

Clinical Appropriateness Guidelines: Advanced Imaging

Appropriate Use Criteria: Imaging of the Abdomen & Pelvis

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Description and Application of the Guidelines



AIM's Clinical Appropriateness Guidelines (hereinafter "AIM's Clinical Appropriateness Guidelines" or the "Guidelines") are designed to assist providers in making the most appropriate treatment decision for a specific clinical condition for an individual. As used by AIM, the Guidelines establish objective and evidence-based, where possible, criteria for medical necessity determinations. In the process, multiple functions are accomplished:

- To establish criteria for when services are medically necessary
- To assist the practitioner as an educational tool
- To encourage standardization of medical practice patterns
- To curtail the performance of inappropriate and/or duplicate services
- To advocate for patient safety concerns
- To enhance the quality of healthcare
- To promote the most efficient and cost-effective use of services

AIM's guideline development process complies with applicable accreditation standards, including the requirement that the Guidelines be developed with involvement from appropriate providers with current clinical expertise relevant to the Guidelines under review and be based on the most up to date clinical principles and best practices. Relevant citations are included in the "References" section attached to each Guideline. AIM reviews all of its Guidelines at least annually.

AIM makes its Guidelines publicly available on its website twenty-four hours a day, seven days a week. Copies of AIM's Clinical Appropriateness Guidelines are also available upon oral or written request. Although the Guidelines are publicly-available, AIM considers the Guidelines to be important, proprietary information of AIM, which cannot be sold, assigned, leased, licensed, reproduced or distributed without the written consent of AIM.

AIM applies objective and evidence-based criteria and takes individual circumstances and the local delivery system into account when determining the medical appropriateness of health care services. The AIM Guidelines are just guidelines for the provision of specialty health services. These criteria are designed to guide both providers and reviewers to the most appropriate services based on a patient's unique circumstances. In all cases, clinical judgment consistent with the standards of good medical practice should be used when applying the Guidelines. Guideline determinations are made based on the information provided at the time of the request. It is expected that medical necessity decisions may change as new information is provided or based on unique aspects of the patient's condition. The treating clinician has final authority and responsibility for treatment decisions regarding the care of the patient and for justifying and demonstrating the existence of medical necessity for the requested service. The Guidelines are not a substitute for the experience and judgment of a physician or other health care professionals. Any clinician seeking to apply or consult the Guidelines is expected to use independent medical judgment in the context of individual clinical circumstances to determine any patient's care or treatment.

The Guidelines do not address coverage, benefit or other plan specific issues. If requested by a health plan, AIM will review requests based on health plan medical policy/guidelines in lieu of AIM's Guidelines.

The Guidelines may also be used by the health plan or by AIM for purposes of provider education, or to review the medical necessity of services by any provider who has been notified of the need for medical necessity review, due to billing practices or claims that are not consistent with other providers in terms of frequency or some other manner.

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Administrative Guideline: Ordering of Multiple Studies



Requests for multiple imaging studies to evaluate a suspected or identified condition and requests for repeated imaging of the same anatomic area are subject to additional review to avoid unnecessary or inappropriate imaging.

Simultaneous Ordering of Multiple Studies

In many situations, ordering multiple imaging studies at the same time is not clinically appropriate because:

- Current literature and/or standards of medical practice support that one of the requested imaging studies is more appropriate in the clinical situation presented; or
- One of the imaging studies requested is more likely to improve patient outcomes based on current literature and/or standards of medical practice; or
- Appropriateness of additional imaging is dependent on the results of the lead study.

When multiple imaging studies are ordered, the request will often require a peer-to-peer conversation to understand the individual circumstances that support the medical necessity of performing all imaging studies simultaneously.

Examples of multiple imaging studies that may require a peer-to-peer conversation include:

- CT brain and CT sinus for headache
- MRI brain and MRA brain for headache
- MRI cervical spine and MRI shoulder for pain indications
- MRI lumbar spine and MRI hip for pain indications
- MRI or CT of multiple spine levels for pain or radicular indications
- MRI foot and MRI ankle for pain indications
- Bilateral exams, particularly comparison studies

There are certain clinical scenarios where simultaneous ordering of multiple imaging studies is consistent with current literature and/or standards of medical practice. These include:

- Oncologic imaging – Considerations include the type of malignancy and the point along the care continuum at which imaging is requested
- Conditions which span multiple anatomic regions – Examples include certain gastrointestinal indications or congenital spinal anomalies

Repeated Imaging

In general, repeated imaging of the same anatomic area should be limited to evaluation following an intervention, or when there is a change in clinical status such that imaging is required to determine next steps in management. At times, repeated imaging done with different techniques or contrast regimens may be necessary to clarify a finding seen on the original study.

Repeated imaging of the same anatomic area (with same or similar technology) may be subject to additional review in the following scenarios:

- Repeated imaging at the same facility due to motion artifact or other technical issues
- Repeated imaging requested at a different facility due to provider preference or quality concerns
- Repeated imaging of the same anatomic area (MRI or CT) based on persistent symptoms with no clinical change, treatment, or intervention since the previous study
- Repeated imaging of the same anatomical area by different providers for the same member over a short period of time

Administrative Guideline: Pre-Test Requirements



Critical to any finding of clinical appropriateness under the guidelines for specific imaging exams is a determination that the following are true with respect to the imaging request:

- A clinical evaluation has been performed prior to the imaging request (which should include a complete history and physical exam and review of results from relevant laboratory studies, prior imaging and supplementary testing) to identify suspected or established diseases or conditions.
- **For suspected diseases or conditions:**
 - Based on the clinical evaluation, there is a reasonable likelihood of disease prior to imaging; and
 - Current literature and standards of medical practice support that the requested imaging study is the most appropriate method of narrowing the differential diagnosis generated through the clinical evaluation and can be reasonably expected to lead to a change in management of the patient; and
 - The imaging requested is reasonably expected to improve patient outcomes based on current literature and standards of medical practice.
- **For established diseases or conditions:**
 - Advanced imaging is needed to determine whether the extent or nature of the disease or condition has changed; and
 - Current literature and standards of medical practice support that the requested imaging study is the most appropriate method of determining this and can be reasonably expected to lead to a change in management of the patient; and
 - The imaging requested is reasonably expected to improve patient outcomes based on current literature and standards of medical practice.
- If these elements are not established with respect to a given request, the determination of appropriateness will most likely require a peer-to-peer conversation to understand the individual and unique facts that would supersede the pre-test requirements set forth above. During the peer-to-peer conversation, factors such as patient acuity and setting of service may also be taken into account.

Computed Tomography (CT) Abdomen



CPT Codes

- 74150..... CT abdomen; without contrast
- 74160..... CT abdomen; with contrast
- 74170..... CT abdomen; without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- Diaphragmatic dome to iliac crests
- Scan coverage may vary, depending on the specific clinical indication

Technology Considerations

- For most gallbladder and hepatobiliary conditions, ascites evaluation and certain renal abnormalities (such as detection of gallstones, hydronephrosis and differentiation of cystic, complex and solid lesions), initial imaging should be considered using ultrasound.
- Verification of cystic lesions in abdominal viscera can usually be well-documented with ultrasound.
- Ultrasound studies may be limited in obese patients.

Common Diagnostic Indications

This section contains general abdominal, hepatobiliary, pancreatic, gastrointestinal, genitourinary, splenic, and vascular indications.

General Abdominal

Abdominal pain

- Unexplained by any of the following:
 - Clinical findings; **OR**
 - Physical examination; **OR**
 - Other imaging studies

Abnormalities detected on other imaging studies which require additional clarification to direct treatment

Ascites

- For diagnosis and surveillance, following non-diagnostic ultrasound

Congenital anomaly

Diffuse, unexplained lower extremity edema

Note: For female patients, to exclude an occult lesion causing mass effect, vascular compression, or intraluminal thrombi, ultrasound should be considered as the initial imaging modality

Fever of unknown origin

- Lasting more than three weeks with exceptions for immunocompromised patients
- Following standard work-up to localize the source

Hematoma / hemorrhage

Common Diagnostic Indications

Hernia

- For diagnosis of a hernia with suspected complications or presurgical planning including, but not limited to the following types of hernia:
 - Femoral
 - Internal
 - Inguinal
 - Spigelian (through semilunar line, lateral to rectus abdominis muscle)
 - Ventral

Incisional hernia

- For diagnosis of a hernia with suspected complications or presurgical planning

Note: *Ultrasound should be considered as the initial imaging modality*

Infectious or inflammatory process

- Including but not limited to the following:
 - Abscess
 - Diffuse inflammation / phlegmon
 - Fistula

Iron deposition/overload in hemochromatosis

- When MRI is contraindicated; **AND**
- To exclude iron overload in patients with hemochromatosis who are candidates for chelation therapy or phlebotomy

Lymphadenopathy

- For initial detection and follow-up

Palpable abdominal mass

Note: *For pediatric patients, ultrasound should be considered as the initial imaging modality*

Post-operative or post-procedure evaluation

Preoperative or pre-procedure evaluation

Note: *This indication is for preoperative evaluation of conditions not specifically referenced elsewhere in this guideline.*

Retroperitoneal abnormality – fibrosis, inflammation and neoplasm

Trauma

- Following significant blunt or penetrating injury to the abdomen

Common Diagnostic Indications

Tumor (primary neoplasm or metastatic disease)

Diagnosis, management or surveillance of known or suspected malignancy

Exclusions—advanced imaging is not indicated in the following scenarios:

- Breast cancer
 - Staging of low risk breast cancer (stage 2B or less) in the absence of signs or symptoms suggestive of metastatic disease
 - Surveillance of breast cancer in the absence of signs or symptoms of recurrent disease
- Colon cancer
 - Surveillance imaging of colon cancer in remission, **unless one of the following high risk features is present:**
 - Lymphatic or venous invasion
 - Lymph node involvement
 - Perineural invasion
 - Poorly differentiated tumor
 - T4 tumor
 - Associated with bowel obstruction
 - Close, indeterminate or positive margins
 - Fewer than 12 nodes examined at surgery
 - Localized perforation
- Gynecologic malignancies
 - Surveillance imaging in patients with previously treated gynecologic malignancies including ovarian, endometrial, cervical, vaginal or vulvar cancer (**Note:** *This exclusion does not apply to sarcoma or other rare histologies not typically associated with these structures*).
- Non-Hodgkin's lymphoma
 - Surveillance imaging of non-Hodgkin's lymphoma for a patient in remission and there has been at least two (2) years since the most recent course of chemotherapy
- Prostate cancer
 - Staging of low risk prostate cancer: Gleason score equal to six (6), PSA less than 10 ng/mL, and stage T1 or T2
 - Follow up or surveillance of prostate cancer following completion of therapy in the absence of a rising PSA

Note: *Surveillance applies to patients with no signs or symptoms of recurrent or persistent disease.*

Unexplained weight loss – significant weight loss exceeding 10% of desirable body weight, over short time interval (six months or less), after initial evaluation for other causes

Hepatobiliary

Acute cholecystitis

- Evaluation of suspected complications of acute cholecystitis when abdominal ultrasound is non-diagnostic

Examples include perforation, abscess, gangrenous or hemorrhagic cholecystitis, gallstone ileus and Mirizzi's syndrome

Cirrhosis for evaluation of hepatocellular carcinoma

Common Diagnostic Indications

Elevated liver transaminases

- Including alanine transaminase (ALT) and aspartate transaminase (AST)
- Following an abnormal or inconclusive abdominal ultrasound
- In patients on medications known to cause liver transaminase elevation, such as statins for hyperlipidemia, acetaminophen, non-steroidal anti-inflammatory drugs, Dilantin®, protease inhibitors and sulfonamides. These medications should be stopped whenever possible and liver chemistries repeated before performing advanced imaging
- Other causes for elevated liver transaminases include excessive alcohol intake, cirrhosis, hepatitis, hepatic steatosis as well as other hepatic and non-hepatic disorders. Consider additional diagnostic labs such as hepatitis panel and serum alpha fetoprotein, as appropriate

Focal liver lesions

Indeterminate lesions (not biopsied and not fully characterized by prior imaging)

- **Initial evaluation** of an indeterminate lesion identified on prior imaging when any of the following are present:
 - Size > 1 cm in diameter
 - Multiple lesions
 - Known malignancy
 - Known cirrhosis
 - Chronic hepatitis
 - Sclerosing cholangitis
 - Primary biliary cirrhosis
 - Hemochromatosis
 - Hemosiderosis
 - Oral contraceptive use
 - Anabolic steroid use
- **Follow up or surveillance** at 3 to 6 months when any of the above risk factors are present, or when the lesion is enhancing, poorly defined or increasing in size

Benign lesions (biopsy-proven or fully characterized by imaging)

- Follow up when symptoms suggest a change in size or character
- Periodic evaluation of known adenoma

Hepatomegaly

- For clinically suspected or worsening hepatic enlargement

Note: *Ultrasound should be considered as the initial imaging modality*

Jaundice

- With abnormal liver function tests (transaminases) and unexplained icterus, following an abdominal ultrasound
- CT imaging used to evaluate for diffuse or multifocal parenchymal liver disease as well as biliary obstruction

Pancreatic

Acute pancreatitis

- With suspected complications including:
 - Pancreatic necrosis
 - Abscess
 - Pseudocyst
 - Peri-pancreatic fluid

Note: *Patients with mild acute, uncomplicated pancreatitis usually do not require cross-sectional imaging, aside from ultrasound identification of gallstones and/or biliary ductal calculi, as a potential cause*

Common Diagnostic Indications

Known pancreatic mass

- CT pancreas with pancreatic protocol is indicated

Note: MRI pancreas may be performed as an alternative study

Pancreatic pseudocyst

- With prior history of pancreatitis or pancreatic trauma

Note: For a patient with a known pancreatic pseudocyst requiring follow-up surveillance, ultrasound should be considered as the initial imaging modality

Gastrointestinal

Appendiceal or peri-appendiceal mass – unexplained on physical exam and other imaging studies

Appendicitis

Diagnosis

- Male patients or non-pregnant female patients
- Following a non-diagnostic ultrasound in pregnant patients when MRI is contraindicated or unavailable

Management

- Failure of non-operative therapy
- Complications of appendicitis

Bowel obstruction

Diverticulitis

Enteritis and/or colitis

Inflammatory bowel disease (IBD)

Diagnosis

- Evaluation of suspected Crohn's disease following non-diagnostic upper and lower endoscopy

Management

- Evaluation of new or worsening symptoms to confirm exacerbation or evaluate for complications, including stricture, abscess or fistula

Ischemic bowel

Genitourinary

Acute pyelonephritis

- In a patient with any of the following:
 - Diabetes; **OR**
 - History of renal calculi; **OR**
 - History of renal surgery; **OR**
 - Absence of response after 72 hours of therapy

Adrenal lesion

- Following a non-diagnostic ultrasound in neonate patients
- For characterization of an indeterminate adrenal mass identified on prior imaging – such as a benign adenoma versus a metastatic deposit; **OR**
- When there is biochemical evidence of an adrenal endocrine abnormality

Common Diagnostic Indications

Hematuria

Hydronephrosis

- Evaluation for possible obstructing ureteral or urinary bladder lesion
- When ultrasound is non-diagnostic or abnormal and unexplained, requiring further evaluation

Renal cyst

- Following a non-diagnostic ultrasound

Note: *A simple renal cyst which has benign characteristics on ultrasound may not require advanced imaging or surveillance*

Renal lesion

- Characterization of indeterminate lesion, particularly a mass, demonstrated on prior imaging

Note: *For pediatric patients, ultrasound should be considered as the initial imaging modality*

Renal neoplasm

- For diagnosis, initial staging and pre-operative evaluation, re-staging and treatment monitoring

Note: *For pediatric patients, ultrasound should be considered as the initial imaging modality*

Undescended testicle (cryptorchidism)

Urinary tract calculi

Initial evaluation of suspected renal or ureteral calculi in patients with no history of nephrolithiasis

Suspected recurrence

- History of radiolucent calculus
- History of radiopaque calculus and atypical presentation
- History of radiopaque calculus and typical presentation, following non-diagnostic ultrasound

Management and follow up

- In patients planning to undergo treatment with percutaneous nephrolithotomy, ureteroscopy or shock wave lithotripsy, when CT has not been performed within the preceding 30 days
- Symptomatic patients with known radiolucent calculi
- Symptomatic patients with radiopaque calculi, following non-diagnostic KUB or ultrasound
- Asymptomatic patients with known radiolucent calculi, persistent hydronephrosis on ultrasound, and treatment involving either shock wave lithotripsy or ureteroscopic stone extraction

Pregnancy

- Diagnosis or management, following non-diagnostic ultrasound or KUB

Worsening renal function

- Following a non-diagnostic ultrasound

Note: *Non-contrast evaluation is indicated in individuals with worsening renal function, as contrast administration may potentially worsen renal function in these patients.*

Splenic

Indeterminate splenic lesion on prior imaging, such as ultrasound

Note: *Splenic hemangioma is the most common benign splenic tumor and may be followed with splenic ultrasound.*

Splenic hematoma

- Parenchymal
- Subcapsular
- Peri-splenic

Common Diagnostic Indications

Splenomegaly

- For clinically suspected or worsening splenic enlargement

Note: *Ultrasound should be considered as the initial imaging modality*

Vascular

Aneurysm of the abdominal aorta

- Following inconclusive ultrasound in patients with suspected aneurysm/dilation of the abdominal aorta
- Follow-up imaging of patients with an established aneurysm/dilation when most recent ultrasound imaging is inconclusive
- Pre-operative assessment or prior to percutaneous endovascular stent graft placement
- Annual post-operative surveillance of stable patients who have undergone open surgical repair when most recent ultrasound imaging is inconclusive
- Post-operative surveillance of stable patients who have been treated with endovascular stent graft
- Suspected complication of an aneurysm/dilation, such as aneurysmal rupture or infection—requiring urgent imaging
- Prior to transcatheter aortic valve implantation/replacement (TAVI or TAVR), unless advanced imaging has been performed for this indication within the preceding 60 days

Aortic dissection

- May evaluate with either CT or CTA
 - Usually results from subdiaphragmatic extension of a thoracic aortic dissection

Thrombosis in the systemic and portal venous circulations

- Following initial evaluation with inconclusive Doppler ultrasound

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CPT Codes

- 74181..... MRI of abdomen, without contrast
- 74182..... MRI of abdomen, with contrast
- 74183..... MRI of abdomen, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- Scan coverage depends on the specific clinical indication for the abdominal MRI. General landmarks extend from the diaphragmatic dome to the iliac crests

Technology Considerations

- Abdominal MRI studies are usually targeted for further evaluation of indeterminate or questionable findings, identified on more standard imaging exams such as ultrasound and CT.
- For evaluation of vascular abnormalities such as renal artery stenosis and celiac/superior mesenteric artery stenosis (in chronic mesenteric ischemia), Doppler ultrasound, MRA or CTA should be considered as the preferred imaging modalities.
- The CPT code assignment for an MRI procedure is based on the anatomic area imaged. Requests for multiple MRI imaging of the same anatomic area to address patient positional changes, additional sequences or equipment are not allowed. These variations or extra sequences are included within the original imaging request.

Common Diagnostic Indications

Abnormalities detected on other imaging studies which require additional clarification to direct treatment

Appendicitis

Diagnosis and management

- In pregnant patients, following a non-diagnostic ultrasound

Note: This guideline is intended only for pregnant patients

Congenital anomaly

Contraindication to CT (contrast allergy, renal disease, pregnancy)

- Iodinated contrast risks (i.e., allergy, renal disease)
 - Patient meets appropriateness criteria for CT, and MRI has been shown to have superior diagnostic accuracy to non-contrast CT
- Pregnancy
 - MRI is a reasonable alternative for the requested indication

Diffuse liver disease

- Following an inconclusive or abnormal abdominal ultrasound or CT
- Including the following hepatic disorders:
 - Cirrhosis
 - Chronic hepatitis

Common Diagnostic Indications

Focal liver lesions

Indeterminate lesions (not biopsied and not fully characterized by prior imaging)

- **Initial evaluation** of an indeterminate lesion identified on prior imaging when any of the following are present:
 - Size > 1 cm in diameter
 - Multiple lesions
 - Known malignancy
 - Known cirrhosis
 - Chronic hepatitis
 - Sclerosing cholangitis
 - Primary biliary cirrhosis
 - Hemochromatosis
 - Hemosiderosis
 - Oral contraceptive use
 - Anabolic steroid use
- **Follow up or surveillance** at 3 to 6 months when any of the above risk factors are present, or when the lesion is enhancing, poorly defined or increasing in size

Benign lesions (biopsy-proven or fully characterized by imaging)

- Follow up when symptoms suggest a change in size or character
- Periodic evaluation of known adenoma

Indeterminate abdominal mass

- For further evaluation and characterization of indeterminate lesions arising in the solid abdominal viscera and surrounding anatomic structures, including but not limited to the following anatomic sites:
 - Adrenal – characterization of an adrenal mass, including differentiation of adrenal adenoma from metastasis
 - Assess vascular invasion or compression by pelvic or renal tumor
 - Kidney – evaluation of an indeterminate renal mass
 - Other abdominal and retroperitoneal anatomic structures
 - Pancreas
 - Spleen

Infectious or inflammatory process

- CT is usually the initial imaging modality of choice for infectious and inflammatory conditions
- Including but not limited to the following:
 - Abscess
 - Diffuse inflammation / phlegmon

Inflammatory bowel disease (IBD)

Diagnosis

- Evaluation of suspected Crohn's disease following non-diagnostic upper and lower endoscopy

Management

- Evaluation of new or worsening symptoms to confirm exacerbation or evaluate for complications, including stricture, abscess or fistula

Iron deposition/overload in hemochromatosis

- To exclude iron overload in patients with hemochromatosis who are candidates for chelation therapy or phlebotomy

Common Diagnostic Indications

Lymphadenopathy

- When abdominal CT is non-diagnostic
- May be useful for differentiating enlarged lymph nodes from vascular structures (with flow void on MRI), as follow-up from an unenhanced abdominal CT exam

Tumor (primary neoplasm or metastatic disease)

Management of biopsy-proven malignancy, when MRI is needed to guide treatment in either of the following scenarios:

- CT is contraindicated or expected to be suboptimal (due to contrast allergy or anticipated contrast nephrotoxicity)
- Evidence-based literature has shown MRI to have superior diagnostic accuracy to CT.

Exclusions—advanced imaging is not indicated in the following scenarios:

- Breast cancer
 - Staging of low risk breast cancer (stage 2B or less) in the absence of signs or symptoms suggestive of metastatic disease
 - Surveillance of breast cancer in the absence of signs or symptoms of recurrent disease
- Colon cancer
 - Surveillance imaging of colon cancer in remission, **unless one of the following high risk features is present:**
 - Lymphatic or venous invasion
 - Lymph node involvement
 - Perineural invasion
 - Poorly differentiated tumor
 - T4 tumor
 - Associated with bowel obstruction
 - Close, indeterminate or positive margins
 - Fewer than 12 nodes examined at surgery
 - Localized perforation
- Gynecologic malignancies
 - Surveillance imaging in patients with previously treated gynecologic malignancies including ovarian, endometrial, cervical, vaginal or vulvar cancer (**Note:** *This exclusion does not apply to sarcoma or other rare histologies not typically associated with these structures.*)
- Non-Hodgkin's lymphoma
 - Surveillance imaging of non-Hodgkin's lymphoma for a patient in remission and there has been at least two (2) years since the most recent course of chemotherapy
- Prostate cancer
 - Staging of low risk prostate cancer: Gleason score equal to six (6), PSA less than 10 ng/mL, and stage T1 or T2
 - Follow up or surveillance of prostate cancer following completion of therapy in the absence of a rising PSA

Note: *Surveillance applies to patients with no signs or symptoms of recurrent or persistent disease.*

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CPT Codes

74181..... MRI of abdomen, without contrast

Standard Anatomic Coverage

- Magnetic resonance cholangiopancreatography (MRCP) is used to evaluate the biliary and pancreatic ductal systems non-invasively and is covered under CPT code 74181, abdominal MRI without contrast.

Technology Considerations

- MRCP studies are usually targeted for further evaluation of indeterminate or questionable findings, identified on more standard imaging exams such as ultrasound and CT.
- When magnetic resonance cholangiopancreatography (MRCP) is requested in addition to a MRI of the abdomen, only one MRI abdomen code should be allowed. Additional sequences obtained for MRCP are considered part of the primary procedure.
- MRCP is performed using heavily T2-weighted images to display hyperintense signal from static or slowly-moving fluid-filled structures.
- Advantages of MRCP when compared with ERCP include non-invasive imaging technique, no ionizing radiation, no anesthesia required, often better anatomic visualization proximal to a ductal obstruction, may detect extra-ductal abnormalities not evident by ERCP
- Disadvantages of MRCP when compared with ERCP include limited spatial resolution and therefore less sensitive exam for detection of more subtle abnormalities, only provides diagnostic information compared with ERCP which has both diagnostic and therapeutic capabilities, as a consequence, MRCP may result in a delay for needed therapeutic interventions performed with ERCP (such as sphincterotomy, stone extraction, stent placement), susceptibility artifact on MRI may occur (for example, from metallic foreign bodies/surgical clips in the right upper abdominal quadrant) and result in image degradation.
- MRCP is appropriate in cases of incomplete or failed ERCP or when ERCP cannot be safely performed (e.g., following pancreatic ductal trauma or a significant allergy to iodinated contrast material) or when ERCP is precluded by anatomic considerations such as a biliary-enteric surgical anastomosis.
- Significant upper abdominal ascites and large cystic/fluid-filled structures may impede visualization of the pancreatic and biliary ductal systems with MRCP.

Common Diagnostic Indications

Biliary tract dilatation, biochemical evidence of biliary obstruction and/or unexplained RUQ pain

- Including but not limited to the detection of:
 - Choledocholithiasis
 - Benign stricture
 - Mass lesion (benign or malignant)
 - Fistula

High clinical suspicion for choledocholithiasis in a patient who is post-cholecystectomy

Primary sclerosing cholangitis

Recurrent acute pancreatitis of unknown etiology

- To identify possible causes such as congenitally aberrant ductal anatomy (e.g., choledochal cyst, pancreas divisum and annular pancreas)

Common Diagnostic Indications

Suspected biliary and/or pancreatic ductal abnormalities

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CT/MR Angiography (CTA/MRA) Abdomen



CPT Codes

- 74175..... Computed tomographic angiography, abdomen, with contrast material(s), including non-contrast images, if performed, and image post-processing
- 74185..... Magnetic resonance angiography, abdomen; without or with contrast

Standard Anatomic Coverage

- Anatomic coverage for CPT codes 74175 (CTA) and 74185 (MRA) includes the major arterial and/or venous structures in the abdomen, from the diaphragmatic dome through the iliac crests.

Technology Considerations

- For CTA of the abdominal aorta and iliofemoral vasculature with lower extremity runoff, use CPT code 75635
- For MRA of the abdominal aorta and iliofemoral vasculature, with lower extremity runoff, use the following CPT codes: CPT 74185 MRA Abdomen x 1 and CPT 73725 MRA Lower Extremities x 2.
- Doppler ultrasound examination is an excellent means to identify a wide range of vascular abnormalities, both arterial and venous in origin. This well-established modality should be considered in the initial evaluation of many vascular disorders listed below.
- CTA of the abdomen is an alternative exam in patients who cannot undergo MRA.

Common Diagnostic Indications

Aneurysm of the abdominal aorta

- Following inconclusive ultrasound in patients with suspected aneurysm/dilation of the abdominal aorta
- Follow-up imaging of patients with an established aneurysm/dilation when most recent ultrasound imaging is inconclusive
- Pre-operative assessment or prior to percutaneous endovascular stent graft placement
- Annual post-operative surveillance of stable patients who have undergone open surgical repair when most recent ultrasound imaging is inconclusive
- Post-operative surveillance of stable patients who have been treated with endovascular stent graft
- Suspected complication of an aneurysm/dilation, such as aneurysmal rupture or infection—requiring urgent imaging
- Prior to transcatheter aortic valve implantation/replacement (TAVI or TAVR), unless advanced imaging has been performed for this indication within the preceding 60 days

Arteriovenous malformation (AVM) or arteriovenous fistula (AVF)

Note: For renal or superficial AVM, ultrasound should be considered as the first imaging modality

Dissection

Of the abdominal aorta and/or branch vessel

Hematoma / hemorrhage

Of the abdominal aorta and/or branch vessel

Mesenteric ischemia

- May have an acute or chronic and progressive (intestinal or abdominal angina) presentation

Portal hypertension

Common Diagnostic Indications

Preoperative or pre-procedure evaluation

Note: This indication is for preoperative evaluation of conditions not specifically referenced elsewhere in this guideline.

Prior to resection of pelvic neoplasm

Pseudoaneurysm

Of the abdominal aorta and/or branch vessel

Renal artery stenosis

- Suspected renovascular hypertension from renal artery stenosis with at least **one of the following**
 - Refractory hypertension, in patients receiving therapeutic doses of three (3) or more anti-hypertensive medications with documentation of at least two (2) abnormal serial blood pressure measurements
 - Hypertension with renal failure or progressive renal insufficiency
 - Accelerated or malignant hypertension
 - Abrupt onset of hypertension
 - Hypertension developing in patients younger than 30 years of age
- Deteriorating renal function on angiotensin converting enzyme inhibition
- Abdominal bruit, suspected to originate in the renal artery
- Generalized arteriosclerotic occlusive disease with hypertension
- Unilateral small renal size (greater than 1.5 cm difference in renal size on ultrasound)
- Following an abnormal renal Doppler ultrasound suggestive of renal artery stenosis
- Recurrent, unexplained episodes of “flash” pulmonary edema

Note: Doppler ultrasound examination of the renal arteries has been shown in the peer-reviewed literature to be efficacious and cost-efficient in detecting renal artery stenosis. However, it is less sensitive than CTA/MRA for detection of renovascular hypertension

Stenosis or occlusion of the abdominal aorta or branch vessels

- Due to:
 - Atherosclerosis
 - Thromboembolism
 - Other causes

Surgical planning for a kidney donor

Surgical planning for renal tumor resection

Suspected leak following abdominal aortic surgery

Traumatic vascular injury

Unexplained blood loss in the abdomen

Vascular anatomic delineation for other surgical and interventional procedures

- Including but not limited to the following clinical scenarios:
 - For surgical porto-systemic shunt placement or TIPS (transjugular intrahepatic porto-systemic shunt)
 - For hepatic chemo-embolization procedure
 - For vascular delineation prior to operative resection of an abdominal neoplasm
 - For pre- and post-procedure evaluation of bypass grafts, stents and vascular anastomoses

Common Diagnostic Indications

Vascular evaluation of lower extremity claudication

- CPT Coding for abdominal aortic and run-off evaluation, which involves image post-processing for three-dimensional reconstructions, should follow:
 - For CTA: 75635 - CTA of abdominal aorta and bilateral iliofemoral lower extremity run-off without contrast, followed by re-imaging with contrast
 - For MRA: 74185 - abdominal MRA and 73725 - bilateral lower extremity MRAs
- Either CTA or MRA is indicated in a patient with classic presenting symptoms of claudication from peripheral arterial disease, such as diminished/absent peripheral pulses and cramping pain in the legs (particularly in the thighs and calves) when walking, which disappears at rest. Other clinical findings which support non-invasive assessment with CTA or MRA include lower extremity cutaneous ulcers and gangrene.
- In the absence of classic peripheral symptoms of claudication, then obtain a vascular surgical consultation and perform lower extremity non-invasive arterial evaluation, which may include the following: segmental systolic pressure measurements, segmental limb plethysmography, continuous wave Doppler and duplex ultrasonography. Ankle brachial indices (ABI) of < 0.9 may undergo advanced imaging. Rest pain or severe occlusive disease typically occurs with ABI < 0.5

Vascular invasion or compression by an abdominal tumor

Vasculitis

Venous thrombosis or occlusion

Evaluation of suspected thrombosis or occlusion of major abdominal vessels, including portal and systemic venous systems

- Ultrasound is required as the initial study to evaluate the following:
 - Hepatic or portal vein thrombosis
 - Renal vein thrombosis
 - Splenic vein thrombosis

Note: *Ultrasound is not required for suspected thrombosis of the IVC or other venous structures in the abdomen and pelvis.*

Visceral artery aneurysms

- Diagnosis, management, and surveillance of visceral artery aneurysms including:
 - Renal
 - Celiac
 - Splenic
 - Hepatic
 - Superior/inferior mesenteric and their branches

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CT Angiography (CTA) Abdominal Aorta and Bilateral Iliofemoral Lower Extremity Run-Off



CPT Codes

75635..... Computed tomographic angiography, abdominal aorta and bilateral iliofemoral lower extremity runoff, with contrast material(s), including non-contrast images, if performed, and image post-processing

Standard Anatomic Coverage

- Anatomic coverage for CPT code 75635 (CTA) includes the abdominal aorta and bilateral iliofemoral vasculature, in addition to lower extremity run-off to the level of the popliteal regions at the knees and often extending through the calf vasculature to the ankle and foot regions.

Technology Considerations

- Doppler ultrasound examination is an excellent means to identify a wide range of vascular abnormalities, both arterial and venous in origin. This well-established modality should be considered in the initial evaluation of many vascular disorders listed below.
- CTA of the abdomen is an alternative exam for patients who cannot undergo MRA.
- Additional, separate requests for a CTA of the pelvis and/or the lower extremities, along with CPT code 75635, are inappropriate.

Common Diagnostic Indications

Aneurysm of abdominal aorta or branch vessel

- Following inconclusive ultrasound in patients with suspected aneurysm/dilation of the abdominal aorta or branch vessel
- Follow-up imaging of patients with an established aneurysm/dilation when most recent ultrasound imaging is inconclusive
- Pre-operative assessment or prior to percutaneous endovascular stent graft placement
- Annual post-operative surveillance of stable patients who have undergone open surgical repair when most recent ultrasound imaging is inconclusive
- Post-operative surveillance of stable patients who have been treated with endovascular stent graft
- Suspected complication of an aneurysm/dilation, such as aneurysmal rupture or infection—requiring urgent imaging
- Prior to transcatheter aortic valve implantation/replacement (TAVI or TAVR), unless advanced imaging of the abdomen or pelvis has been performed for this indication within the preceding 60 days

Critical ischemia of lower extremities

- For example, in diabetic vascular disease with ischemic ulcers or gangrene

Dissection

Of the abdominal aorta and/or branch vessel

Hemorrhage

Common Diagnostic Indications

Peripheral arterial disease

- Evaluation of peripheral arterial disease of the lower extremities following non-invasive confirmation (ankle brachial index, toe-brachial index, segmental pressure examination, or duplex ultrasound) in patients with claudication or critical limb ischemia who have no contraindication to revascularization
- Evaluation of peripheral arterial disease of the lower extremities following non-invasive confirmation (ankle brachial index, toe-brachial index, segmental pressure examination, or duplex ultrasound) in patients with ischemic ulceration who have no contraindication to revascularization
- Periodic follow up of patients who have undergone lower extremity revascularization when non-invasive evaluation (ankle brachial index, toe-brachial index, segmental pressure examination, or duplex ultrasound) suggests recurrent stenosis or occlusion
- Following vascular procedures (angiography or revascularization) or trauma involving the lower extremity when non-invasive evaluation suggests a complication (dissection, pseudoaneurysm, external compression, etc.) and CTA will be used to direct subsequent management

Post-operative or post-procedure evaluation

Preoperative or pre-procedure evaluation

Note: This indication is for preoperative evaluation of conditions not specifically referenced elsewhere in this guideline.

Pseudoaneurysm

Of the abdominal aorta and/or branch vessel

Thromboembolism

Traumatic vascular injury

References

1. Anderson JL, Halperin JL, Albert N, et al. Management of Patients With Peripheral Artery Disease (Compilation of 2005 and 2011 ACCF/AHA Guideline Recommendations): A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol.* 2012;61(14):1555-1570.
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CPT Codes

- 72192..... CT of pelvis, without contrast
- 72193..... CT of pelvis, with contrast
- 72194..... CT of pelvis without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- Iliac crests to ischial tuberosities
- Coverage may vary, depending on the specific clinical indication for the exam

Technology Considerations

- Consider using ultrasound for indications such as differentiation of cystic, complex and solid lesions and initial ascites evaluation.
- Verification of cystic lesions in the pelvis is usually well-established with ultrasound.
- Ultrasound studies may be limited in obese patients.

Common Diagnostic Indications

This section contains general pelvic, intestinal, genitourinary, vascular, and osseous indications.

General Pelvic

Abnormalities detected on other imaging studies which require additional clarification to direct treatment

Ascites

- For diagnosis and surveillance, following non-diagnostic ultrasound

Congenital anomaly

Diffuse, unexplained lower extremity edema

Note: For female patients, to exclude an occult lesion causing mass effect, vascular compression, or intraluminal thrombi, ultrasound should be considered as the initial imaging modality

Fever of unknown origin

- Lasting more than three weeks with exceptions for immunocompromised patients
- Following standard work-up to localize the source

Hematoma / hemorrhage

Hernia

- For diagnosis of a hernia with suspected complications or presurgical planning including, but not limited to the following types of hernia:
 - Femoral
 - Internal
 - Inguinal
 - Spigelian (through semilunar line, lateral to rectus abdominis muscle)
 - Ventral

Common Diagnostic Indications

Incisional hernia

- For diagnosis of a hernia with suspected complications or presurgical planning

Note: *Ultrasound should be considered as the initial imaging modality*

Infectious or inflammatory process

- Including but not limited to the following:
 - Abscess
 - Diffuse inflammation / phlegmon
 - Fistula
 - Recurrent cystitis (male with at least two episodes or female with failed antibiotic therapy)
-

Lymphadenopathy

- For initial detection and follow-up
-

Palpable pelvic mass

- When palpable pelvic mass requires further evaluation following pelvic ultrasound in female patients
 - Male patients
-

Pelvic pain

- For female patients, following non-diagnostic transabdominal and transvaginal pelvic ultrasound
 - Unexplained by any of the following:
 - Clinical findings; **OR**
 - Physical examination; **OR**
 - Other imaging studies
-

Post-operative or post-procedure evaluation

Preoperative or pre-procedure evaluation

Note: *This indication is for preoperative evaluation of conditions not specifically referenced elsewhere in this guideline.*

Retroperitoneal abnormality – fibrosis, inflammation and neoplasm

Trauma

- Following significant blunt or penetrating injury to the pelvis

Common Diagnostic Indications

Tumor (primary neoplasm or metastatic disease)

Diagnosis, management or surveillance of known or suspected malignancy

Exclusions—advanced imaging is not indicated in the following scenarios:

- Breast cancer
 - Staging of low risk breast cancer (stage 2B or less) in the absence of signs or symptoms suggestive of metastatic disease
 - Surveillance of breast cancer in the absence of signs or symptoms of recurrent disease
- Colon cancer
 - Surveillance imaging of colon cancer in remission, **unless one of the following high risk features is present:**
 - Lymphatic or venous invasion
 - Lymph node involvement
 - Perineural invasion
 - Poorly differentiated tumor
 - T4 tumor
 - Associated with bowel obstruction
 - Close, indeterminate or positive margins
 - Fewer than 12 nodes examined at surgery
 - Localized perforation
- Gynecologic malignancies
 - Surveillance imaging in patients with previously treated gynecologic malignancies including ovarian, endometrial, cervical, vaginal or vulvar cancer (**Note:** *This exclusion does not apply to sarcoma or other rare histologies not typically associated with these structures*).
- Non-Hodgkin's lymphoma
 - Surveillance imaging of non-Hodgkin's lymphoma for a patient in remission and there has been at least two (2) years since the most recent course of chemotherapy
- Prostate cancer
 - Staging of low risk prostate cancer: Gleason score equal to six (6), PSA less than 10 ng/mL, and stage T1 or T2
 - Follow up or surveillance of prostate cancer following completion of therapy in the absence of a rising PSA

Note: *Surveillance applies to patients with no signs or symptoms of recurrent or persistent disease.*

Unexplained weight loss – significant weight loss exceeding 10% of desirable body weight, over short time interval (six months or less) after initial evaluation for other causes

Intestinal

Appendiceal or peri-appendiceal mass – unexplained on physical exam and other imaging studies

Appendicitis

Diagnosis

- Male patients or non-pregnant female patients
- Following a non-diagnostic ultrasound in pregnant patients when MRI is contraindicated or unavailable

Management

- Failure of non-operative therapy
- Complications of appendicitis

Bowel obstruction

Common Diagnostic Indications

Diverticulitis

Enteritis and/or colitis

Inflammatory bowel disease (IBD)

Diagnosis

- Evaluation of suspected Crohn's disease following non-diagnostic upper and lower endoscopy

Management

- Evaluation of new or worsening symptoms to confirm exacerbation or evaluate for complications, including stricture, abscess or fistula

Ischemic bowel

Genitourinary

Hematuria

Hydronephrosis

- Evaluation for possible obstructing ureteral or urinary bladder lesion
- When ultrasound is non-diagnostic or abnormal and unexplained, requiring further evaluation

Undescended testicle (cryptorchidism)

Urinary tract calculi

Initial evaluation of suspected renal or ureteral calculi in patients with no history of nephrolithiasis

Suspected recurrence

- History of radiolucent calculus
- History of radiopaque calculus and atypical presentation
- History of radiopaque calculus and typical presentation, following non-diagnostic ultrasound

Management and follow up

- In patients planning to undergo treatment with percutaneous nephrolithotomy, ureteroscopy or shock wave lithotripsy, when CT has not been performed within the preceding 30 days
- Symptomatic patients with known radiolucent calculi
- Symptomatic patients with radiopaque calculi, following non-diagnostic KUB or ultrasound
- Asymptomatic patients with known radiolucent calculi, persistent hydronephrosis on ultrasound, and treatment involving either shock wave lithotripsy or ureteroscopic stone extraction

Pregnancy

- Diagnosis or management, following non-diagnostic ultrasound or KUB

Common Diagnostic Indications

Vascular

Aneurysm of iliac and femoral vessels

- Following inconclusive ultrasound in patients with suspected aneurysm/dilation of the iliac or femoral vessels
- Follow-up imaging of patients with an established aneurysm/dilation when most recent ultrasound imaging is inconclusive
- Pre-operative assessment or prior to percutaneous endovascular stent graft placement
- Annual postoperative surveillance of stable patients who have undergone open surgical repair when most recent ultrasound imaging is inconclusive
- Post-operative surveillance of stable patients who have been treated with endovascular stent graft
- Suspected complication of an aneurysm/dilation, such as aneurysmal rupture or infection—requiring urgent imaging
- Prior to transcatheter aortic valve implantation/replacement (TAVI or TAVR), unless advanced imaging has been performed for this indication within the preceding 60 days

Aorto-iliac dissection

- May evaluate with either CT or CTA

Thrombosis in the systemic and portal venous circulations

- Following initial evaluation with inconclusive Doppler ultrasound

Osseous

Acute pelvic trauma, for fracture evaluation

- Radiographs should be performed prior to CT

Hip osteonecrosis

- When the patient is unable to undergo hip MRI or radionuclide bone scintigraphy, which are more sensitive modalities than hip CT, in individuals with normal hip films or inconclusive radiographic evidence of hip osteonecrosis
- In known hip osteonecrosis and femoral head collapse by radiography, CT may help in the preoperative planning, to define the location and extent of disease in patients with painful hips

Osseous tumor evaluation in the pelvis

- MRI or radionuclide bone scintigraphy may be more appropriate for detection of skeletal metastases and primary bone tumors unless otherwise contraindicated

Osteoid osteoma

- Requires negative or inconclusive hip radiographs prior to CT imaging

Sacroiliitis

- Following sacroiliac joint radiographs

Stress / insufficiency fracture in the pelvis

- Radiographs are a required first step before other imaging is performed
 - Subsequent advanced imaging often includes MRI or radionuclide bone scan as the next step

Suspicion of pelvic osteomyelitis or septic arthritis

- When the patient is unable to undergo hip MRI or radionuclide bone scintigraphy

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Magnetic Resonance Imaging (MRI)

Pelvis



CPT Codes

- 72195..... MRI of pelvis, without contrast
- 72196..... MRI of pelvis, with contrast
- 72197..... MRI of pelvis, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- Iliac crests to ischial tuberosities
- Coverage may vary, depending on the specific clinical indication for the exam

Technology Considerations

- Depending on the patient's presenting signs and symptoms, pelvic imaging should be directed to the most appropriate modality for clinical work-up.
- Diagnostic evaluation of the pelvis may be performed with pelvic ultrasound (trans-abdominal and trans-vaginal), which is the initial imaging modality for most gynecologic abnormalities. Transabdominal pelvic sonography is also used for urinary bladder assessment, such as post-void residual urine volume. Endoscopy and barium examinations are well established procedures for intestinal evaluation. Cystoscopy is often used for lower urinary tract assessment, pelvic CT or MRI.
- Verification of cystic lesions in the pelvis is usually well-established with ultrasound.
- Ultrasound studies may be limited in obese patients.
- CPT code assignment for an MRI procedure is based on the anatomic area imaged. Authorization requests for multiple MR imaging of the same anatomic area to address patient positional changes, additional sequences or equipment are not allowed.

Common Diagnostic Indications

Abnormalities detected on other imaging studies which require additional clarification to direct treatment

Adenomyosis of the uterus following pelvic ultrasound

Adnexal mass(es) following pelvic ultrasound

- Usually performed to further evaluate problematic cases which are initially detected on pelvic ultrasound. Some uses of pelvic MRI in adnexal lesion evaluation include: differentiation of an ovarian mass from an exophytic or pedunculated fibroid; more confident identification of an ovarian dermoid/teratoma, following an ultrasound or other imaging exam; and demonstration of findings to suggest malignancy in some adnexal masses.
- Includes assessment of suspected hemorrhagic cystic lesions and tumors

Appendicitis

Diagnosis and management

- In pregnant patients, following a non-diagnostic ultrasound

Note: This guideline is intended only for pregnant patients

Bilateral hip osteonecrosis (avascular necrosis; aseptic necrosis)

- MRI is the modality of choice for evaluation of osteonecrosis, particularly when there is clinical suspicion with hip pain and negative or inconclusive hip radiographs

Bladder or urethral diverticula

Common Diagnostic Indications

Congenital anomaly

Contraindication to CT (contrast allergy, renal disease, pregnancy)

- Iodinated contrast risks (i.e., allergy, renal disease)
 - Patient meets appropriateness criteria for CT, and MRI has been shown to have superior diagnostic accuracy to non-contrast CT
 - Pregnancy
 - MRI is a reasonable alternative for the requested indication
-

Endometriosis

- Following pelvic ultrasound
-

Infectious or inflammatory process of the soft tissues

- CT is usually the imaging modality of choice for infectious and inflammatory conditions
 - Including but not limited to the following:
 - Abscess
 - Diffuse inflammation
-

Inflammatory bowel disease (IBD)

Diagnosis

- Evaluation of suspected Crohn's disease following non-diagnostic upper and lower endoscopy

Management

- Evaluation of new or worsening symptoms to confirm exacerbation or evaluate for complications, including stricture, abscess or fistula
-

Lymphadenopathy

- When pelvic CT is non-diagnostic
 - May be useful for differentiating enlarged lymph nodes from vascular structures (with flow void on MRI), as follow-up from an unenhanced pelvic CT exam
-

Obstetrical abnormalities pelvimetry or obstetrical complications

Osteomyelitis or septic arthritis

Pelvic floor disorders associated with urinary or bowel incontinence

Pelvic venous thrombosis evaluation

Sacral insufficiency fracture

Sacroiliitis

- Following sacroiliac joint radiographs
-

Common Diagnostic Indications

Axial Spondyloarthritis (SpA)

Diagnosis of Spondyloarthritis (SpA)

- Negative or equivocal radiographs for sacroiliitis (Grade 0-2) **AND**
- Back pain has persisted for at least three months **AND**
- Clinical evidence for inflammatory back pain defined as at least four of the following five features:
 - Age less than 40
 - Insidious onset
 - Improvement with exercise
 - No improvement with rest
 - Pain at night which improves on getting up

Management of Spondyloarthritis

Therapy response in patients with ankylosing spondylitis

- Baseline study prior to treatment when the diagnosis of AS is based on radiographic findings
- Evaluate therapy response in patients with ankylosing spondylitis and **all of the following**:
 - Established diagnosis of ankylosing spondylitis
 - No response to therapy
 - At least three months of tumor necrosis factor (TNF) inhibitor therapy

Significant pelvic injury

- Following pelvic or sacral radiographs

Sports hernia (athletic pubalgia)

(**All of the following**)

- Pain persists at least 6 weeks
- Non-diagnostic radiographs
- Following a trial of conservative therapy that lasts at least 6 weeks
- Patient is a surgical candidate
- Pain is insidious, progressive, worsens withValsalva or movement
- No detectable inguinal or ventral hernia on exam

Note: Groin pain can be sometimes referred from the hip. See separate guideline for femoral neck stress fracture if that is of concern.

Common Diagnostic Indications

Tumor (primary neoplasm or metastatic disease)

Diagnosis

- Evaluation of suspected prostate cancer in patients with a rising PSA and negative transrectal ultrasound biopsy (TRUS)

Management of biopsy-proven malignancy, when MRI is needed to guide treatment in either of the following scenarios:

- CT is contraindicated or expected to be suboptimal (due to contrast allergy or anticipated contrast nephrotoxicity)
- Evidence-based literature has shown MRI to have superior diagnostic accuracy to CT.

Exclusions—advanced imaging is not indicated in the following scenarios:

- Breast cancer
 - Staging of low risk breast cancer (stage 2B or less) in the absence of signs or symptoms suggestive of metastatic disease
 - Surveillance of breast cancer in the absence of signs or symptoms of recurrent disease
- Colon cancer
 - Surveillance imaging of colon cancer in remission, **unless one of the following high risk features is present:**
 - Lymphatic or venous invasion
 - Lymph node involvement
 - Perineural invasion
 - Poorly differentiated tumor
 - T4 tumor
 - Associated with bowel obstruction
 - Close, indeterminate or positive margins
 - Fewer than 12 nodes examined at surgery
 - Localized perforation
- Gynecologic malignancies
 - Surveillance imaging in patients with previously treated gynecologic malignancies including ovarian, endometrial, cervical, vaginal or vulvar cancer (**Note:** *This exclusion does not apply to sarcoma or other rare histologies not typically associated with these structures*).
- Non-Hodgkin's lymphoma
 - Surveillance imaging of non-Hodgkin's lymphoma for a patient in remission and there has been at least two (2) years since the most recent course of chemotherapy
- Prostate cancer
 - Staging of low risk prostate cancer: Gleason score equal to six (6), PSA less than 10 ng/mL, and stage T1 or T2
 - Follow up or surveillance of prostate cancer following completion of therapy in the absence of a rising PSA

Note: *Surveillance applies to patients with no signs or symptoms of recurrent or persistent disease.*

Undescended testicle (cryptorchidism)

Uterine artery embolization procedures

- Often performed for treatment of persistent bleeding from uterine fibroids

MRI is generally not indicated in the following clinical situations

The indications listed in this section generally do not require advanced imaging using MRI. If there are circumstances that require MRI imaging, a peer-to-peer discussion may be required.

Piriformis syndrome

Note: *Advanced imaging is generally not indicated.*

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CPT Codes

74712..... Magnetic resonance (eg, proton) imaging, fetal, including placental and maternal pelvic imaging when performed; single or first gestation

74713..... each additional gestation (List separately in addition to code for primary procedure)

Standard Anatomic Coverage

- Field of view should be tailored to fetal and maternal size.
- Single shot fast spin echo and other rapid acquisition sequences are important to minimize the effects of fetal motion.

Technology Considerations

- Ultrasound is the gold standard and primary imaging modality for assessment of the fetus.
- MRI is reserved as a problem solving tool in select circumstances for further assessment of abnormalities detected or incompletely characterized on ultrasound.
- MRI should generally be done without contrast as gadolinium is considered a category C drug.
- The long-term effects of MRI on the fetus are unknown; however, no adverse effects have been found to date.

Common Diagnostic Indications

Assessment prior to fetal intervention

- Following non-diagnostic ultrasound

Complication of monochorionic twins

- Following non-diagnostic ultrasound (**any one♦ of the following**)
 - Anatomy of conjoined twins
 - Demise of a monochorionic cotwin

Congenital anomaly of the abdomen and pelvis

- Following non-diagnostic ultrasound (**any one♦ of the following**)
 - Abdominal mass
 - Bowel obstruction
 - Genitourinary anomaly except rectourethral fistula

Congenital anomaly of the chest

- Following non-diagnostic ultrasound (**any one♦ of the following**)
 - Congenital diaphragmatic hernia
 - Congenital pulmonary airway malformation
 - Pleural effusion

Common Diagnostic Indications

Congenital anomaly of the head and neck

- Following non-diagnostic ultrasound (**any one** ♦ of the following)
 - Agenesis of the corpus callosum
 - Cleft palate
 - Cortical malformation
 - Dandy-Walker syndrome
 - Encephalocele
 - Holoprosencephaly
 - Infarct, hemorrhagic or non-hemorrhagic
 - Intracranial mass
 - Meningocele/encephalocele
 - Neck mass
 - Posterior fossa anomaly
 - Vascular malformation, including vein of Galen
 - Ventriculomegaly
 - Vermian hypoplasia

Congenital anomaly of the spine

- Following non-diagnostic ultrasound (**any one** ♦ of the following)
 - Caudal regression
 - Congenital anomaly of the vertebrae
 - Neural tube defect
 - Sacrococcygeal teratoma

Placental complication

- Following non-diagnostic ultrasound (**any one** ♦ of the following)
 - Abruptio
 - Accreta
 - Gestational trophoblastic disease
 - Previa

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CPT Codes

72191..... Computed tomographic angiography, pelvis, with contrast material(s), including non-contrast images, if performed, and image post-processing

72198..... Magnetic resonance angiography, pelvis; without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- Iliac crests to ischial tuberosities
- Scan coverage may vary, depending on the specific clinical indication for the exam

Technology Considerations

- Doppler ultrasound examination is an excellent means to identify a wide range of vascular abnormalities, both arterial and venous in origin. This well-established modality should be considered in the initial evaluation of many vascular disorders listed below.
- MRA should also be considered in patients with a history of either previous contrast reaction to intravascular administration of iodinated radiographic contrast material or atopy.
- CTA of the pelvis is an alternative exam in patients who cannot undergo MRA.
- Requests for pelvic CTA or MRA in addition to a request for a MRA or CTA abdominal aorta and bilateral iliofemoral lower extremity runoff study are not allowed.

Common Diagnostic Indications

Aneurysm of the iliac or femoral vessels

- Following inconclusive ultrasound in patients with suspected aneurysm/dilation of the iliac or femoral vessels
- Follow-up imaging of patients with an established aneurysm/dilation when most recent ultrasound imaging is inconclusive
- Pre-operative assessment or prior to percutaneous endovascular stent graft placement
- Annual post-operative surveillance of stable patients who have undergone open surgical repair when most recent ultrasound imaging is inconclusive
- Post-operative surveillance of stable patients who have been treated with endovascular stent graft
- Suspected complication of an aneurysm/dilation, such as aneurysmal rupture or infection—requiring urgent imaging
- Prior to transcatheter aortic valve implantation/replacement (TAVI or TAVR), unless advanced imaging has been performed for this indication within the preceding 60 days

Arteriovenous malformation (AVM) or arteriovenous fistula (AVF)

Note: For renal or superficial AVM, ultrasound should be considered as the first imaging modality

Dissection

Of the iliac arteries or branches

Hematoma / hemorrhage

Of the iliac arteries or branches

Mesenteric ischemia

- May have an acute or chronic and progressive (intestinal or abdominal angina) presentation

Common Diagnostic Indications

Pseudoaneurysm

Of the iliac arteries or branches

Stenosis or occlusion of the lower abdominal aorta, iliac arteries or other branch vessels in the pelvis

Surgical planning for a kidney donor

Suspected leak following abdominal aortic surgery

Traumatic vascular injury

Unexplained blood loss in the pelvis

Vascular anatomic delineation for other surgical and interventional procedures

- For vascular delineation prior to operative resection of a pelvic neoplasm
- For pre- and post-procedure evaluation of bypass grafts, stents and vascular anastomoses

Vascular invasion or compression by a pelvic tumor

Vasculitis

Venous thrombosis or occlusion

- Following initial evaluation with inconclusive Doppler ultrasound

Visceral artery aneurysms

- Diagnosis, management, and surveillance of visceral artery aneurysms including:
 - Superior/inferior mesenteric and their branches

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Computed Tomography (CT) Abdomen and Pelvis Combination



CPT Codes

- 74176..... CT of abdomen and pelvis, without contrast
- 74177..... CT of abdomen and pelvis, with contrast
- 74178..... CT of abdomen and pelvis, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- Diaphragmatic dome through pubic symphysis
- Scan coverage may vary, depending on the specific clinical indication

Technology Considerations

- Verification of cystic lesions in the abdominal and pelvis is usually well-established with ultrasound.
- For abdominal symptoms in the pediatric population abdominal ultrasound frequently provides diagnostic information without incurring radiation exposure from CT.

Common Diagnostic Indications

This section contains general abdominal and pelvic, gastrointestinal, genitourinary, and vascular indications.

General Abdominal and Pelvic

Abdominal / pelvic pain

- Unexplained by any of the following:
 - Clinical findings; **OR**
 - Physical examination; **OR**
 - Other imaging studies

Abnormalities detected on other imaging studies which require additional clarification to direct treatment

Ascites

- For diagnosis and surveillance, following non-diagnostic ultrasound

Congenital anomaly

Diffuse, unexplained lower extremity edema

Note: For female patients, to exclude an occult lesion causing mass effect, vascular compression, or intraluminal thrombi, ultrasound should be considered as the initial imaging modality

Fever of unknown origin

- Lasting more than three weeks with exceptions for immunocompromised patients
- Following standard work-up to localize the source

Hematoma / hemorrhage

Common Diagnostic Indications

Hernia

- For diagnosis of a hernia with suspected complications or presurgical planning including, but not limited to the following types of hernia:
 - Femoral
 - Internal
 - Inguinal
 - Spigelian (through semilunar line, lateral to rectus abdominis muscle)
 - Ventral

Incisional hernia

- For diagnosis of a hernia with suspected complications or presurgical planning

Note: *Ultrasound should be considered as the initial imaging modality*

Infectious or inflammatory process

- Including but not limited to the following:
 - Abscess
 - Diffuse inflammation / phlegmon
 - Fistula
 - Recurrent cystitis (male with at least two episodes or female with failed antibiotic therapy)

Lymphadenopathy

- For initial detection and follow-up

Palpable abdominal / pelvic mass

- When palpable pelvic mass requires further evaluation following pelvic ultrasound in female patients

Note: *For pediatric patients, ultrasound should be considered as the initial imaging modality.*

Post-operative or post-procedure evaluation

Preoperative or pre-procedure evaluation

Note: *This indication is for preoperative evaluation of conditions not specifically referenced elsewhere in this guideline.*

Retroperitoneal abnormality – fibrosis, inflammation and neoplasm

Trauma

- Following significant blunt or penetrating injury to the abdomen

Common Diagnostic Indications

Tumor (primary neoplasm or metastatic disease)

Diagnosis, management or surveillance of known or suspected malignancy

Exclusions—advanced imaging is not indicated in the following scenarios:

- Breast cancer
 - Staging of low risk breast cancer (stage 2B or less) in the absence of signs or symptoms suggestive of metastatic disease
 - Surveillance of breast cancer in the absence of signs or symptoms of recurrent disease
- Colon cancer
 - Surveillance imaging of colon cancer in remission, **unless one of the following high risk features is present:**
 - Lymphatic or venous invasion
 - Lymph node involvement
 - Perineural invasion
 - Poorly differentiated tumor
 - T4 tumor
 - Associated with bowel obstruction
 - Close, indeterminate or positive margins
 - Fewer than 12 nodes examined at surgery
 - Localized perforation
- Gynecologic malignancies
 - Surveillance imaging in patients with previously treated gynecologic malignancies including ovarian, endometrial, cervical, vaginal or vulvar cancer (**Note:** *This exclusion does not apply to sarcoma or other rare histologies not typically associated with these structures*).
- Non-Hodgkin's lymphoma
 - Surveillance imaging of non-Hodgkin's lymphoma for a patient in remission and there has been at least two (2) years since the most recent course of chemotherapy
- Prostate cancer
 - Staging of low risk prostate cancer: Gleason score equal to six (6), PSA less than 10 ng/mL, and stage T1 or T2
 - Follow up or surveillance of prostate cancer following completion of therapy in the absence of a rising PSA

Note: *Surveillance applies to patients with no signs or symptoms of recurrent or persistent disease.*

Unexplained weight loss – significant weight loss exceeding 10% of desirable body weight, over short time interval (six months or less), after initial evaluation for other causes

Gastrointestinal

Appendiceal or peri-appendiceal mass – unexplained on physical exam and other imaging studies

Appendicitis

Diagnosis

- Male patients or non-pregnant female patients
- Following a non-diagnostic ultrasound in pregnant patients when MRI is contraindicated or unavailable

Management

- Failure of non-operative therapy
- Complications of appendicitis

Bowel obstruction

Common Diagnostic Indications

Diverticulitis

Enteritis and/or colitis

Inflammatory bowel disease (IBD)

Diagnosis

- Evaluation of suspected Crohn's disease following non-diagnostic upper and lower endoscopy

Management

- Evaluation of new or worsening symptoms to confirm exacerbation or evaluate for complications, including stricture, abscess or fistula
-

Ischemic bowel

Genitourinary

Acute pyelonephritis

- In a patient with any of the following:
 - Diabetes; **OR**
 - History of renal calculi; **OR**
 - History of renal surgery; **OR**
 - Absence of response after 72 hours of therapy
-

Hematuria

Hydronephrosis

- Evaluation for possible obstructing ureteral or urinary bladder lesion
 - When ultrasound is non-diagnostic or abnormal and unexplained, requiring further evaluation
-

Renal neoplasm

- For diagnosis, initial staging and pre-operative evaluation, re-staging and treatment monitoring

Note: For pediatric patients, ultrasound should be considered as the initial imaging modality.

Undescended testicle (cryptorchidism)

Common Diagnostic Indications

Urinary tract calculi

Initial evaluation of suspected renal or ureteral calculi in patients with no history of nephrolithiasis

Suspected recurrence

- History of radiolucent calculus
- History of radiopaque calculus and atypical presentation
- History of radiopaque calculus and typical presentation, following non-diagnostic ultrasound

Management and follow up

- In patients planning to undergo treatment with percutaneous nephrolithotomy, ureteroscopy or shock wave lithotripsy, when CT has not been performed within the preceding 30 days
- Symptomatic patients with known radiolucent calculi
- Symptomatic patients with radiopaque calculi, following non-diagnostic KUB or ultrasound
- Asymptomatic patients with known radiolucent calculi, persistent hydronephrosis on ultrasound, and treatment involving either shock wave lithotripsy or ureteroscopic stone extraction

Pregnancy

- Diagnosis or management, following non-diagnostic ultrasound or KUB

Worsening renal function

- Following a non-diagnostic ultrasound

Note: *Non-contrast evaluation is indicated in individuals with worsening renal function, as contrast administration may potentially worsen renal function in these patients.*

Vascular

Aneurysm of the abdominal aorta, iliac or femoral vessels

- Following inconclusive ultrasound in patients with suspected aneurysm/dilation of the abdominal aorta, iliac or femoral vessels
- Follow-up imaging of patients with an established aneurysm/dilation when most recent ultrasound imaging is inconclusive
- Pre-operative assessment or prior to percutaneous endovascular stent graft placement
- Annual post-operative surveillance of stable patients who have undergone open surgical repair when most recent ultrasound imaging is inconclusive
- Post-operative surveillance of stable patients who have been treated with endovascular stent graft
- Suspected complication of an aneurysm/dilation, such as aneurysmal rupture or infection—requiring urgent imaging
- Prior to transcatheter aortic valve implantation/replacement (TAVI or TAVR), unless advanced imaging has been performed for this indication within the preceding 60 days

Aorto-iliac dissection

- May evaluate with either CT or CTA
 - Usually results from subdiaphragmatic extension of a thoracic aortic dissection

Thrombosis in the systemic and portal venous circulations

- Following initial evaluation with inconclusive Doppler ultrasound

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CT Angiography (CTA) Abdomen and Pelvis Combination



CPT Codes

74174..... Computed tomographic angiography, abdomen and pelvis, with contrast material(s), including noncontrast images, if performed, and image postprocessing

Standard Anatomic Coverage

- Anatomic coverage for CPT code 74174 (CTA abdomen and pelvis combination) includes the major arterial and/or venous structures in the abdomen, from the diaphragmatic dome to the ischial tuberosities.
- Coverage for an abdominal CTA generally includes the abdominal aorta and these visceral arteries (aortic branches):
 - Renal arteries
 - Celiac artery
 - Splenic artery
 - Hepatic artery
 - Superior mesenteric artery
- Coverage for a pelvic CTA includes the aortic bifurcation and these arteries:
 - Common iliac artery
 - Internal iliac artery (aka hypogastric) and its branches
 - External iliac artery
- Full evaluation of the superior and inferior mesenteric artery generally requires both CTA abdomen and pelvis.
- Complete evaluation of the femoral artery generally requires CT angiography with iliofemoral lower extremity runoff (CPT 75635).

Technology Considerations

- For CTA of the abdominal aorta and iliofemoral vasculature with lower extremity runoff, use CPT code 75635
- Doppler ultrasound examination is an excellent means to identify a wide range of vascular abnormalities, both arterial and venous in origin. This well-established modality should be considered in the initial evaluation of many vascular disorders listed below.
- CTA is an alternative exam in patients who cannot undergo MRA.
- Requests for a combination CTA abdomen and pelvis study in addition to a request for a CTA abdominal aorta and bilateral iliofemoral lower extremity runoff study are not allowed
- The primary reason to combine CTA's of the abdomen and pelvis is to evaluate for a vascular disease that affects both the abdominal aorta (covered by the CTA abdomen) and the iliac arteries (covered by CTA pelvis). Some examples include ischemia, occlusion, aneurysm, trauma, vasculitis.
- Aortic stent grafts often cover the infrarenal abdominal aorta and proximal iliac arteries. CTA abdomen and pelvis should be used to evaluate complications such as endoleak in these cases.
- Aortic dissection will often be requested at a CTA chest (CPT 71275) and abdomen. Pelvis is not required.

Common Diagnostic Indications

Aneurysm of the abdominal aorta, iliac or femoral vessels

- Following inconclusive ultrasound in patients with suspected aneurysm/dilation of the abdominal aorta, iliac or femoral vessels
- Follow-up imaging of patients with an established aneurysm/dilation when most recent ultrasound imaging is inconclusive
- Preoperative assessment or prior to percutaneous endovascular stent graft placement
- Annual post-operative surveillance of stable patients who have undergone open surgical repair when most recent ultrasound imaging is inconclusive
- Post-operative surveillance of stable patients who have been treated with endovascular stent graft
- Suspected complication of an aneurysm/dilation, such as aneurysmal rupture or infection—requiring urgent imaging
- Prior to transcatheter aortic valve implantation/replacement (TAVI or TAVR), unless advanced imaging has been performed for this indication within the preceding 60 days

Arteriovenous malformation (AVM) or arteriovenous fistula (AVF)

Note: For renal or superficial AVM, ultrasound should be considered as the first imaging modality

Dissection

Of the abdominal aorta and/or branch vessel

Hematoma / hemorrhage

Of the abdominal aorta and/or branch vessel

Mesenteric ischemia

- May have an acute or chronic and progressive (intestinal or abdominal angina) presentation

Preoperative or pre-procedure evaluation

Note: This indication is for preoperative evaluation of conditions not specifically referenced elsewhere in this guideline.

Prior to resection of pelvic neoplasm

Pseudoaneurysm

Of the abdominal aorta and/or branch vessel

Stenosis or occlusion of the abdominal aorta or branch vessels

- Due to:
 - Atherosclerosis
 - Thromboembolism
 - Other causes

Suspected leak following abdominal aortic surgery or intervention (endoleak)

Traumatic vascular injury

Unexplained blood loss in the abdomen

Vascular anatomic delineation for other surgical and interventional procedures

- Including but not limited to the following clinical scenarios:
 - For vascular delineation prior to operative resection of an abdominal neoplasm
 - For pre- and post-procedure evaluation of bypass grafts, stents and vascular anastomoses

Vascular invasion or compression by an abdominal tumor

Common Diagnostic Indications

Vasculitis

Venous thrombosis or occlusion

Evaluation of suspected thrombosis or occlusion of major abdominal vessels, including portal and systemic venous systems

- Ultrasound is required as the initial study to evaluate the following:
 - Hepatic or portal vein thrombosis
 - Renal vein thrombosis
 - Splenic vein thrombosis

Note: *Ultrasound is not required for suspected thrombosis of the IVC or other venous structures in the abdomen and pelvis.*

Visceral artery aneurysms

- Diagnosis, management, and surveillance of visceral artery aneurysms including:
 - Renal
 - Celiac
 - Splenic
 - Hepatic
 - Superior/inferior mesenteric and their branches

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Computed Tomography (CT)

CT Colonography

(Virtual Colonoscopy)



CPT Codes

- 74261..... Diagnostic CT colonography without contrast
- 74262..... Diagnostic CT colonography with contrast including non-contrast images if performed
- 74263..... Screening CT colonography including image post-processing

Standard Anatomic Coverage

- Use of helical CT and reconstruction algorithms to provide endoluminal visualization of the colon, as well as anatomic depiction throughout much of the abdomen and pelvis. Both 2D and 3D reconstructions are routinely used for colonic evaluation. Colonic preparation is required, similar to standard fiberoptic colonoscopy. Another similarity to fiberoptic colonoscopy is the requirement for air insufflation to distend the colon

Technology Considerations

- CPT codes for CT of the abdomen (74150–74170) and CT of the Pelvis (72192–72194) should not be used when a CT colonography exam is requested.
- Depending on the presenting signs and symptoms, other studies such as fiberoptic colonoscopy and barium examination may be helpful for evaluation of the colon.
- CT colonography requires cleansing bowel preparation and air insufflation for colonic distention, similar to fiberoptic colonoscopy.

Common Diagnostic Indications

This section contains indications for diagnostic CT colonography (74261, 74262) and for screening CT colonography (74263).

Indications for Diagnostic CT Colonography (74261, 74262)

Coagulopathy

Complications from prior fiberoptic colonoscopy

Diverticulitis, with increased risk of perforation

Failed or incomplete fiberoptic colonoscopy of the entire colon, due to inability to pass the colonoscope proximally. Failure to advance the colonoscope may be secondary to:

- Obstructing neoplasm
- Spasm
- Redundant colon
- Altered anatomy or scarring from previous surgery
- Stricture
- Extrinsic compression

Increased sedation risk

- For example, COPD or previous adverse reaction to anesthesia

Known colonic obstruction, when standard fiberoptic colonoscopy is contraindicated

Lifetime or long-term anticoagulation, with increased patient risk if discontinued

Common Diagnostic Indications

Indication for Screening CT Colonography (74263)

As an alternative to either conventional (optical) colonoscopy or double contrast barium enema for colorectal cancer screening, in individuals beginning at the age of 50 years and at a frequency of every 5 years

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