170</td>
<td>CT abdomen without and with contrast</td>
</tr>
<tr>
<td>74181</td>
<td>MRI abdomen without contrast</td>
</tr>
<tr>
<td>74183</td>
<td>MRI abdomen without &amp; with contrast</td>
</tr>
<tr>
<td>78812</td>
<td>PET, skull base to mid-thigh</td>
</tr>
<tr>
<td>78815</td>
<td>PET/CT, skull base to mid-thigh</td>
</tr>
</tbody>
</table>
## AB-16.1 Adrenal Cortical Lesions

<table>
<thead>
<tr>
<th>Imaging Decision Tree: Incidentally Discovered Adrenal Mass&lt;sup&gt;1,2,3,4&lt;/sup&gt;</th>
<th>Mass Details</th>
<th>Primary Study</th>
<th>Additional Studies/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) &gt;4cm</td>
<td>PET</td>
<td>Biopsy before or after PET</td>
<td></td>
</tr>
<tr>
<td>1) Suspected Cushing’s Syndrome</td>
<td>CT abdomen with contrast</td>
<td>Serum ACTH level, Dexamethasone suppression, 24 hour urine for free cortisol</td>
<td></td>
</tr>
<tr>
<td>Prior to adrenal vein sampling:</td>
<td></td>
<td>CT abdomen with contrast</td>
<td></td>
</tr>
<tr>
<td>1) Conn’s Syndrome (hyperaldosteronism or virilizing adrenal tumor)</td>
<td>CT abdomen without contrast</td>
<td>Serum aldosterone/rennin</td>
<td></td>
</tr>
<tr>
<td>Prior to adrenal sampling:</td>
<td></td>
<td>CT Abdomen with contrast</td>
<td></td>
</tr>
<tr>
<td>1) Suspected Pheochromocytoma</td>
<td>MRI abdomen or CT abdomen (contrast as requested)</td>
<td>Chemical shift MRI is the preferred imaging</td>
<td></td>
</tr>
</tbody>
</table>

### CPT® Codes
- CT abdomen with contrast: CPT® 74160
- CT abdomen without and with contrast: CPT® 74170
- MRI abdomen without contrast: CPT® 74181
- MRI abdomen without & with contrast: CPT® 74183
- PET, skull base to mid-thigh: CPT® 78812
- PET/CT, skull base to mid-thigh: CPT® 78815

## AB-16.2 Normal Laboratory Values

### NORMAL VALUES

#### Aldosterone
- 3-10 ng/dl (supine)
- 5-30 ng/dl (upright)

#### Cortisol
- at 8am: 7-28 µgm/dL
- at 4 pm: 2-18 µgm/dL
- at 10pm: 50% of 8 am value in µgm/dL
AB-16.3 Adrenal Insufficiency

- CT abdomen without contrast (CPT®74150) or MRI abdomen without contrast (CPT®74181) is supported to determine the cause of primary adrenal insufficiency. Imaging is necessary if testing has confirmed adrenal insufficiency or adrenomyeloneuropathy.6,7

**Practice Notes**

The majority of “incidentalomas” are benign adenomas. The risk of primary adrenal carcinoma is as high as 5%. Metastases with history of malignancy are 25-75%. Routine screening for endocrine function is recommended since 5%-23% will be hormone secreting.

Resection or biopsy is often considered for mass lesions larger than 4 cm or hormone-secreting tumors should be resected.

Biopsy is often considered if pheochromocytoma is excluded.

Signs and symptoms of pheochromocytoma:

- Flushing spells and/or poorly controlled hypertension.
- Elevated plasma or urine metanephrines support the diagnosis of pheochromocytoma with sensitivity for diagnosis at 99.7%.

If plasma metanephrines are not elevated, a 24-hour urine for catecholamine and metanephrine levels should be obtained prior to considering advanced imaging.

If catecholamine and metanephrine levels are not elevated in a 24-hour urine test, then no advanced imaging is indicated unless unexplained symptoms suggestive of pheochromocytoma persist.

*Endocrine guidelines recommend biochemical evaluation in all incidental adrenal lesions with the exception of myelolipomas and cysts.

**Adenoma imaging characteristics:

<table>
<thead>
<tr>
<th>Findings consistent with Adenoma</th>
<th>Indeterminate for Adenoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT abdomen without contrast</td>
<td>≤ 10 Hounsfield Units</td>
</tr>
<tr>
<td>CT abdomen with contrast with washout calculated</td>
<td>≥ 60% absolute washout or ≥ 40% relative washout</td>
</tr>
<tr>
<td>Chemical Shift MRI</td>
<td>Signal drop out</td>
</tr>
</tbody>
</table>
Size > 4 cm or growth of a lesion are concerning for malignancy (although occasionally adenomas can demonstrate very slight growth on 6 to 12 month follow-up imaging)

References


ABDOMEN IMAGING GUIDELINES

SPECIFIC ABDOMINAL ORGANS - STRUCTURES

AB-17~Abdominal Aortic Aneurysm (AAA), Iliac Artery Aneurysm (IAA), and Visceral Artery Aneurysms
Follow-Up of Known Aneurysms and Pre-Op Evaluation

AB-17.1 Abdominal Aortic Aneurysm (AAA)

Non-Obese Individual
✓ Ultrasound (CPT® 76706) is the preferred initial imaging study to screen and (CPT®76775 to surveil for AAA or to evaluate a pulsatile abdominal mass.

Obese Individual
✓ CT abdomen with contrast (CPT®74160) can be substituted for US using the same timeline as non-obese individual

Screening
✓ One-time screening recommendations for AAA (Ultrasound (CPT®76706))
  o Men age 65 to 75 who have smoked
  o Women and non-smokers – no routine screening

Surveillance
✓ Surveillance recommendations for AAA (Ultrasound (CPT®76775))
  o 2.6-2.9cm → once at 5 years
  o 3.0-3.4cm → once at 3 years
  o 3.5-4.4cm → annually
  o 4.5-5.4 → every 6 months

✓ >5.4 cm. or aortic diameter has increased in size by 0.7 cm in six months or at least 1 cm in a year may undergo more frequent monitoring and should be evaluated by a Vascular Specialist.

Additional Imaging
✓ 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).
  o Preoperative imaging if endovascular or open repair of AAA is being considered
  o New onset of back and/or abdominal pain in an individual with a known AAA
Also see:
**PVD-6—Aortic Disorders, Renal Vascular Disorders, and Visceral Artery Aneurysms** in the Peripheral Vascular Disease Imaging Guidelines.

**Practice Note**
There is insufficient evidence to support the use of advanced imaging to screen for thoracic aortic aneurysm in individuals with known abdominal aortic aneurysm.

**AB-17.2 Iliac Artery Aneurysm (IAA)**

- Evaluation of a suspected IAA should begin with ultrasound.
  - If ultrasound is equivocal, CT pelvis with contrast (CPT®72193) may be performed.
  - Follow-up imaging studies can be performed annually

**Additional Imaging**

- CT of the abdomen and pelvis with contrast (CPT®74177), CT of the abdomen and pelvis without and with contrast (CPT®74178), or CTA abdomen and pelvis (CPT®74174).
  - Preoperative imaging if endovascular or open repair is being considered

**Practice Notes**

- Iliac artery aneurysms are most commonly associated with aortic aneurysms.
- Isolated IAA’s are rare.
- Approximately one third to one half of isolated IAA’s are bilateral at time of presentation.
- The majority of individuals are male and between 50 and 70 years old.
- The normal size of the iliac artery is <1cm.
- Aneurysm rupture usually occurs at a diameter of 5 cm or larger, whereas common iliac aneurysms that are less than 3 cm in diameter almost never rupture.
ABDOMEN IMAGING GUIDELINES

AB-17.3 Visceral Artery Aneurysm

Also see: PVD-6—Aortic Disorders, Renal Vascular Disorders, and Visceral Artery Aneurysms in the Peripheral Vascular Disease Imaging Guidelines

Reference

AB-18~Abdominal Aortic Aneurysm (AAA) and Iliac Artery Aneurysm (IAA)-Post Endovascular or Open Aortic Repair

AB-18.1 AAA, IAA, Post Endovascular or Open Aortic Repair

✓ Any one of the following studies can be used after aortic intervention:
  o CT of the abdomen and/or pelvis with contrast (CPT®74160 or CPT®72193 or CPT®74177), or
  o CT of the abdomen and/or pelvis without and with contrast (CPT®74170 or CPT®72194 or CPT®74178) or
  o CTA of the abdomen and/or pelvis (CPT®74175 or CPT®72191 or CPT®74174), or
  o MRA of the abdomen and/or pelvis (CPT®74185 and CPT®72198)

✓ Open Aortic Repair - every 3 years to screen for aneurysms in the remaining aorta

✓ Endovascular (Stent) Aortic Repair - 1 month, 6 months, and 12 months following repair, then every year
  o An additional study at 3 months can be performed if there was evidence of endoleak on the 1 month study.

✓ Any of the following studies can be used after endovascular iliac repair (stent):
  o CT pelvis (CPT®72193 or CPT®72194), or
  o CTA pelvis (CPT®72191), or
  o MRA pelvis (CPT®72198)

✓ Endovascular (Stent) Iliac Repair - 1 week, 1 month, 3 months, and 6 months after endovascular treatment, and then every 6 months thereafter.

References
AB-19~Aortic Dissection and Imaging for Other Aortic Conditions

AB-19.1 Aortic Dissection and other Aortic Conditions

✓ *Any* of the following studies can be used if acute dissection is suspected:
  o CT of the chest (CPT® 71260 or CPT® 71270) *and/or*
  o CT abdomen (CPT® 74160 or CPT® 74170) *and/or*
  o CT pelvis (CPT® 722193 or CPT® 722194) *or*
    ▪ If CT abdomen and pelvis with or with and without is requested, codes: (CPT® 74177 or CPT® 74178) are appropriate.
  o CTA of the chest (CPT® 71275) and/or CTA abdomen and/or pelvis (CPT® 74175 or CPT® 72191 or CPT® 74174), *or*
  o MRA of the chest and/or abdomen and/or pelvis (CPT® 71555 and/or CPT® 74185 and/or CPT® 72198)
  o See **CH-30~Thoracic Aortic** in the Chest Imaging Guidelines

AB-19.2 Imaging for Other Aortic Conditions

✓ Chest CTA (CPT® 71275) prior to minimally invasive or robotic surgery.
  (See also: **CD-1.10** in the Cardiac Imaging Guidelines.)
For diverticulitis, see: **AB-2.2 Abdominal Pain**

For mesenteric/colonic ischemia, see: **AB-6~Mesenteric/Colonic Ischemia**

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**AB-20~Bowel Obstruction And Gastroparesis**

### AB-20.1 Bowel Obstruction

- **✓** Plain X-rays of the abdomen (obstructive series) should be obtained as the initial study in individuals with suspected bowel obstruction.

- **✓** CT of the abdomen and pelvis with contrast (CPT®74177) may be used for:
  - Plain X-rays that are abnormal or equivocal
  - High index of suspicion for bowel obstruction (abdominal pain, vomiting, constipation, abdominal distention, failure to pass flatus), especially in individuals with prior history of abdominal surgery, history of malignancy, or individuals with current hernias.¹

- **✓** For bariatric surgery individuals, see: **AB-9.1 Bariatric Surgery**

---

**Reference**

AB-21~Diarrhea, Constipation, and Irritable Bowel

**AB-21.1 Acute and Persistent Diarrhea (up to 30 days)**

- Routine advanced imaging is not supported for acute, or persistent (up to 30 days) uncomplicated, including infectious diarrhea.

- Travel and dysenteric (including bloody) diarrhea should undergo biological assessment and antimicrobial treatment.

- CT of the abdomen and pelvis with contrast (CPT®74177) can be used if:
  - Suspected ischemia (see AB-6)
  - Older (over 50) individuals with significant abdominal pain
  - Previous gastric bypass
  - Acute abdomen suggesting bowel obstruction, toxic megacolon (abdominal swelling, fever, tachycardia, elevated white blood cell count), or perforation
  - Bloody stools
  - Immunocompromised
  - Persistent abdominal pain and at least one of the following:
    - Failure of conservative treatment for 4 weeks
    - History of cancer
    - Fever (101 degrees or greater)
    - Mass
    - GI bleeding
    - Moderate to severe abdominal tenderness
    - Guarding, rebound tenderness, or peritoneal signs
    - WBC 10,000 or greater

**AB-21.2 Chronic Diarrhea (more than 30 days)**

- Basic lab work including routine CBC, chemistries, as well as stool tests for pathogens should be done prior to advanced imaging.
  - If diarrhea is watery – a secretory or osmotic etiology should be identified
  - If diarrhea is bloody it is inflammatory – requiring colonoscopy
  - CT Abdomen, CT Abdomen and Pelvis, CT enterography, or MR enterography can be considered if both basic lab work and colonoscopy are negative
**AB-21.3 Constipation**

- After initial work-up, treatment of constipation is empiric medication or dietary trials.
- Colonoscopy if chronic constipation and any of the following: blood in the stool, anemia, or weight loss are present or if age appropriate colon cancer screening has not been performed.
- CT Abdomen and Pelvis (CPT®74177) if
  - Acute abdomen suggesting bowel obstruction, toxic megacolon (abdominal swelling, fever, tachycardia, elevated white blood cell count), or perforation.
  - Bloody stools.
  - Immunocompromised.
  - Previous gastric bypass.
  - Persistent abdominal pain and at least one of the following:
    - Failure of conservative treatment for 4 weeks.
    - History of cancer.
    - Fever (101 degrees or greater).
    - Mass.
    - GI bleeding.
    - Moderate to severe abdominal tenderness.
    - Guarding, rebound tenderness, or peritoneal signs.
    - WBC 10,000 or greater.
- MRI Defecography (MRI pelvis without contrast CPT®72195) can be considered only if ordered for preoperative evaluation for the planning of complex pelvic reconstruction.

**AB-21.4 Bloating and/or Irritable Bowel Syndrome**

- Advanced imaging is not needed for suspected or known Irritable Bowel Syndrome (IBS) which is a diagnosis of exclusion with the following symptoms:
  - Abdominal pain.
  - Change in frequency (diarrhea, constipation or both) and form of stool.
  - Relief of symptoms with defecation.
References


AB-22.1 GI Bleeding

✓ Endoscopy for upper GI bleeding as initial evaluation
✓ Colonoscopy for lower GI bleeding as initial evaluation
✓ CTA Abdomen (CPT®74175) or CTA Abdomen and Pelvis (CPT®74174) or CT Abdomen and Pelvis with contrast (CPT®74177):
  o Active bleeding and if endoscopy is negative
  o If conventional angiography is being considered
  o If surgery is being considered
  o If colonoscopy cannot be performed in an individual with GI bleeding
    ▪ CT Abdomen and Pelvis (CPT®74177) with contrast can be performed instead of CTA
  o GI bleeding and severe abdominal pain
  o GI bleeding and hemodynamic instability (shock)
✓ Gastrointestinal Bleeding Scintigraphy (CPT®78278) can be considered if there is brisk active bleeding with negative endoscopy.

✓ For TIPS placement, see AB-26.3 Portal Hypertension

AB-22.2 Small Bowel Bleed – Suspected

✓ If small bowel bleeding is suspected as the source of bleeding, and if upper and lower endoscopies are negative:
  o Video capsule endoscopy (VCE) is performed prior to advanced imaging.
  o VCE is not required prior to advanced imaging if small bowel obstruction or stricture is suspected.
  o CT enterography (CTE) if upper and lower endoscopy are negative and if VCE is negative. If there is a contraindication to CTE, Magnetic Resonance enterography (MRE) may be performed.
✓ Iron Deficient Anemia
  o If the bleeding is determined to be non-gastrointestinal (e.g., hematuria or vaginal bleeding), refer to the appropriate guideline for these conditions.
  o If the source is determined to be gastrointestinal:
- Upper endoscopy and colonoscopy should be performed unless contraindicated
- Small bowel video capsule endoscopy is next, if endoscopies are negative (unless contraindicated)
- CT Abdomen and Pelvis with contrast, CT enterography or MR enterography can be performed if small bowel video capsule endoscopy is negative or for further evaluation of abnormal video capsule findings
- Gastric Mucosa Imaging (CPT® 78261) study to determine if Meckel’s diverticulum (must have lower GI bleeding or unexplained anemia with guaiac positive stools)

References


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AB-23.1 IBD Rule Out Crohn’s Disease or Ulcerative Colitis

✓ Suspected Crohn’s Disease or Ulcerative Colitis
✓ Chronic diarrhea without “Red Flags” (see AB-2.1) refer to AB-21 “Diarrhea”
✓ CT Abdomen and Pelvis with contrast (CPT®74177) or CT enterography (CPT®74177) or MR enterography (CPT®74183 and 72197) if:
  o Acute abdomen suggesting bowel obstruction, toxic megacolon (abdominal swelling, fever, tachycardia, elevated white blood cell count), or perforation
  o Bloody stools
  o Immunocompromised
  o Previous gastric bypass
  o Persistent abdominal pain and at least one of the following:
    ▪ Failure of conservative treatment for 4 weeks
    ▪ History of cancer
    ▪ Fever (101 degrees or greater)
    ▪ Mass
    ▪ GI bleeding
    ▪ Moderate to severe abdominal tenderness
    ▪ Guarding, rebound tenderness, or other peritoneal signs
    ▪ WBC 10,000 or greater

AB-23.2 Known IBD

✓ Known Crohn’s Disease or Ulcerative Colitis with suspected complications including abscess, perforation, fistula or obstruction, or monitoring response to therapy:
  o CT Abdomen and Pelvis with contrast (CPT®74177), CT enterography (CPT®74177) or MR enterography.

AB-23.3 Rectal Disease

✓ Rectal/Peri-Rectal evaluation for fistula
  o Endoscopic ultrasound, rectal ultrasound (CPT®76872), MRI pelvis without and with contrast (CPT®72197), or CT pelvis with contrast (CPT®72193)²,³

AB-23.4 Primary Sclerosing Cholangitis (PSC)

✓ Primary Sclerosing Cholangitis
  o MRCP should be considered, after an ultrasound excludes biliary obstruction, in those:
    ▪ With IBD and elevated liver enzymes (any above normal)
    ▪ Without IBD persistent cholestatic liver tests
  o Annual screening for cholangiocarcinoma in individuals with PSC can be done with US or MRI/MRCP.⁶-⁸
✓ SPECT, PET and PET/CT Enterography are considered investigational4

**Practice Notes:**
Primary sclerosing cholangitis (PSC) is a chronic liver and biliary tract disease that can result in stricturing and fibrosis of the intra- and extra- hepatic biliary ducts, as well as end-stage liver disease. It is most often associated with inflammatory bowel disease. Biliary obstruction can occur anywhere along the biliary tree, resulting in cholangitis, and there is a high risk of the development of cholangiocarcinoma, which must be strongly considered in individuals with PSC and a dominant stricture, as well as an increased risk of gallbladder polyps and other malignancies. As such, imaging plays an important role in the diagnosis and follow-up of PSC.

**AB-23.5 Special Considerations**
✓ 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.

**References**
AB-24.1 Celiac Disease

✓ Diagnosis is made by blood testing¹:
  o Anti-tissue transglutaminase antibody (anti-tTg), anti-endomysium antibody (EMA), total IgA count, CBS to detect anemia, iron studies, ESR, C-reactive protein, complete metabolic panel, vitamin D, vitamin E, vitamin B12 levels
  o Endoscopy and biopsy of the small bowel is performed to confirm the diagnosis if the anti-tTG and EMA tests are positive.

✓ CT abdomen and pelvis with contrast (CPT 74177) or CT Enteroclysis (CPT 74176 or CPT 74177) is appropriate for:
  o One time study after initial, confirmed diagnosis of Celiac Disease
  o Confirmed celiac disease and the individual is experiencing new or continued weight loss, diarrhea, abdominal distention, or anemia despite adherence to a gluten free diet.

Practice Notes

Celiac is an autoimmune disease in which the villi of the small intestine are damaged from eating gluten (found in wheat, barley, and rye).

Reference

**AB-25.1 CTC**

- **Screening CTC** (CPT®74263) for colorectal cancer\(^1,2,3\):
  - Every 5 years in average-risk individuals ages 50 to 75 (average risk is defined as no history of adenoma and inflammatory bowel disease and negative for first degree family history of colorectal cancer) unless one of the following has been completed:
    - gFOBT (guaiac-based fecal occult blood test) or FIT (fecal immunochemical test) within one year;
    - FIT-DNA (multitargeted stool DNA test) within the last one year;
    - Colonoscopy within the last 5 years

- **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\(^4\):
    - Coagulopathy
    - Intolerance to sedation
    - Elderly greater than or equal to 80 years of age
    - Recent (within the last 60 days) myocardial infarction (MI)

**References**

AB-26~Cirrhosis And Liver Screening for Hepatocellular Carcinoma (HCC); Ascites and Portal Hypertension

**AB-26.1 Cirrhosis and Liver Screening for HCC**

- The American Association for the Study of Liver Diseases (AASLD) no longer considers serum alpha-fetoprotein (AFP) a good test to use in surveillance and has excluded its use in their screening algorithms.
- Due to its difficulty in differentiating between hepatocellular carcinoma (HCC) and intrahepatic cholangiocarcinoma (ICC), AASLD does not suggest the use of contrast-enhanced ultrasound imaging (CEUS C9744) of the cirrhotic liver for the further delineation of a suspicious liver lesion found on a routine surveillance ultrasound.
- Ultrasound every 6 months in the presence of chronic liver disease.
- If liver nodule identified:
  - Less than 1 cm – repeat US in 3 months, then every 3-6 months if stable for 2 years, then return to US every 6 months screening.
  - Greater than or equal to 1 cm:
    - Multiphase CT or MRI should be performed.
    - If not characteristic of HCC, repeat whichever study was done initially (CT or MRI) or biopsy.
    - If second advanced imaging is not diagnostic then biopsy.
- Advanced imaging may be appropriate if the US is technically limited by such factors as obesity, intestinal gas, or chest wall deformity.
- First ultrasound can be CP76700 or CPT®76705.
- Follow-up ultrasounds should be CPT®76705.

**AB-26.2 Ascites**

- All initial evaluations require Abdominal Ultrasound with diagnostic paracentesis to determine the need for advanced imaging.
AB-26.3 Portal Hypertension
✓ All initial evaluations require abdominal US (Duplex Doppler US of the liver and upper abdomen) (CPT® 93975) to assist in determining the cause (pre-hepatic, intrahepatic presinusoidal, and post-hepatic; portal vein or hepatic vein thrombosis) or prior to Transjugular Intrahepatic Portosystemic Shunt (TIPS) advanced imaging
  o TIPS advanced imaging
    ▪ CTA or MRA may be indicated when surgical or radiologic interventions are planned.
    ▪ US is usually the first study to evaluate the portal circulation prior to TIPS placement
    ▪ Follow-up scanning is important and is usually done by US with color Doppler Imaging
    ▪ CT or MRI is used to evaluate stent patency if preceded by an indeterminate US or if there is a negative US with clinical signs of worsening portal hypertension
  o Certain requests are made for advanced imaging to evaluate an individual with cirrhosis for the presence of esophageal varices. In general, and in the absence of a contraindication, endoscopy should be performed in individuals to assess for the presence of varices and should be repeated in 1 to 3 year intervals, depending on the findings and circumstances.

✓ Fatty Liver
  o See: AB-29 Liver Lesion

✓ Liver Transplant:
  o See: AB-42.1 Liver Transplant

References
MRCP is an alternative to endoscopic retrograde cholangiopancreatography (ERCP) for evaluating the biliary system and pancreatic ducts. It should not be used if there is a high probability of biliary obstruction based on CT or endoscopic ultrasound (EUS) and if therapeutic intervention will likely be needed. In this situation ERCP should be used.1

AB-27.1 MRCP

- Rule out pathology in the biliary system or pancreatic duct.
  - Examples include:
    - Suspected or known gallstone pancreatitis
    - Suspected biliary pain
    - Pancreatic pseudocyst (for preoperative cyst drainage and/or pancreatic trauma with suspected duct injury)
    - Pancreatic trauma
    - Recurrent acute pancreatitis with no known cause

- Preoperative planning
- Evaluation of congenital anomaly of pancreaticobiliary tract
- Altered biliary anatomy that precludes ERCP (e.g. post-surgical distorted anatomy)
- Failed ERCP in an individual who needs further investigation
- Evaluation of pancreaticobiliary anatomy proximal to a biliary obstruction that cannot be opened by ERCP
- ERCP is indicated but is not available, is contraindicated, or is expected to be difficult
  - Examples include coagulopathy, severe cardiopulmonary disease, allergy to iodinated contrast, distorted anatomy, pregnant individual
- Requests for 3D rendering do not need to be sent to MD for review when criteria are met for MRCP as indicated above
Coding Notes

Code assignment for MRCP
- There is no CPT® code that specifically describes MRCP.
- To report an MRCP, select one of these codes: CPT®74181 or CPT®74183. The specific MRI code should be selected based on whether or not intravenous contrast was administered.
- Reporting/billing a second MRI code, to represent the “MRCP portion” of the study, is not supported.

References
AB-28.1 Jaundice

✓ Ultrasound\(^1\) (CPT\(^\circ\)76700 or CPT\(^\circ\)76705) is the preferred initial imaging study to visualize the biliary ductal system when pain is present. Ultrasound often demonstrates the level and cause of any obstruction.

✓ Abdomen CT\(^2\) without and with contrast (CPT\(^\circ\)74170) or Abdomen CT with contrast (CPT\(^\circ\)74160) should be considered in the following scenarios:

  o If non-diagnostic or equivocal ultrasound
    ▪ e.g., large amounts of intestinal gas
  o Individual is obese
  o Painless jaundice
  o Acute abdominal pain and one of following: fever, previous biliary surgery, or known cholelithiasis.
  o If there is high pretest probability of obstruction due to malignancy\(^1\)

✓ MR cholangiopancreatography (MRCP) (See AB-27~MRCP) may be used to assess the extent and cause of intrahepatic bile duct obstruction:

  o Suggested by either ultrasound or CT if further characterization is warranted.
  o Contraindications to the use of IV contrast for CT imaging.

AB-28.2 Gallbladder Polyps

✓ Incidentally identified polyps less than 6 mm in size do not require further follow-up

✓ The following polyps typically are not imaged in follow-up with US and excised as cholecystectomy in surgical candidate:
  o \(>\text{=} 10\) mm
  o Any size and one of the following:
    ▪ Symptomatic from the gallbladder polyp
    ▪ Associated with primary sclerosing cholangitis
    ▪ Age older than 50
  o At any time if enlarging or worsening in character

✓ Ultrasound (CPT\(^\circ\)76700 or CPT\(^\circ\)76705) should be considered for polyps 6 to 9 mm in size 6 months after the initial finding
Practice Notes
Caused by an inherited gene mutation, Gilbert’s Syndrome is a liver condition in which the liver doesn't properly process a substance called bilirubin. It is often detected incidentally when a blood test shows elevated bilirubin levels.

Normal Values:
✓ Bilirubin (total) 0.2-1.0 mg/dl
✓ Bilirubin (conjugated) 0-0.2 mg/dl

References
   http://www.acr.org/~/media/553B1108216749ECAD662580FEBF1F0.pdf.
AB-29~Liver Lesion Characterization

AB-29.1 Liver Lesion Characterization

- No further diagnostic imaging is needed if:
  - Simple cyst or hemangioma
  - Benign on biopsy
  - Fatty liver (steatosis) without findings suspicious for a focal liver lesion(s)

- Ultrasound (CPT®76700 or CPT®76705) or ultrasound with contrast (C9744) should be considered:
  - For suspected hepatomegaly
  - For suspected simple cyst
  - For initial study if suspect liver lesion without history of malignancy

- Abdominal MRI or CT are the best studies to evaluate an indeterminate liver lesion (ACR, 2014)\textsuperscript{11,12}

- Ultrasound with contrast (CEUS, C9744) is only considered, when MRI or CT could not be performed, and the clinical situation requires ultrasound contrast (C9744) to delineate further the nature of the lesion.

See: AB-26 Cirrhosis

<table>
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<td>See Cirrhosis (AB-26)</td>
<td>See Cirrhosis (AB-26)</td>
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<tr>
<td>Liver lesion with significant risk factors such as a history of malignancy, elevated tumor markers, or unintentional weight loss</td>
<td>multiphase CT or MRI</td>
<td>If indeterminate, follow-up CT or MRI every 6 months for 2 years, and then annually, to establish any growth patterns and assess for malignant transformation.</td>
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<tr>
<td>Incidental lesions on US or CT without a dedicated liver protocol</td>
<td>multiphase CT or MRI</td>
<td>If indeterminate, follow-up CT or MRI every 6 months for 2 years, and then annually, to establish any growth patterns and assess for malignant transformation.</td>
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<tr>
<td><strong>Suspected Hepatic Adenoma</strong></td>
<td>MRI is considered the best technique for characterization.</td>
<td>Follow-up CT or MRI every 6 months for 2 years, and then annually, to establish any growth patterns and assess for malignant transformation.</td>
<td>Risks include spontaneous rupture, and rarely, malignant transformation. Almost all cases of rupture occur in lesions &gt; 5 cm in size. HCAs &lt; 5 cm are generally managed conservatively, with discontinuation of OCPs or anabolic steroids.</td>
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<tr>
<td><strong>Hepatic Hemangioma (HH)</strong></td>
<td>Multiphase CT and MRI are reliable in establishing the diagnosis.</td>
<td>Follow-up imaging is not required if the advanced imaging study demonstrates classic features of hemangioma. The exception is giant hemangiomas (&gt; 4 cm) in which follow up ultrasound can be obtained because of the increased risk of complications.</td>
<td>Most common benign hepatic tumor.</td>
</tr>
<tr>
<td><strong>Focal Nodular Hyperplasia (FNH)</strong></td>
<td>MRI without or with or multiphase CT to confirm a diagnosis of FNH. The use of Eovist® in MRI imaging may be useful in distinguishing focal nodular hyperplasia from hepatocellular adenoma.</td>
<td>FNH based on prior imaging characteristics or biopsy and are NOT using oral contraceptives do not require follow-up imaging. Follow-up annual US for 2 to 3 years is appropriate in women diagnosed with FNH who are continuing to use OCPs. Follow-up with MRI or CT can be done if the lesion is not adequately visualized on US.</td>
<td></td>
</tr>
<tr>
<td>Hepatic cysts</td>
<td>US shows internal septations, fenestrations, calcifications, irregular walls, as well as the presence of daughter cysts should be evaluated with CT or MRI for features of biliary cystadenoma or a hydatid cyst.</td>
<td>Asymptomatic, simple cysts do NOT require additional follow-up.</td>
<td>Simple hepatic cysts are not felt to be precursors to biliary cystadenomas or cystadenocarcinomas. The vast majority of cysts are benign.</td>
</tr>
</tbody>
</table>

- Other indications for MRI abdomen without and with contrast (CPT® 74183), CT abdomen without and with contrast (CPT® 74170), or CT abdomen with contrast (CPT® 74160):
  - Percutaneous liver biopsy is to be considered if imaging is atypical or inconclusive
  - Diagnosis for HCC is done with imaging, biopsy is not needed for diagnosis\(^5\)
  - Suspected liver metastases; see ONC-31.2 Liver Metastases
  - Fatty liver on US with a focal liver lesion(s)

- Further evaluation
  - MRI abdomen without and with contrast (CPT® 74183) can be considered if an initially performed CT abdomen without and with contrast (CPT® 74170) or CT abdomen with contrast (CPT® 74160) is equivocal
  - MRA abdomen (CPT® 74185) or CTA abdomen (CPT® 74175) for preoperative study in individuals with large hemangiomas or adenomas considered for resection

**Practice Notes:**
If fatty infiltration is demonstrated by US, neither CT nor MRI can distinguish between steatosis or steatohepatitis. Clinically, additional workup of fatty liver is biochemical, serologic, and may include a liver biopsy as potential etiologies are sought.
References


ABDOMEN IMAGING GUIDELINES

AB-30~Elevated Liver Function (LFT) Levels

AB-30.1 Elevated Liver Function Levels

✓ Ultrasound (CPT®76705) or CT¹,² of the abdomen without and with contrast (CPT®74170), CT of the abdomen with contrast (CPT®74160) or MRI of the abdomen without and with contrast (CPT®74183) for:
  o Elevation of LFTs of AST and/or ALT less than two times normal if:
    • Persistent elevation of AST or ALT after 3 weeks, with discontinuation of lipid lowering medications (statins, niacin, sulfa, rifampin, tetracycline, estrogen, acetaminophen, etc.) if applicable
  o Elevation of LFTs of AST and/or ALT greater than or equal to two times normal
  o Known cancer and suspected liver metastases
  o Elevated alpha-fetoprotein (AFP) levels

✓ For Jaundice, see AB-28~Jaundice

✓ MRCP can be considered if biliary dilatation is seen on ultrasound or CT
  o (See AB-27~MRCP for coding guidelines for MRCP)

✓ Primary Sclerosing Cholangitis see AB-23.4~ Primary Sclerosing Cholangitis (PSC)

Practice Notes
The enzymes included in this category are AST, ALT, alkaline phosphatase, GGT, and bilirubin.

References
ABDOMEN IMAGING GUIDELINES

AB-31~Pancreatic Lesion

AB-31.1 Pancreatic Lesion

Screening studies for pancreatic cancer can be considered in those who are considered high risk in the following guideline: **ONC-13~Pancreatic Cancer** in the Oncology Imaging Guidelines.

- These guidelines do not pertain to solid papillary lesions, cystic adenocarcinoma, neuroendocrine tumors, or “main duct” intraductal papillary mucinous neoplasms due to its significantly higher risk of malignancy (compared to the more common side-branch IPMN, to which these guidelines do apply).

- Advanced imaging is no longer required if:
  - No significant change in the characteristics of the cyst after 5 years of surveillance or if the individual is no longer a surgical candidate.
  - No routine surveillance if there was no high-grade dysplasia or malignancy in the surgically resected cyst.

AB-31.2 Pancreatic Lesion (Incidental Pancreatic Cyst)

- Abdominal CT (CPT®74170) preferably, thin slice or MRI with and without contrast (CPT®74183) for any of the following:1,2
  - Every 12 months after the initial incremental finding if < 1 cm in size
  - Every 6 to 12 months after the initial finding if 1 to 2 cm in size
  - Every 3 to 6 months after the initial finding if greater than 2 cm in size

- The following lesions should be evaluated by endoscopic ultrasound (EUS) and MRCP1,2:
  - Pancreatic lesions > 3 cm; or
  - Pancreatic lesions of any size with concerning features (mural nodules, dilated duct, pain, positive cytology, jaundice, worsening diabetes, etc.).
  - See **AB-27~MRCP** for coding guidelines for MRCP.

- Pancreatic cysts < 3 cm without a solid component or a dilated pancreatic duct:
  - MRI abdomen without and with contrast surveillance in 1 year and then every 2 years for a total of 5 years if there is no change in size or characteristics. Surveillance is then discontinued after 5 years.

- Pancreatic cysts with at least 2 high risk features, such as (1) ≥ 3 cm, (2) dilated main pancreatic duct, or the presence of (3) an associated solid component
  - Endoscopic ultrasound-fine needle aspiration.
If the EUS-FNA results are not concerning, MRI surveillance should be done at 1 year, and then every 2 years to ensure no change in risk of malignancy. Requests for earlier imaging for individuals in this category can be considered.

Concerning Features:
- Significant changes in the characteristics of the cyst, including the development of a solid component, increasing size of the pancreatic duct and/or diameter ≥ 3 cm, are indications for EUS-FNA,
- Both a solid component and a dilated pancreatic duct or other concerning features on EUS and FNA should undergo surgery to reduce the risk of mortality from carcinoma.

Post-surgical surveillance after removal of a pancreatic cyst

MRI abdomen every 2 years if there was invasive cancer or dysplasia in the surgically resected cyst.

AB-31.3 Pancreatic Lesion (Incidental Pancreatic Mass or Suspected Metastatic Disease to Pancreas)

CT abdomen with contrast with dual phase imaging (CPT®74160), or CT abdomen without and with contrast (CPT®74170) (dedicated pancreatic protocol) since the majority of pancreatic tumors will enhance following IV contrast).

Practice Notes:
In April, 2015, the American Gastroenterological Association (AGA) issued a technical review on the diagnosis and management of asymptomatic neoplastic pancreatic cysts. The AGA notes that these guidelines are conditional as the level of evidence if fairly low but are advocated as a rational approach based on current knowledge and a very extensive review of the literature.

References
ABDOMEN IMAGING GUIDELINES

AB-32~Pancreatic Pseudocysts

AB-32.1 Pancreatic Pseudocysts

✓ CT of the abdomen with contrast (CPT®74160), or without and with contrast (CPT®74170),¹ ² or abdominal MRI without and with contrast (CPT®74183)
  o Minimal symptoms - every 2 weeks, up to 6 weeks total. Thereafter, every 4 weeks.
  o Anytime symptoms worsen, including development of ascites or pleural effusion, increasing serum amylase, or if drainage of the cyst is planned.

✓ MRCP for preoperative planning cyst drainage:
  o See AB-27~MRCP for coding guidelines for MRCP

✓ MRCP for pancreatic trauma with suspected duct injury or pseudocyst

Practice Notes
Endoscopic ultrasound has increasingly become an important imaging modality in evaluating pseudocysts.²

References
AB-33.1 Pancreatitis

- Ultrasound² (CPT®76700 or CPT®76705) is the first study to evaluate:
  - Mild and uncomplicated symptoms of epigastric pain described as uncomfortable without guarding to rule out gallstone disease
  - If ultrasound suggests uncomplicated pancreatitis, then advanced imaging is not necessary. For complicated pancreatitis, see below.

- CT abdomen² with contrast (CPT®74160), without contrast (CPT®74150) or without and with contrast (CPT®74170)
  - Suspected complications including peripancreatic effusions, pseudocysts, abscess, and pancreatic necrosis
  - Lipase and/or amylase greater than or equal to three times the upper limit of normal and any one of the following:
    - Fever (101 degrees or greater)
    - Elevated WBC (10,000 or greater)
    - Mass
    - No improvement with medical therapy
  - Suspected pancreatitis and ultrasound findings do not explain symptoms (gallstones, common duct, etc.)
  - Plain abdominal X-ray (KUB) and ultrasound (CPT®76700 or CPT®76705) are not characteristic and diagnostic in known chronic pancreatitis

- MRI without and with contrast² (CPT®74183) is considered if:
  - CT is contraindicated and CT indications met or equivocal

- MR cholangiopancreatography¹,² can be considered if:
  - Suspected gallstone pancreatitis to screen for those individuals who would benefit from ERCP
  - Recurrent, acute pancreatitis with no known cause
  - Evaluation of individuals with suspicion of pancreatic ductal anomalies that may predispose individuals to pancreatitis
  - Plain abdominal X-ray (KUB) and ultrasound (CPT®76700 or CPT®76705) are not characteristic and diagnostic in known chronic pancreatitis and findings will affect management decisions
  - MRCP—See: AB-27~MRCP for coding guidelines for MRCP
Practice Notes

The diagnosis of acute pancreatitis is often made by fulfilling two of the following three (3) conditions:

1. Typical pain (acute onset of epigastric pain radiating to the back that is persistent without relief, frequently associated with nausea and vomiting, and associated with severe epigastric tenderness and/or guarding, and/or fever)
2. Lipase and/or amylase greater than or equal to three times the upper limit of normal
3. Typical characteristics of pancreatitis on CT abdomen

Chronic pancreatitis that is suspected as evidenced by recurrent characteristic pancreatic pain, symptoms of maldigestion/malabsorption that improve with digestive enzymes, does not require the use of advanced imaging

For known chronic pancreatitis including hereditary pancreatitis, there is no evidence-based data supporting screening

Acute pancreatitis is divided clinically into non-severe (previously called mild) and severe pancreatitis.3

- Non-severe pancreatitis represents interstitial edematous pancreatitis, and severe pancreatitis manifests as necrotizing pancreatitis or as pancreatitis associated with organ failure.
- Serum enzyme levels do not correlate with the severity of the disease
- Clinical scoring systems and imaging tests have been advocated to classify individuals in terms of severity.
- The diagnosis may be overlooked in the absence of typical enzyme elevation; in some individuals, acute pancreatitis may be present in the absence of enzyme abnormalities

References

ABOMEN IMAGING GUIDELINES

AB-34~Spleen

**AB-34.1 Spleen**

- Ultrasound ¹ (CPT®76700 or CPT®76705) is considered the initial imaging modality for:
  - Incidental cystic splenic lesion seen on a non-abdominal imaging study
    - Splenic cysts < 5 cm in diameter should be followed yearly or until new symptoms present.
    - Splenic cysts 5 cm or greater should be referred for surgical evaluation.
  - Splenomegaly

- CT² abdomen without and with contrast (CPT®74170) or CT abdomen with contrast should be considered when:
  - Ultrasound is indeterminate or shows an abnormality
  - Incidental non-cystic splenic lesion is seen on a non-abdominal imaging study
  - Pre-operative for splenectomy

- MRI² abdomen without and with contrast (CPT®74183) should be considered when:
  - CT is indeterminate or IV contraindicated
  - Pregnant women with indeterminate or abnormal ultrasound

**AB-34.2 Trauma - Spleen**

- Ultrasound of the abdomen (CPT®76700 or CPT®76705) and pelvis (CPT®76856 or CPT®76857) or CT³,⁴,⁵ of the abdomen and pelvis without and with contrast (CPT®74178) or with contrast are indicated in individuals with blunt abdominal trauma with suspected splenic rupture or in individuals with penetrating trauma to the left upper quadrant.
  See: AB-10~Blunt Abdominal Trauma

**Practice Notes**

Splenomegaly is usually the result of systemic disease, and diagnostic studies are directed toward identifying the causative disease. Complete blood count with differential, LFTs, and peripheral blood smear examination are often performed prior to considering advanced imaging. There is no evidence-based data to support performing serial CT or MRI to follow individuals with incidental splenic lesions.
References


ABDOMEN IMAGING GUIDELINES

AB-35~Indeterminate Renal Lesion

For acute flank pain, rule out renal stone, see: AB-4~Flank Pain

**AB-35.1 Indeterminate Renal Lesion**

### Newly Discovered Renal Mass, Any Size (indeterminate by the initial test)

<table>
<thead>
<tr>
<th>Initial Imaging (Step 1)</th>
<th>Secondary Imaging (Step 2)</th>
<th>Tertiary Imaging or Biopsy (Step 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrasound (CPT®76770 or CPT®76775); or CT abdomen without and with contrast (CPT®74170)</td>
<td>No further imaging if: • Simple cyst or other benign lesion (e.g. Bosniak 1 or 2, angiomyolipoma without calcifications); or • Biopsy makes the definitive diagnosis of angiomyolipoma, metanephric adenoma, or focal infection</td>
<td>No further imaging if: • Benign on CT/MRI (e.g. Bosniak 1 or 2, or angiomyolipoma without calcifications) or • Biopsy diagnosis of angiomyolipoma or focal infection</td>
</tr>
<tr>
<td>Otherwise, imaging as follows: • CT of the abdomen without and with contrast (CPT®74170); or • MRI of the abdomen without and with contrast (CPT®74183)</td>
<td>Follow-up imaging with original diagnostic modality (US, CT or MRI) 6 to 12 months, then annually for 5 years if: • indeterminate on either CT/MRI or biopsy or • biopsy nonmalignant</td>
<td></td>
</tr>
</tbody>
</table>

### Practice Notes

The most common renal mass is a cyst. The Bosniak Classification may be helpful to evaluate renal cysts. This classification relates CT renal cyst characteristics and their relationship with malignancy and need for follow-up:

<table>
<thead>
<tr>
<th>Bosniak Class</th>
<th>Characteristic</th>
<th>Work-Up</th>
<th>% Malignant</th>
</tr>
</thead>
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<tr>
<td>Bosniak 1</td>
<td>Simple cyst, anechoic, imperceptible wall, rounded</td>
<td>Nil</td>
<td>~0</td>
</tr>
<tr>
<td>Bosniak 2</td>
<td>Minimally complex, single thin (&lt; 1mm) septations, thin Ca++; non-enhancing high-attenuation renal lesions of less than 3 cm are also included in this category; these lesions are generally well marginated.</td>
<td>Nil</td>
<td>~0</td>
</tr>
<tr>
<td>Bosniak 2F</td>
<td>Minimally complex. • Increased number of septa, minimally thickened or enhancing septa or wall • Thick Ca++, • Hyperdense cyst that is: &gt; 3 cm diameter, mostly intrarenal (less than 25% of wall visible); no enhancement</td>
<td>Ultrasound / CT follow up</td>
<td>~5</td>
</tr>
<tr>
<td>Bosniak 3</td>
<td>Indeterminate, thick or multiple septations, mural nodule, hyperdense on CT (see 2F)</td>
<td>Partial nephrectomy or RF ablation, in elderly/poor surgical risk</td>
<td>~50</td>
</tr>
<tr>
<td>Bosniak 4</td>
<td>Clearly malignant, solid mass with cystic spaces</td>
<td>Partial/total nephrectomy</td>
<td>&gt;80</td>
</tr>
</tbody>
</table>

**References**

AB-36.1 Renal Failure

- Ultrasound (CPT® 76770 or CPT® 76775) of the kidney and bladder, preferably with Doppler (CPT® 93975 or CPT® 93976), is the preferred imaging study for in the evaluation of acute or chronic renal failure.

- MRA abdomen (CPT® 74185) can be utilized when suspected:
  - Renal vein/caval thrombosis
  - Renal artery stenosis as cause of renal failure

- CT abdomen without contrast (CPT® 74150) is not needed except to rule out ureteral obstruction or retroperitoneal mass.

References
AB-37.1 Renovascular Hypertension

✓ MRA without or with contrast (CPT®74185) or CTA with contrast (CPT®74175) of the abdomen if:
  - Resistant to three blood pressure medications and two serial blood pressure measurements (>140/90 without history of diabetes or renal disease or >130/80 with diabetes or renal disease)
    ▪ Home blood pressure measurements thwarting “white coat syndrome” and other secondary causes may improve accuracy.
  - Anyone under 40 years old with hypertension.
  - Sudden onset of significant hypertension (generally >160/100) or flash pulmonary edema.
  - Women who develop hypertension (≥140/90) within the first 20 weeks of pregnancy, if the hypertension persists >12 weeks post-partum.
  - Previously stable hypertension, with worsening hypertension or worsening renal function/increasing creatinine (especially after the administration of an ACE inhibitor or with angiotensin receptor blocking agent).
  - Unexplained atrophic kidney or discrepancy in size between kidneys of greater than 1.5 cm.

✓ US kidney retroperitoneal (CPT®76775) AND/OR Doppler(CPT®93975 or CPT®93976) if expertise is available.

References

AB-38~Polycystic Kidney Disease

AB-38.1 Polycystic Kidney Disease

✓ Ultrasound\(^1\) (CPT\(^\text{®}\)76770 or CPT\(^\text{®}\)76775) can be performed for:
  o Suspected polycystic kidney disease
  o Screening individuals at risk for autosomal dominant polycystic disease (ADPKD)

Reference

AB-39~Hematuria and Hydronephrosis

AB-39.1 Hematuria with Urinary Tract Infection (UTI)
✓ Signs and symptoms of UTI (urinary frequency, burning on urination, positive urine leukocyte esterase, presence of WBCs in the urine, fever, elevated WBC>10,000):
✓ Females ≤ 40 years of age should receive at least a 3-day regimen of antibiotics followed by repeat dipstick urinalysis or complete urinalysis with microscopic exam. If the hematuria resolves, advanced imaging is not indicated. If symptoms persist, may receive CT Urogram (CPT®74178)
✓ Females >40 years of age, may undergo CT urogram1 (CPT®74178)
✓ Males with UTI should be imaged, see: AB-40~Urinary Tract Infection

AB-39.2 Hematuria, not Related to Urinary Tract Infection (UTI) or Flank Pain
✓ CT Urogram (CPT®74178)
✓ Evidence of primary generalized renal disease should have renal US (CPT®76770 or CPT®76775) in order to determine renal volume and morphology, prior to considering advanced imaging including CT Urogram.

AB-39.3 Hematuria and Flank Pain (suspicion for renal/urethral stones)
✓ CT abdomen and pelvis without contrast (CPT®74176) or CT Urogram (74178)

AB-39.4 Hydronephrosis of Explained or Indeterminate Cause
✓ CT Urogram (CPT®74178)

References
ABDOMEN IMAGING GUIDELINES

AB-40~Urinary Tract Infection (UTI)

✓ These guidelines refer to UTI without Hematuria.

✓ For UTI with Hematuria, See AB-39~Hematuria

**AB-40.1 Upper (Pyelonephritis)**

✓ CT abdomen and pelvis without and with contrast (CPT®74178) or CT abdomen and pelvis with contrast (CPT®74177) if:
  - Suspected complicated: diabetes, immune-compromised, history of stones, prior renal surgery, elevated creatinine, or fever ≥101 F (≥38.5 C)
  - Not responding to therapy after 3 days
  - Recurrent pyelonephritis (at least 1 prior pyelonephritis)
  - Males with first time UTI, or recurrent UTI without etiology

✓ Pregnant women should be evaluated initially by renal ultrasound2 (CPT®76770 or CPT®76775) and if further imaging is necessary, MRI abdomen and pelvis3 (contrast as requested).

**AB-40.2 Lower**

✓ CT abdomen and pelvis without and with contrast (CPT®74178) if:
  - Suspected complicated: diabetes or immunocompromised or history of stones or prior renal surgery, elevated creatinine or fever ≥101 F(≥ 38.5 C)
  - Not responding to therapy after 3 days
  - Males with first time UTI, or recurrent UTI without etiology
  - Recurrent UTI >3 per year
  - Recommendation by urologist or specialists

✓ MRI pelvis without and with contrast (CPT®72197) if:
  - Suspected urethral diverticulum or other urethral abnormalities

✓ Also see PV-13~Periurethral Cysts and Urethral Diverticula in the Pelvis Imaging Guidelines.

**References**

AB-41.1 Patent Urachus

✓ CT Pelvis with contrast (CPT®72193) can be performed if ultrasound (CPT®76700 or CPT®76705) is equivocal, or if needed for surgical planning.¹ ²

Practice Note

The urachus is a “tube” connecting the fetal bladder to the umbilical cord. It is usually obliterated during fetal growth, but if it remains patent, there can be a connection between the bladder and the umbilicus.

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ABDOMEN IMAGING GUIDELINES

**AB-42.1 Liver Transplant, Pre-Transplant**

Individuals on the liver transplant waiting list can undergo advanced imaging per the participating institution’s protocol, as long as the studies do not exceed the following:

See: **CD-1.6 Transplant Individuals** in the Cardiac Imaging Guidelines for guidelines on cardiac stress testing

- **If no known Hepatocellular Carcinoma**:  
  o Liver ultrasound (CPT®76705) with Doppler (CPT®93975) every six months  
  o CT or MRI abdomen (CPT®74170 or CPT®74183) every year  
  o CT chest (CPT®71260) for initial placement on the transplant list, but repeat chest CT is not required  
  o MRI Bone Marrow Blood Supply (CPT®77084) or bone-scan one time

- **If known Hepatocellular Carcinoma**:  
  o Liver ultrasound (CPT®76705) with Doppler (CPT®93975) every six months  
  o CT or MRI abdomen (CPT®74170 or CPT®74183) every three months  
  o CT chest (CPT® 71260) every six months  
  o Bone scan every six months

- **If known Primary Sclerosing Cholangitis (PSC)**  
  o MRCP (see: **AB-27~MRCP** for correct reporting/coding)

- **Pre-operative studies immediately prior to liver transplant**:  
  o CT or MRI abdomen (CPT®74170 or CPT®74183)  
    - If CT abdomen was most recently done while on the transplant waiting list, then MRI abdomen should be done immediately prior to transplant and vice versa  
  o CT pelvis (CPT®72193)  
  o CTA abdomen (CPT®74175) or MRA abdomen (CPT®74185)  
  o CT chest (CPT®71260)  
  o MRI Bone Marrow Blood Supply (CPT®77084) or bone scan

**AB-42.2 Liver Transplant, Partial Liver Transplant Donors**

- Donors for partial liver transplant can be evaluated with CT of the abdomen without and with contrast (CPT®74170) or MRI of abdomen without and with contrast (CPT®74183) prior to transplant
ABDOMEN IMAGING GUIDELINES

AB-42.3 Liver Transplant, Post-transplant

See: CD-1.6 Transplant Individuals in the Cardiac Imaging Guidelines for guidelines on stress testing

✓ If known Hepatocellular Carcinoma:
  o CT or MRI abdomen (CPT®74170 or CPT®74183) at 6 and 12 months post transplant, then every year until 5 years post-transplantation, then as clinically indicated

✓ If known Cholangiocarcinoma:
  o Liver ultrasound (CPT®76705) every 6 months until 5 years post-transplantation
  o Chest CT (CPT®71260) every 6 months until 5 years post-transplantation
  o MRI abdomen and MRCP (CPT®74183) every 6 months until 5 years post-transplantation

✓ All other post-transplant individuals:
  o Abdomen and pelvis CT with contrast (CPT®74177) or without contrast (CPT®74176) can be performed for the following:
    ▪ Unexplained fever, abdominal pain, anemia, bleeding, weight loss, lymphadenopathy, enlarged spleen or liver, or other suspected postoperative complication

AB-42.4 Liver Transplant, Post-Transplant Lymphoproliferative Disease (PTLD)

✓ Most cases of PTLD are observed in the first year following transplant. Frequency of developing PTLD:
  o Small bowel transplant—20% of individuals are at risk of developing PTLD
  o Lung transplant—10% risk
  o Heart transplant—6% risk
  o Liver transplant—1%-3% risk
  o Kidney transplant—1%-3% risk

✓ Evaluation of suspected PTLD is same as evaluation for lymphoma: (See: ONC-27~Lymphomas in the Oncology Imaging Guidelines)

✓ Chest/abdomen/pelvis CT with contrast (CPT®71260 and CPT®74177) can be performed. Biopsy of the involved organ should be performed if PTLD is suspected

✓ There is insufficient evidence-based data to support the routine use of imaging to screen for PTLD^4
ABDOMEN IMAGING GUIDELINES

AB-42.5 Kidney Transplant, Pre-Transplant Imaging Studies
See: CD-1.6 Transplant Individuals in the Cardiac Imaging Guidelines for guidelines on cardiac stress testing

Individuals on the kidney transplant waiting list can undergo advanced imaging per that institution’s protocol as long as the studies do not exceed the following:

✓ If stress test is positive for reversible ischemia, or if duration of diabetes is > 25 years and individual has additional cardiac risk factors, then diagnostic left heart catheterization can be performed

✓ Carotid duplex study (CPT®93880 bilateral study or CPT®93882 unilateral study) if there is history of stroke, TIA, or if carotid bruit is present on exam

✓ Abdomen and pelvis CT (CPT® 74176 or CPT®74177) or CTA of the Abdomen (CPT®74175) one time

AB-42.6 Kidney Transplant, Post-transplant

✓ Ultrasound of transplanted kidney:
  o Current ultrasound imaging protocols of the transplanted kidney commonly include a Doppler study and are coded as CPT®76776
    ▪ Do not report non-invasive vascular codes CPT®93975 and CPT®93976 in conjunction with CPT®76776
  o Ultrasound of the transplanted kidney performed without duplex Doppler should be reported as a limited retroperitoneal ultrasound (CPT®76775)

AB-42.7 Heart Transplant

  o See: CD-1.6 Transplant Individuals in the Cardiac Imaging Guidelines

References


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:
  o Evaluation of portal and hepatic veins prior to or following TIPS (transjugular intrahepatic portosystemic shunt)
  o Evaluation of portal and hepatic veins prior to or following surgical intervention for portal hypertension
  o Evaluation of hepatic vasculature prior to and following embolization procedure
  o Evaluation of hepatic vasculature prior to planned hepatectomy
  o Evaluation of liver donor
  o 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 Susicion of iliac vein thrombus
  o Susicion 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

References