UnitedHealthcare® Community Plan: *Radiology Imaging Coverage Determination Guideline*

Adult Abdomen Imaging Guidelines (For Ohio Only)

V1.0.2023

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Application (for Ohio Only)

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

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Related Community Plan Policies

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General Policies • Pelvis Imaging Guidelines • Peripheral Vascular Disease (PVD) Imaging Guidelines • Cardiac Imaging Guidelines • Oncology Imaging Guidelines
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Guideline Development (Preface-1)

Guideline

Guideline Development (Preface-1.1)

Guideline Development (Preface-1.1)

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- The UnitedHealthcare's evidence-based, proprietary clinical guidelines evaluate a range of advanced imaging and procedures, including NM, US, CT, MRI, PET, Radiation Oncology, Sleep Studies, as well as Cardiac, musculoskeletal and Spine interventions.
- UnitedHealthcare reserves the right to change and update the guidelines. The guidelines undergo a formal review annually. United HealthCare's guidelines are based upon major national and international association and society guidelines and criteria, peer-reviewed literature, major treatises as well as, input from health plans, and practicing academic and community-based physicians.
- These Guidelines are not intended to supersede or replace sound medical judgment, but instead, should facilitate the identification of the most appropriate imaging or other designated procedure given the individual's clinical condition. These guidelines are written to cover medical conditions as experienced by the majority of individuals. However, these guidelines may not be applicable in certain clinical circumstances, and physician judgment can override the guidelines.
- Clinical decisions, including treatment decisions, are the responsibility of the individual and his/her provider. Clinicians are expected to use independent medical judgment, which takes into account the clinical circumstances to determine individual management decisions.
- UnitedHealthcare supports the Choosing Wisely initiative **(https://www.choosingwisely.org/)** by the American Board of Internal Medicine (ABIM) Foundation and many national physician organizations, to reduce the overuse of diagnostic tests that are low value, no value, or whose risks are greater than the benefits.

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

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Benefits, Coverage Policies, and Eligibility Issues (Preface-2.1)

References (Preface-2)

Benefits, Coverage Policies, and Eligibility Issues (Preface-2.1)

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Investigational and Experimental Studies

- Certain advanced imaging studies, or other procedures, may be considered investigational and experimental if there is a paucity of supporting evidence; if the evidence has not matured to exhibit improved health parameters or; the advanced imaging study/procedure lacks a collective opinion of support.

Clinical and Research Trials

- Similar to investigational and experimental studies, clinical trial imaging requests will be considered to determine whether they meet UnitedHealthcare's evidence-based guidelines.
- Imaging studies which are inconsistent with established clinical standards, or are requested for data collection and not used in direct clinical management are not supported.

Legislative Mandate

- State and federal legislations may need to be considered in the review of advanced imaging requests.

References (Preface-2)

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1. Coverage of Clinical Trials under the Patient Protection and Affordable Care Act; 42 U.S.C.A. § 300gg-8

Clinical Information (Preface-3)

Guideline

Clinical Information (Preface-3.1)

References (Preface-3)

Clinical Information (Preface-3.1)

Clinical Documentation and Age Considerations

- UnitedHealthcare's guidelines use an evidence-based approach to determine the most appropriate procedure for each individual, at the most appropriate time in the diagnostic and treatment cycle. UnitedHealthcare's guidelines are framed by:
  - Clinical presentation of the individual, rather than the studies requested
  - Adequate clinical information that must be submitted to UnitedHealthcare in order to establish medical necessity for advanced imaging or other designated procedures includes, but is not limited to the following:
    - Pertinent clinical evaluation should include a recent detailed history, physical examination[20] since the onset or change in symptoms, and/or laboratory and prior imaging studies.
      - Condition-specific guideline sections may describe additional clinical information which is required for a pertinent clinical evaluation.
      - The Spine and Musculoskeletal guidelines require x-ray studies from when the current episode of symptoms has started or changed; x-ray imaging does not have to be within the past 60 days.
      - Advanced imaging or other designated procedures should not be ordered prior to clinical evaluation of an individual by the physician treating the individual. This may include referral to a consultant specialist who will make further treatment decisions.
      - Other meaningful technological contact (telehealth visit, telephone or video call, electronic mail or messaging) since the onset or change in symptoms by an established individual can serve as a pertinent clinical evaluation.
        - Some conditions may require a face-to-face evaluation as discussed in the applicable condition-specific guideline sections.
    - A recent clinical evaluation may be unnecessary if the individual is undergoing a guideline-supported, scheduled follow-up imaging or other designated procedural evaluation. Exceptions due to routine surveillance indications are addressed in the applicable condition-specific guideline sections.
  - UnitedHealthcare's evidence-based approach to determine the most appropriate procedure for each individual requires submission of medical records pertinent to the requested imaging or other designated procedures.
- Many conditions affecting the pediatric population are different diagnoses than those occurring in the adult population. For those diseases which occur in both pediatric and adult populations, minor differences may exist in management due to

individual age, comorbidities, and differences in disease natural history between children and adults.

- Individuals who are 18 years old or younger[19] should be imaged according to the Pediatric Imaging Guidelines if discussed in the condition-specific guideline sections. Any conditions not specifically discussed in the Pediatric Imaging Guidelines should be imaged according to the General Imaging Guidelines. Individuals who are >18 years old should be imaged according to the General Imaging Guidelines, except where directed otherwise by a specific guideline section.

- The terms "male" and "female" used in these guidelines refer to anatomic-specific diseases and disease predispositions associated with individuals' sex assigned at birth rather than their gender identity. It should be noted that gender identity and anatomic-specific diseases as well as disease predispositions are not always linked. As such, these guidelines should be applied to the individual's corresponding known or suspected anatomic-specific disease or disease predisposition. At UnitedHealthcare, we believe that it is important to understand how all individuals, including those who are gender-diverse, choose to identify themselves. To ensure that gender-diverse individuals are treated with respect and that decisions impacting their healthcare are made correctly and with sensitivity, UnitedHealthcare recognizes all individuals with the following gender marker options: Male, Female, Transgender male, Transgender female, "X", and "Not specified."

General Imaging Information

- "Standard" or "conventional" imaging is most often performed in the initial and subsequent evaluations of malignancy. Standard or conventional imaging includes plain film, CT, MRI, or US.
  - Often, further advanced imaging is needed when initial imaging, such as ultrasound, CT, or MRI does not answer the clinical question. Uncertain, indeterminate, inconclusive, or equivocal may describe these situations.
- Appropriate use of contrast is a very important component of evidence-based advanced imaging use.
  - The appropriate levels of contrast for an examination (i.e. without contrast, with contrast, without and with contrast) is determined by the evidence-based guidance reflected in the condition-specific guideline sections.
  - If, during the performance of a non-contrast imaging study, there is the unexpected need to use contrast in order to evaluate a possible abnormality, then that is appropriate.[1]

Ultrasound

- Diagnostic ultrasound uses high frequency sound waves to evaluate soft tissue structures and vascular structures utilizing greyscale and Doppler techniques.
- Ultrasound allows for dynamic real-time imaging at the bedside

- Ultrasound is limited in areas where there is dense bone or other calcification.
- Ultrasound also has a relatively limited imaging window so may be of limited value to evaluate very large abnormalities
- In general, ultrasound is highly operator-dependent, and proper training and experience are required to perform consistent, high-quality evaluations.

- Indications for ultrasound may include, but are not limited to:
  - Obstetric and gynecologic imaging
  - Soft tissue and visceral imaging of the chest, abdomen, pelvis, and extremities
  - Brain and spine imaging when not obscured by dense bony structures
  - Vascular imaging when not obscured by dense bony structures
  - Procedural guidance when not obscured by dense bony structures
  - Initial evaluation of ill-defined soft tissue masses or fullness and differentiating adenopathy from mass or cyst. Prior to advanced imaging, ultrasound can be very beneficial in selecting the proper modality, body area, image sequences, and contrast level that will provide the most definitive information for the individual.
- More specific guidance for ultrasound usage, including exceptions to this general guidance, can be found throughout the condition-specific guidelines.

Computed Tomography (CT):

- The AMA CPT® manual does not describe nor assign any minimum or maximum number of sequences for any CT study. CT imaging protocols are often influenced by the individual clinical situation of the individual and additional sequences are not uncommon. There are numerous CT protocols that may be performed to evaluate specific clinical questions, and this technology is constantly undergoing development.
- CT utilizes ionizing radiation to create cross-sectional and volumetric images of the body.
  - Advantages over ultrasound include a much larger field of view, and faster completion time in general. Disadvantages compared to ultrasound include lack of portability and exposure to ionizing radiation.
  - Advantages over MRI include faster imaging, and a more spacious scanner area limiting claustrophobia. Disadvantages compared to MRI include decreased soft tissue definition, especially with non-contrast imaging, and exposure to ionizing radiation.
- CT can be performed without, with, or without and with intravenous (IV) contrast depending on the clinical indication and body area.
  - In general, non-contrast imaging is appropriate for evaluating structures with significant tissue density differences such as lung parenchyma and bony structures, or when there is a contraindication to contrast.

  - In general, CT with contrast is the most common level of contrast and can be used when there is need for improved vascular or soft tissue resolution, including better characterization of known or suspected malignancy, as well as, infectious and inflammatory conditions.
  - CT without and with contrast has a limited role as the risks of doubling the ionizing radiation exposure rarely outweigh the benefits of multiphasic imaging, though there are some exceptions which include but are not limited to:
    - Characterization of a mass
    - Characterization of arterial and venous anatomy
    - CT with contrast may be used to better characterize findings on a very recent (within two weeks) inconclusive non-contrast CT where the guidelines would support CT without and with contrast.
  - More specific guidance for CT contrast usage, including exceptions to this general guidance can be found throughout the condition-specific guidelines.
- Shellfish allergy:
  - It is commonly assumed that an allergy to shellfish indicates iodine allergy, and that this implies an allergy to iodinated contrast media used with CT. However, this is NOT true. Shellfish allergy is due to tropomyosins. Iodine plays no role in these allergic reactions. Allergies to shellfish do not increase the risk of reaction to iodinated contrast media any more than that of other allergens.[1]
- Enteric contrast (oral or rectal) is sometimes used in abdominal imaging. There is no specific CPT® code which refers to enteric contrast.
- The appropriate contrast level and anatomic region in CT imaging is specific to the clinical indication, as listed in the condition-specific guideline sections.
- CT should not be used to replace MRI in an attempt to avoid sedation unless it is listed as a recommended study the appropriate condition-specific guideline.
- There are significant potential adverse effects associated with the use of iodinated contrast media. These include hypersensitivity reactions, thyroid dysfunction, and contrast-induced nephropathy (CIN). Individuals with impaired renal function are at increased risk for CIN.[2]
- Both contrast CT and MRI may be considered to have the same risk profile with renal failure (GFR <30 mL/min).
- The use of CT contrast should proceed with caution in pregnant and breastfeeding individuals. There is a theoretical risk of contrast toxicity to the fetal and infant thyroid. The procedure can be performed if the specific need for that contrast-enhanced procedure outweighs risk to the fetus. Breastfeeding individuals may reduce this risk by choosing to pump and discard breast milk for 12-24 hours after the contrast injection.
- CT without contrast may be appropriate if clinical criteria for CT with contrast are met AND the individual has:
  - Elevated blood urea nitrogen (BUN) and/or creatinine

  - Renal insufficiency
  - Allergies to iodinated contrast
  - Thyroid disease which could be treated with I-131
  - Diabetes
  - Very elderly
  - Urgent or emergent settings due to availability
  - Trauma
- CT is superior to other imaging modalities in certain conditions, including but not limited to the following:
  - Screening following trauma
  - Imaging pulmonary disease
  - Imaging abdominal and pelvic viscera
  - Imaging of complex fractures
  - Evaluation of inconclusive findings on Ultrasound or MRI, or if there is a contraindication to MRI
- More specific guidance for CT usage, including exceptions to this general guidance can be found throughout the condition specific guidelines.

Magnetic Resonance Imaging (MRI):

- The AMA CPT® manual does not describe nor assign any minimum or maximum number of sequences for any MRI study. MRI protocols are often influenced by the individual clinical situation of the individual and additional sequences are not uncommon. There are numerous MRI sequences that may be performed to evaluate specific clinical questions, and this technology is constantly undergoing development.
- Magnetic Resonance Imaging (MRI) utilizes the interaction between the intrinsic radiofrequency of certain Molecules in the body (hydrogen in most cases) and a strong external magnetic field.
  - MRI is often superior for advanced imaging of soft tissues and can also define physiological processes in some instances [e.g. edema, loss of circulation (AVN), and increased vascularity (tumors)].
  - MRI does not use ionizing radiation, and even non-contrast images have much higher soft tissue definition than CT or Ultrasound
  - MRI typically takes much longer than either CT or Ultrasound, and for some individuals may require sedation. It is also much more sensitive to individual motion that can degrade image quality than either CT or Ultrasound.
- MRI Breast and MRI Chest are not interchangeable, as they focus detailed sequences on different adjacent body parts.
- MRI may be utilized either as the primary advanced imaging modality, or when further definition is needed based on CT or ultrasound imaging.

- Most orthopedic and dental implants are not magnetic. These include hip and knee replacements; plates, screws, and rods used to treat fractures; and cavity fillings. Yet, all of these metal implants can distort the MRI image if near the part of the body being scanned.
  - Other implants, however, may have contraindications to MRI. These include:
    - Pacemakers
    - ICD or heart valves
    - Metal implants in the brain
    - Metal implants in the eyes or ears
    - Infusion catheters and bullets or shrapnel.
  - CT can therefore be an alternative study to MRI in these scenarios.
- The contrast level and anatomic region in MRI imaging is specific to the clinical indication, as listed in the specific guideline sections.
- MRI is commonly performed without, without and with contrast.
  - Non-contrast imaging offers excellent tissue definition
  - Imaging without and with contrast is commonly used when needed to better characterize tissue perfusion and vascularization.
    - Most contrast is gadolinium based and causes T2 brightening of the vascular and extracellular spaces.
    - Some specialized gadolinium and non-gadolinium contrast agents are available, and most commonly used for characterizing liver lesions.
  - MRI with contrast only is rarely appropriate and is usually used to better characterize findings on a recent inconclusive non-contrast MRI, commonly called a completion study.
  - MRI contrast is contraindicated in pregnant individuals
  - More specific guidance for MRI contrast usage, including exceptions to this general guidance can be found throughout the condition specific guidelines.
- MRI may be preferred in individuals with renal failure, and in individuals allergic to intravenous CT contrast.
  - Both contrast CT and MRI may be considered to have the same risk profile with renal failure (GFR <30 mL/min).[2]
  - Gadolinium can cause Nephrogenic Systemic Fibrosis (NSF). The greater the exposure to gadolinium in individuals with a low GFR (especially if on dialysis), the greater the chance of individuals developing NSF.
  - Multiple studies have demonstrated potential for gadolinium deposition following the use of gadolinium-based contrast agents (GBCAs) for MRI studies.[3,4,5,6,7] The U.S. Food and Drug Administration (FDA) has noted that there is currently no evidence to suggest that gadolinium retention in the brain is harmful and restricting gadolinium-based contrast agents (GBCAs) use is not warranted at

this time. It has been recommended that GBCA use should be limited to circumstances in which additional information provided by the contrast agent is necessary and the necessity of repetitive MRIs with GBCAs should be assessed.[8]

- A CT may be approved in place of an MRI when clinical criteria are met for MRI AND there is a contraindication to having an MRI (pacemaker, ICD, insulin pump, neurostimulator, etc.)
  - When replacing MRI with CT, contrast level matching should occur as follows:
    - MRI without contrast → CT without contrast
    - MRI without and with contrast → CT with contrast or CT without and with contrast
- The following situations may impact the appropriateness for MRI and or MR contrast
  - Caution should be taken in the use of gadolinium in individuals with renal failure
  - The use of gadolinium contrast agents is contraindicated during pregnancy unless the specific need for that procedure outweighs risk to the fetus.
  - MRI can be performed for non-ferromagnetic body metals (i.e. titanium), although some imaging facilities will consider it contraindicated if recent surgery, regardless of the metal type
- MRI should not be used as a replacement for CT for the sole reason of avoidance of ionizing radiation when MRI is not supported in the condition-based guidelines, since it does not solve the problem of overutilization.
- MRI is superior to other imaging modalities in certain conditions, including but not limited to the following:
  - Imaging the brain and spinal cord
  - Characterizing visceral and musculoskeletal soft tissue masses
  - Evaluating musculoskeletal soft tissues including ligaments and tendons
  - Evaluating inconclusive findings on ultrasound or CT
  - Individuals who are pregnant or have high radiation sensitivity
  - Suspicion, diagnosis of or surveillance of infections
- More specific guidance for MRI usage, including exceptions to this general guidance can be found throughout the condition-specific guidelines.

Positron Emission Tomography (PET):

- PET is a nuclear medicine study that uses a positron emitting radiotracer to create cross-sectional and volumetric images based on tissue metabolism.
- Conventional imaging (frequently CT, sometimes MRI or bone scan) of the affected area(s) drives much of initial and restaging and surveillance imaging for malignancy and other chronic conditions. PET is not indicated for surveillance imaging unless specifically stated in the condition-specific guideline sections.

- PET/MRI is generally not supported, See **PET-MRI (Preface-5.3)**
- PET is rarely performed as a single modality, but is typically performed as a combined PET/CT.
  - The unbundling of PET/CT into separate PET and diagnostic CT CPT® codes is not supported, because PET/CT is done as a single study.
- PET/CT lacks the tissue definition of CT or MRI, but is fairly specific for metabolic activity based on the radiotracer used
  - Fluorodeoxyglucose (fluorine-18-2-fluoro-2-deoxy-D-glucose [FDG]) is the most common PET radiotracer and images glucose metabolism
  - Some specialized radiotracers including Gallium-68 DOTATATE, C-11 Choline, F-18 Fluciclovine (AXUMIN®), 68Ga PSMA-11, and 18F Piflufolastat PSMA (Pylarify®) are supported in evaluation for some oncologic conditions, while the use of other radiotracers including but not limited to F-18 Sodium Fluoride is not supported.
- Indications for PET/CT may include
  - Oncologic Imaging for evaluation of tumor metabolic activity
  - Cardiac Imaging for evaluation of myocardial metabolic activity
  - Brain Imaging for evaluation of metabolic activity for procedural planning
- More specific guidance for PET usage, including exceptions to this general guidance can be found throughout the condition-specific guidelines.

Overutilization of Advanced Imaging:

- A number of recent reports describe overutilization in many areas of advanced imaging and other procedures, which may include:
  - High level testing without consideration of less invasive, lower cost options which may adequately address the clinical question at hand
  - Excessive radiation and costs with unnecessary testing
  - Defensive medical practice
  - CT without and with contrast (so called “double contrast studies) requests, which have few current indications.
  - MRI requested in place of CT to avoid radiation without considering the primary indication for imaging
  - Adult CT settings and protocols used for smaller people and children
  - Unnecessary imaging procedures when the same or similar studies have already been conducted.
- A review of the imaging or other relevant procedural histories of all individuals presenting for studies has been recognized as one of the more important processes that can be significantly improved. By recognizing that a duplicate or questionably indicated examination has been ordered for individuals, it may be possible to avoid

exposing them to unnecessary risks.[9, 10] To avoid these unnecessary risks, the precautions below should be considered.

  - The results of initial diagnostic tests or radiologic studies to narrow the differential diagnosis should be obtained prior to performing further tests or radiologic studies.
  - The clinical history should include a potential indication such as a known or suspected abnormality involving the body part for which the imaging study is being requested. These potential indications are addressed in greater detail within the applicable guidelines.
  - The results of the requested imaging procedures should be expected to have an impact on individual management or treatment decisions.
  - Repeat imaging studies are not generally necessary unless there is evidence of disease progression, recurrence of disease, and/or the repeat imaging will affect an individual's clinical management.
- Preoperative imaging/pre-surgical planning imaging/pre-procedure imaging is not indicated if the surgery/procedure is not indicated. Once the procedure has been approved or if the procedure does not require prior authorization, the appropriate pre-procedural imaging may be approved.

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Coding Issues (Preface-4)

Guideline

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3D Rendering (Preface-4.1)

CPT® 76376 and CPT® 76377:

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

- Evaluation of congenital skull abnormalities in newborns, infants, and toddlers (usually for preoperative planning)
- Complex fractures (comminuted or displaced)/dislocations of any joint (For preoperative planning when conventional imaging is insufficient)
- Spine fractures, pelvic/acetabulum fractures, intra-articular fractures (For preoperative planning when conventional imaging is insufficient)
- Preoperative planning for other complex surgical cases
- Complex facial fractures

- Preoperative planning for other complex surgical cases
- Cerebral angiography
- Pelvis conditions:
  - Uterine intra-cavitary lesion when initial US is equivocal (See **Abnormal Uterine Bleeding (AUB) (PV-2.1)** and **Leiomyoma/Uterine Fibroids (PV-12.1)** in the Pelvis Imaging Guidelines)
  - Hydrosalpinxes or peritoneal cysts when initial US is indeterminate (See
  - **Complex Adnexal Masses (PV-5.3)** in the Pelvis Imaging Guidelines)
  - Lost IUD (inability to feel or see IUD string) with initial US (See **Intrauterine Device (PV-10.1)** in the Pelvis Imaging Guidelines)
  - Uterine anomalies with initial US (See **Uterine Anomalies (PV-14.1)** in the Pelvis Imaging Guidelines)
  - Infertility (See **Initial Infertility Evaluation, Female (PV-9.1)** in the Pelvis Imaging Guidelines)
- Abdomen conditions:
  - CT Urogram (See **Hematuria and Hydronephrosis (AB-39)** in the Abdomen Imaging Guidelines)
  - MRCP (See **MR Cholangiopancreatography (MRCP) (AB-27)** in the Abdomen Imaging Guidelines)

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

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

TABLE: Imaging Guidance Procedure Codes

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

CPT® 19085 and CPT® 19086:

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

CPT® 75989:

- This code is used to report imaging guidance for a percutaneous drainage procedure in which a catheter is left in place.

- This code can be used to report whether the drainage catheter is placed under fluoroscopy, ultrasound, CT, or MR guidance modality.

CPT® 77011:

- A stereotactic CT localization scan is frequently obtained prior to sinus surgery. The dataset is then loaded into the navigational workstation in the operating room for use during the surgical procedure. The information provides exact positioning of surgical instruments with regard to the individual's 3D CT images.[3]
- In most cases, the preoperative CT is a technical-only service that does not require interpretation by a radiologist.
  - The imaging facility should report CPT® 77011 when performing a scan not requiring interpretation by a radiologist.
  - If a diagnostic scan is performed and interpreted by a radiologist, the appropriate diagnostic CT code (e.g., CPT® 70486) should be used.
  - It is not appropriate to report both CPT® 70486 and CPT® 77011 for the same CT stereotactic localization imaging session.
  - 3D Rendering (CPT® 76376 or CPT® 76377) should not be reported in conjunction with CPT® 77011 (or CPT® 70486 if used). The procedure inherently generates a 3D dataset.

CPT® 77012 (CT) and CPT® 77021 (MR):

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

CPT® 77013 (CT) and CPT® 77022 (MR):

- These codes include the initial guidance to direct a needle electrode to the tumor(s), monitoring for needle electrode repositioning within the lesion, and as necessary for multiple ablations to coagulate the lesion and confirmation of satisfactory coagulative necrosis of the lesion(s) and comparison to pre-ablation images.
  - **NOTE**: CPT® 77013 should only be used for non-bone ablation procedures.

        - CPT® 20982 includes CT guidance for bone tumor ablations.
    - Only codes representing percutaneous surgical procedures should be billed with CPT® 77013 and CPT® 77022. It is inappropriate to use with surgical codes for open, excisional, or incisional procedures.
- CPT® 77012 and CPT® 77021 (as well as guidance codes CPT® 76942 [US], and CPT® 77002 - CPT® 77003 [fluoroscopy]) describe radiologic guidance by different modalities.
    - Only one unit of any of these codes should be reported per individual encounter (date of service). The unit of service is considered to be the individual encounter, not the number of lesions, aspirations, biopsies, injections, or localizations.

Unlisted Procedures/Therapy Treatment Planning (Preface-4.3)

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

- These unlisted codes should be reported whenever a diagnostic or interventional CT or MR study is performed in which an appropriate anatomic site-specific code is not available.
  - A Category III code that describes the procedure performed must be reported rather than an unlisted code if one is available.
- CPT® 76497 or CPT® 76498 (Unlisted CT or MRI procedure) can be considered in the following clinical scenarios:
  - Studies done for navigation and planning for neurosurgical procedures (i.e. Stealth or Brain Lab Imaging)[1,2]
  - Custom joint Arthroplasty planning (not as Alternative Recommendation) (See **Osteoarthritis (MS-12.1)** in the Musculoskeletal Imaging Guidelines)
  - Any procedure/surgical planning if thinner cuts or different positional acquisition (than those on the completed diagnostic study) are needed. These could include navigational bronchoscopy. See **Navigational Bronchoscopy (CH-1.7)** in the Chest Imaging Guidelines

Therapy Treatment Planning

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

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

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

SPECT/CT Imaging (Preface-4.6)

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

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

PRF.CD.0004.7.UOH
v1.0.2023

- It is inappropriate to use diagnostic imaging codes for interpretation of a previously performed exam that was completed at another facility.
  - If the outside exam is being used for comparison with a current exam, the diagnostic code for the current examination includes comparison to the prior study[4]
  - CPT® 76140 is the appropriate code to use for an exam which was completed elsewhere, and a secondary interpretation of the images is requested.[5]

Quantitative MR Analysis of Tissue Composition (Preface-4.8)

PRF.CD.0004.8.UOH
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- Category III CPT® codes for quantitative analysis of multiparametric MR (mp-MRI) data with and without an associated diagnostic MRI have been established. Quantitative mp-MRI uses software to analyze tissue physiology of visceral organs and other anatomic structures non-invasively. At present, these procedures are primarily being used in clinical trials and there is no widely recommended indications in clinical practice. As such, these procedures are considered to be investigational and experimental for coverage purposes.
  - CPT® 0648T (without diagnostic MRI) and CPT® 0649T (with diagnostic MRI) refer to data analysis with and without associate imaging of a single organ, with its most common use being LiverMultiScan (LMS)
    - See **Fatty Liver (AB-29.2)** in the Abdomen Imaging Guidelines
  - CPT® 0697T (without diagnostic MRI) and CPT® 0698T (with diagnostic MRI) refer to data analysis with and without associate imaging of a multiple organs, with its most common use being CoverScan.

HCPCS Codes (Preface-4.9)

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- Healthcare Common Procedure Coding System (HCPCS) codes are utilized by some hospitals in favor of the typical Level 3 CPT® Codes. These codes are typically 4 digits preceded by a C, or S[6]
  - Many of these codes have similar code descriptions to level 3 CPT® codes (i.e. C8931 – MRA with dye, Spinal Canal, and 72159-MRA Spinal canal)
  - If cases are submitted with HCPCS codes with similar code descriptions to the typical level 3 CPT® codes, those procedures should be managed in the same manner as the typical CPT® codes
  - HCPCS code management is discussed further in the applicable guideline sections
- Requests for many Healthcare Common Procedure Coding System (HCPCS) codes, including nonspecific codes such as S8042 [Magnetic resonance imaging (MRI), low-field], should be redirected to a more appropriate and specific CPT® code. Exceptions are noted in the applicable guideline sections.

References (Preface-4)

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2. Intraoperative MR. Brainlab. https://www.brainlab.com/surgery-products/overview-neurosurgery-products/intraoperative-mr/
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6. HCPCS - General Information from CMS.gov at https://www.cms.gov/medicare/coding/medhcpcsgeninfo

Whole Body Imaging (Preface-5)

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Whole Body CT Imaging (Preface-5.1)

Whole Body MR Imaging (Preface-5.2)

PET-MRI (Preface-5.3)

References (Preface-5)

Whole Body CT Imaging (Preface-5.1)

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

Whole Body MR Imaging (Preface-5.2)

PRF.WB.0005.2.UOH
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- Whole-body MRI (WBMRI) is, with the exception of select cancer predisposition syndromes and autoimmune conditions discussed below, generally not supported at this time due to lack of standardization in imaging technique and lack of evidence that WBMRI improves individual outcome for any individual disease state.
  - While WBMRI has the benefit of whole-body imaging and lack of radiation exposure, substantial variation still exists in the number of images, type of sequences (STIR vs. diffusion weighting, for example), and contrast agent(s) used.
- Coding considerations:
  - There are no established CPT® or HCPCS codes for reporting WBMRI.
  - WBMRI is at present only reportable using CPT® 76498. All other methods of reporting whole-body MRI are inappropriate, including:
    - Separate diagnostic MRI codes for multiple individual body parts
    - MRI Bone Marrow Supply (CPT® 77084)
- Disease-specific considerations:
  - Cancer screening:
    - Interval WBMRI is recommended for cancer screening in individuals with select cancer predisposition syndromes. Otherwise, WBMRI has not been shown to improve outcomes for cancer screening. See **Li-Fraumeni Syndrome (LFS) (PEDONC-2.2)**, **Hereditary Paraganglioma-Pheochromocytoma (HPP) Syndromes (PEDONC-2.13)**, **Constitutional Mismatch Repair Deficiency (CMMRD or Turcot Syndrome) (PEDONC-2.15)** in the Pediatric Oncology Imaging Guidelines for additional information
  - Cancer staging and restaging
    - While the feasibility of WBMRI has been established, data remain conflicting on whether WBMRI is of equivalent diagnostic accuracy compared with standard imaging modalities such as CT, scintigraphy, and PET imaging.
    - Evidence has not been published establishing WBMRI as a standard evaluation for any type of cancer.
  - Autoimmune disease
    - WBMRI can be approved in some situations for individuals with chronic recurrent multifocal osteomyelitis. See **Chronic Recurrent Multifocal Osteomyelitis (PEDMS-10.2)** in the Pediatric Musculoskeletal Imaging Guidelines for additional information.

PET-MRI (Preface-5.3)

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- PET-MRI is generally not supported for a vast majority of oncologic and neurologic conditions due to lack of standardization in imaging technique and interpretation. However, it may be appropriate in select circumstances when the following criteria are met:
  - The individual meets guideline criteria for PET-CT **AND** PET-CT is not available at the treating institution **AND**
  - The provider requests PET-MRI in lieu of PET-CT
- When the above criteria are met, PET-MRI may be reported using the code combination of PET Whole-Body (CPT® 78813) and MRI Unlisted (CPT® 76498). All other methods of reporting PET-MRI are inappropriate.
  - When clinically appropriate, diagnostic MRI codes may be indicated at the same time as the PET-MRI code combination.
- See **PET Imaging in Pediatric Oncology (PEDONC-1.4)** in the Pediatric Oncology Imaging Guidelines, **PET Brain Imaging (PEDHD-2.3)**, and **Special Imaging Studies in Evaluation for Epilepsy Surgery (PEDHD-6.3)** in the Pediatric Head Imaging Guidelines for more information

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7. National Comprehensive Cancer Network (NCCN) Guidelines Version 2 2022. – March 19, 2022, Genetic/Familial High Risk Assessment: Breast and Ovarian, available at: https://www.nccn.org/professionals/physician_gls/pdf/genetics_bop.pdf Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines™) for Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic V2.2022. – March 19, 2022 ©. 2022 National Comprehensive Cancer Network, Inc. All rights reserved. The NCCN Guidelines™ and illustrations herein may not be reproduced in any form for any purpose without the express written permission of the NCCN. To view the most recent and complete version of the NCCN Guidelines™, go online to NCCN.org

References (Preface-6)

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References (Preface-6.1)

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- Complete reference citations for the journal articles are embedded within the body of the guidelines and/or may be found on the Reference pages at the end of some guideline sections.
- The website addresses for certain references are included in the body of the guidelines but are not hyperlinked to the actual website.
- The website address for the American College of Radiology (ACR) Appropriateness Criteria® is **http://www.acr.org**.

Copyright Information (Preface-7)

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Abbreviations for Abdomen Imaging Guidelines

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Abbreviations for Abdomen Imaging Guidelines	
AAA	abdominal aortic aneurysm
AASLD	American Association for the Study of Liver Diseases
ACE	angiotensin-converting enzyme
ACG	American College of Gastroenterology
ACR	American College of Radiology
ACTH	adrenocorticotropic hormone
AFP	alpha-fetoprotein
AGA	American Gastroenterological Association
ALT	alanine aminotransferase
ASGE	American Society for Gastrointestinal Endoscopy
AST	aspartate aminotransferase
AUA	American Urological Association
BEIR	Biological Effects of Ionizing Radiation
BUN	blood urea nitrogen
CAG	Canadian Association of Gastroenterology
CNS	central nervous system
CT	computed tomography
CTA	computed tomography angiography
CTC	computed tomography colonography (aka: virtual colonoscopy)
DVT	deep vein thrombosis
ERCP	endoscopic retrograde cholangiopancreatography
EUS	endoscopic ultrasound
FNH	focal nodular hyperplasia
GFR	glomerular filtration rate

Abbreviations for Abdomen Imaging Guidelines	
GGT	gamma glutamyltransferase
GI	gastrointestinal
HCC	hepatocellular carcinoma
HCPCS	Healthcare Common Procedural Coding System (commonly pronounced: “hix pix”)
HU	Hounsfield units
IAA	iliac artery aneurysm
IV	intravenous
KUB	kidneys, ureters, bladder (plain frontal supine abdominal radiograph)
LFT	liver function tests
MRCP	magnetic resonance cholangiopancreatography
MRA	magnetic resonance angiography
MRI	magnetic resonance imaging
mSv	millisievert
NAFLD	nonalcoholic fatty liver disease
PA	posteroanterior projection
PET	positron emission tomography
RAS	renal artery stenosis
RBC	red blood cell
SBFT	small bowel follow through
SPECT	single photon emission computed tomography
VC	virtual colonoscopy (CT colonography)
PFT	pulmonary function tests
WBC	white blood cell
ZES	Zollinger-Ellison Syndrome

General Guidelines (AB-1.0)

- 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 individual can substitute for a face-to-face clinical evaluation.

Red Flag Findings

- The following signs and symptoms can be indicative of more serious conditions. Documentation of abdominal pain along with ANY of the following warrants exclusion from prerequisites to advanced imaging:
  - History of malignancy with a likelihood or propensity to metastasize to abdomen
  - Fever (≥101 degrees Fahrenheit)
  - Elevated WBC >10,000, or above the upper limit of normal for the particular lab reporting the result
  - Palpable mass of clinical concern and/or without benign features
  - GI bleeding, overt or occult, not obviously hemorrhoidal
  - Abdominal tenderness documented as moderate or severe
  - Peritoneal signs, such as guarding or rebound tenderness
  - Suspected complication of bariatric surgery
  - Notation by the ordering provider that the individual has a "surgical abdomen"
  - Age ≥60 years with unintentional weight loss of ≥10 lbs. or ≥5% of body weight over 6 months or less
- See the condition-specific sections for when the above list of exclusionary criteria apply and lead directly to advanced imaging.

Experimental, Investigational, and/or Unproven Techniques

- Certain imaging studies described in these guidelines are considered investigational and/or unproven (EIU)
- Reasons for this may include:
  - There is a paucity of supporting evidence:
    - The requested procedure has not been shown to be medically effective by sufficient scientific evidence such as well-conducted randomized clinical trials or cohort studies with a sample size of sufficient statistical power, and/or
    - Does not have endorsement by national professional specialty medical societies for the clinical condition being treated, and/or

- No national evidence-based guideline currently advocates the use of the procedure for the indication as requested.

- Evidence has not matured to exhibit improved health parameters:
  - Available scientific evidence does not demonstrate use of the requested procedure that leads to superior/improved/better health outcomes for the clinical condition being treated compared to standard, currently available modalities.
- The requested procedure does not have final approval from appropriate governmental regulatory bodies for use in the treatment of the existing clinical condition.

Pre-operative Radiologic Imaging

- Please refer to the appropriate guidelines relevant to the clinical condition for the pre-operative imaging indications (e.g., **Percutaneous Gastrostomy (AB-9.2)**)
- Radiologic therapeutic intervention is addressed elsewhere in this Guideline
- Radiologic management of lower GI bleeding, see: **GI Bleeding (AB-22)**
- Radiologic management of mesenteric ischemia, see: **Mesenteric/Colonic Ischemia (AB-6)**
- Radiologic management of portal hypertension, see: **Portal Hypertension (AB-26.3)**

Overview (AB-1.1)

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

CT Imaging (AB-1.2)

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- CT imaging is a more generalized modality. CT Abdomen is usually performed with contrast (CPT® 74160):
  - Oral contrast has no relation to the IV contrast administered. Coding for contrast only refers to IV contrast. There is no coding for oral contrast.
  - Exceptions are noted in these guidelines, and include:
    - CT Abdomen with contrast (CPT® 74160) or without and with contrast (CPT® 74170) with suspicion of a solid organ lesion (liver, kidney, pancreas, spleen).
      - Please refer to the specific guideline for the lesion in question for specific guidance.
    - CT Abdomen without contrast (CPT® 74150) or CT Abdomen and Pelvis without contrast (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.
    - CT Abdomen and Pelvis without and with contrast (CPT® 74178 – CT Urogram) for certain urologic conditions (e.g. hematuria)
  - Shellfish allergy:
    - It is commonly assumed that an allergy to shellfish infers iodine allergy, and that this implies an allergy to CT iodinated contrast media. However, this is NOT true. Shellfish allergy is due to tropomysins. Iodine plays no role in these allergic reactions. Allergies to shellfish do not increase the risk of reaction to IV contrast any more than that of other allergens.
  - CT Abdomen and Pelvis, usually with contrast (CPT® 74177), should be considered when signs or symptoms are generalized, or involve a lower quadrant of the abdomen.
  - CT Enterography (CPT® 74177) combines CT imaging with large volumes of ingested neutral bowel contrast material to allow visualization of the small bowel.
  - 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
  - Triple-phase CT

- 3 phases of a triple-phase CT are:
  - 1) Hepatic arterial phase,
  - 2) Portal venous phase, and
  - 3) Washout or delayed acquisitions phase.
- It should be noted that, in general, a pre-contrast or non-contrast CT is usually not needed in a standard triple-phase CT, except in those individuals previously treated with locoregional embolic or ablative therapies. Other specific instances in which a prior non-contrast CT may be indicated for the evaluation of liver lesions are noted in **Liver Lesion Characterization (AB-29.1)** .

- CT Colonography (CTC)
  - There are 3 CPT® codes for CTC:
    - CPT® 74263: Screening CTC (only used for screening procedures)
    - CPT® 74261: CTC without contrast
    - CPT® 74262: CTC with contrast
  - See: **CT Colonography (CTC) (AB-25)** for further indications for these procedures

MR Imaging (AB-1.3)

- 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.
  - MRI Abdomen with contrast only is essentially never performed. If contrast is indicated, MRI Abdomen without and with contrast (CPT® 74183) should be performed.
  - For pregnant women ultrasound or MRI without contrast should be used to avoid radiation exposure. The use of gadolinium contrast agents is limited during pregnancy, as gadolinium contrast agents cross the placenta and enter the amniotic fluid with unknown long-term effects on the fetus.
    - See: **Pregnancy Considerations for Imaging (AB-1.12)** for additional discussion of this issue
- MR Elastography (CPT® 76391) replaces MRI Abdomen (CPT® 74183 or CPT® 74181) for requests for MR Elastography liver (See: **Liver Elastography (AB-45)**)

MR Enterography and Enteroclysis Coding Notes (AB-1.4)

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- MR Enterography or Enteroclysis is reported in one of two ways:
  - MRI Abdomen without and with contrast (CPT® 74183), or
  - MRI Abdomen without and with contrast (CPT® 74183) and MRI Pelvis with and without contrast (CPT® 72197)

Ultrasound (AB-1.5)

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- Ultrasound, also called sonography, uses high frequency sounds waves to image body structures.
  - The routine use of 3D and 4D rendering, (post-processing), in conjunction with ultrasound is considered investigational.
  - All ultrasound studies require permanently recorded images either stored on film or in a Picture Archiving and Communication System (PACS).
  - 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.
  - The minimal use of color Doppler alone, when performed for anatomical structure identification during a standard ultrasound procedure, is not separately reimbursable.

Abdominal Ultrasound (AB-1.6)

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- Complete abdominal ultrasound (CPT® 76700) includes all of the following required elements:
  - Liver, gallbladder, common bile duct, pancreas, spleen, kidneys, upper abdominal aorta, and inferior vena cava.
  - 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.
  - 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.

Retroperitoneal Ultrasound (AB-1.7)

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- Complete retroperitoneal ultrasound (CPT® 76770) includes all of the following required elements:
  - Kidneys, lymph nodes, abdominal aorta, common iliac artery origins, inferior vena cava.
  - 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.
  - Further, CPT® 76775 should:
    - Be assigned to report follow-up studies once a complete retroperitoneal ultrasound (CPT® 76770) has been performed; and
    - Be reported only once per individual imaging session; and
      - Not be reported with CPT® 76770 for the same individual for the same imaging session.

CT-, MR-, Ultrasound-guided Procedures (AB-1.8)

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See: **CT-, MR-, or Ultrasound-Guided Procedures (Preface-4.2)** in the Preface Imaging Guidelines

Contrast-Enhanced Ultrasound (AB-1.9)

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Ultrasound with contrast (CEUS, CPT® 76978, CPT® 76979) is an emerging technology that may be as good, if not better, than CT or MRI in certain circumstances. Abdominal Imaging Guidelines address its use as appropriate. CPT® 76978 refers to the initial imaging of the first lesion, and CPT® 76979 refers to additional lesions that are imaged subsequently.

Quantitative MRI (AB-1.10)

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- Quantitative MR analysis of tissue composition (CPT® 0648T, 0649T, 0697T and 0698T)
  - These CPT codes are investigational and experimental for coverage purposes.
  - See: **Quantitative MR Analysis of Tissue Composition (Preface-4.8)** and **Fatty Liver (AB-29.2)** for further discussion of these modalities.

RADCAT Grading System (AB-1.11)

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- The RADCAT (Radiology Report Categorization) Grading System was developed in order to communicate to ordering physicians (most commonly in the ER setting), the relative urgency of a radiologic finding. It is not related to the LI-RADs reporting system, nor does it necessarily imply the need for follow-up imaging, as opposed to clinical follow-up. The rating system is as follows:
  - RADCAT 1: Normal Result
  - RADCAT 2: Routine Result
  - RADCAT 3: Result with recommendation for non-urgent routine follow-up
  - RADCAT 4: Priority Result
  - RADCAT 5: Critical Result

Pregnancy Considerations for Imaging (AB-1.12)

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The American College of Obstetricians and Gynecologists has issued guidelines with regards to imaging during pregnancy and lactation. Their recommendations are as follows:[15]

- Ultrasonography and magnetic resonance imaging (MRI) are not associated with risk and are the imaging techniques of choice for the pregnant patient, but they should be used prudently and only when use is expected to answer a relevant clinical question or otherwise provide medical benefit to the patient.
- With few exceptions, radiation exposure through radiography, computed tomography (CT) scan, or nuclear medicine imaging techniques is at a dose much lower than the exposure associated with fetal harm.
    - If these techniques are necessary in addition to ultrasound or MRI or are more readily available for the diagnosis in question, they should not be withheld from a pregnant patient.
- The use of gadolinium contrast with MRI should be limited; it may be used as a contrast agent in a pregnant patient only if it significantly improves diagnostic performance and is expected to improve fetal or maternal outcome.
- With regards to iodinated IV contrast media, “it is generally recommended that contrast only be used if absolutely required to obtain additional diagnostic information that will affect the care of the fetus or woman during pregnancy”.

References (AB-1)

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Abdominal Pain (AB-2)

Acute/Persistent (Non-Chronic) Lower Abdominal Pain (AB-2.2)

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- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.
- Left Lower Abdominal Pain (including suspected diverticulitis) <6 months duration
  - CT Abdomen and Pelvis with contrast is indicated if ANY of the following are present:
    - Age ≥65
    - The presence of LLQ tenderness specifically noted on physical examination, and diverticulitis is specified as a diagnostic consideration
    - Immunocompromised individual (e.g., on immunosuppressive therapy, history of HIV)
    - If prior abdominal and pelvic US has been performed and demonstrates a need for additional imaging OR if they do not explain the source of pain
    - CBC, Basic Metabolic Panel, C-Reactive Protein or other inflammatory marker, Pregnancy Test, and Urinalysis have been performed
      - Note: All the specific laboratory studies listed are not required, but there should be some studies performed relating to the current episode in order to help direct imaging appropriately.
    - For follow-up imaging of acute diverticulitis if symptoms or elevated WBC persists despite treatment
    - For follow-up of complicated diverticulitis, including confirmed abscess, fistulae, free fluid, or perforation (See: **Abdominal Sepsis/Suspected Abdominal Sepsis (AB-3)**).
    - For follow-up of diverticulitis treated with radiologic intervention (e.g. drainage procedure)
    - Note: Per ASCRS, colonic endoscopic evaluation is recommended to confirm the diagnosis after resolution of acute diverticulitis to exclude malignancy, especially when initial CT scan supports abscess, shouldering, or shelf-like appearance of a presumed inflammatory mass, obstruction, mesenteric or retroperitoneal adenopathy.
  - Pregnant individuals
    - US Abdomen and/or Pelvis should be considered initially to avoid ionizing radiation.
    - MRI Abdomen and MRI Pelvis without contrast if US is nondiagnostic. (See: **Pregnancy Considerations for Imaging (AB-1.12)**)
- Right Lower Abdominal Pain (including suspected appendicitis)

- CT Abdomen and Pelvis with or without contrast is indicated if ANY of the following are present:
  - Age ≥65
  - For Alvarado Score of ≥4
  - For AIR (Appendicitis Inflammatory Response Score) of ≥5
  - Immunocompromised individual (e.g., on immunosuppressive therapy, history of HIV)
  - US of the abdomen and pelvis has been performed and is nondiagnostic or negative or indicates a need for further advanced imaging
  - CBC or CRP (or other inflammatory marker such as ESR or fecal calprotectin) have been performed related to this episode
- Pregnant individuals
  - Abdominal US and/or Pelvic US initial imaging
  - MRI Abdomen and Pelvis without contrast if initial US is nondiagnostic.
  - See above statement regarding CT and contrast during pregnancy.

- For Chronic lower abdominal pain (≥6 months), see: **Chronic Abdominal Pain (AB-2.6)**
- For follow-up imaging for conservatively treated acute appendicitis, see: **Non-Operative Treatment of Acute Appendicitis (AB-2.7)**.
- For Rectal Pain (Proctalgia) see: **Pelvic Pain/Dyspareunia (PV-11.1)**, Female, Proctalgia Syndromes and **Male Pelvic Disorders, Proctalgia Syndromes (PV-19.1)**.
- For pain described as pelvic, see: **Pelvic Pain/Dyspareunia (PV-11.1)** or other appropriate sections based on likely etiology.

CPT® Codes for Acute/Persistent (Non-Chronic) Lower Abdominal Pain (AB-2.2)			
CPT® 74150	CT Abdomen without contrast	CPT® 76700	Ultrasound, complete Abdomen
CPT® 74160	CT Abdomen with contrast	CPT® 76705	Ultrasound, limited Abdomen
CPT® 74176	CT Abdomen and Pelvis without contrast	CPT® 76830	Ultrasound, Transvaginal
CPT® 74177	CT Abdomen and Pelvis with contrast	CPT® 76856	Ultrasound, complete Pelvis
CPT® 74181	MRI Abdomen without contrast	CPT® 72195	MRI Pelvis without contrast
CPT® 74183	MRI Abdomen without and with contrast	CPT® 72197	MRI Pelvis without and with contrast

Background and Supporting Information

- The Alvarado Score for appendicitis risk is comprised of the following parameters with points assigned based on their presence, as follows:

Migration of pain	1 point
Anorexia	1 point
Nausea/vomiting	1 point
Right lower quadrant tenderness	2 points
Rebound pain	1 point
Temperature > 99.1	1 point
WBC > 10,000	2 points
PMNs ≥ 75%	1 point

  - Low Risk: <4
  - Moderate Risk: 4-7
  - High Risk: ≥8
- Appendicitis Inflammatory Response Score (AIR)

Vomiting	1 point
Right iliac fossa pain	1 point
Rebound tenderness	Light – 1 point Medium – 2 points Strong – 3 points
Febrile (temperature ≥ 101.3)	1 point
PMNs	70-84% - 1 point ≥85% - 2 points
WBC	10-14.9 – 1 point ≥15 – 2 points
CRP	10-49 – 1 point >50 – 2 points

  - Low Probability: 0-4
  - Mild Probability: 5-8
  - High Probability: 9-12

Right Upper Quadrant Pain including Suspected Gallbladder Disease (AB-2.3)

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- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.
- For Pregnant Women, see: **Pregnancy Considerations for Imaging (AB-1.12)**
- For all others:
  - Abdominal ultrasound (complete or limited) is the initial diagnostic test
  - CT Abdomen with contrast, or MRCP/MRI (MRI Abdomen without or without and with contrast) if ultrasound is equivocal or nondiagnostic.
- Hepatobiliary System Imaging (HIDA) with OR without pharmacologic intervention (CPT® 78226 or CPT® 78227) can be considered:
  - If there is right upper quadrant pain or epigastric pain and there is a suspicion of gallbladder disease, with a normal, or equivocal or non-diagnostic recent ultrasound, CT, or MRI
    - NOTE: If findings on US suggest acute cholecystitis in a symptomatic individual (presence of gallstones with gallbladder wall thickening, Murphy's sign, and peri-cholecystic fluid) then a HIDA scan is generally not needed.
    - If the HIDA without pharmacologic intervention (CPT® 78226) is initially performed and is normal or inconclusive, the site can convert the study to HIDA with pharmacologic intervention (CPT® 78227). The member will not need to return for a second study with injection of a pharmaceutical.
  - Suspected bile leak after trauma or surgery
  - Monitoring of liver regeneration
  - Assessment of liver transplant
  - Assessment of choledochal cyst
  - Pre-operative assessment prior to partial hepatectomy
  - Chronic acalculous cholecystitis, biliary dyskinesia, functional gallbladder disease, or sphincter of Oddi dysfunction can be imaged with a HIDA with or without pharmacologic intervention (CPT® 78226 or CPT® 78227)

Left Upper Quadrant (LUQ) Pain (AB-2.4)

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- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.
- Most common causes which may be more specifically evaluated:
  - Splenic etiologies:
    - Suspected trauma, or splenomegaly
      - See: **Spleen (AB-34)**
    - Suspected infarct or abscess (severe pain and tenderness, fever, history of atrial fibrillation)
      - CT Abdomen without and with contrast or with contrast (CPT® 74170 or CPT® 74160)
  - Pancreatic etiologies:
    - Suspected pancreatitis
      - See: **Acute Pancreatitis (AB-33.1)**
  - Renal etiologies
    - Suspected nephrolithiasis
      - See: **Suspected Renal/Ureteral Stone (AB-4.1)**
    - Suspected pyelonephritis or abscess
      - See: **Upper (Pyelonephritis) (AB-40.1)**
  - Suspected small or large bowel etiologies (e.g., ischemia, obstruction, volvulus, diverticulitis)
    - CT Abdomen (CPT® 74160) or CT Abdomen and Pelvis (CPT® 74177)
  - Gastric etiologies
    - If there is concern for peptic ulcer disease, or if the complaint is dyspepsia, without any signs or symptoms suggesting possible perforation or penetration, endoscopy would be the best study for assessing these potential conditions. See: **EGD-1** in the EGD guidelines
    - If there is concern for a more urgent gastric problem, such as perforation, then a CT Abdomen (CPT® 74160) or CT Abdomen and Pelvis (CPT® 74177) can be approved.
  - Suspected aortic dissection
    - See: **Aortic Dissection and Other Aortic Conditions (PVD-6.7)** in the Peripheral Vascular Disease Imaging Guidelines
  - Unknown etiology, simply reported as LUQ pain

- Prior to advanced imaging, an adequate history and physical examination, with lab work to include: CBC, chemistry profile including electrolytes, BUN, creatinine, LFTs (ALT, AST, alkaline phosphatase and bilirubin) lipase, amylase, and urinalysis, should be performed with the intention of trying to establish a potential etiology.
  - All the specific laboratory studies listed are not required, but there should be some studies performed relating to the current episode in order to help direct imaging appropriately.
- CT Abdomen (CPT® 74160) or CT Abdomen and Pelvis (CPT® 74177) is indicated for ANY of the following:
  - History and physical examination and lab studies are negative or inconclusive for establishing a potential etiology

Background and Supporting Information

- LUQ pain is more difficult to categorize with regard to imaging as there are many potential etiologies, which might be better evaluated with different imaging procedures.

Epigastric Pain and Dyspepsia (AB-2.5)

- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.

Epigastric pain or dyspepsia without additional signs or symptoms

- Epigastric pain or dyspepsia (dyspepsia is defined by the ACG and CAG as predominant epigastric pain lasting at least one month and can be associated with any upper gastrointestinal symptoms such as epigastric fullness, nausea, vomiting, or heartburn) without any red flag findings:
  - Ultrasound Abdomen (CPT® 76700 or CPT® 76705) to assess for biliary/pancreatic disease is the initial study
  - CT Abdomen (CPT® 74160) or MRI Abdomen (CPT® 74183), or MRCP (CPT® 74181 or CPT® 74183), may be appropriate to evaluate positive findings on ultrasound. The use of these advanced imaging procedures to evaluate the ultrasound findings may be specifically addressed in the dedicated guideline.
  - CT Abdomen (CPT® 74160), or MRI Abdomen (CPT® 74183) for persistent symptoms after a negative or inconclusive upper gastrointestinal endoscopy and ultrasound as well as ONE of the following:
    - Test and treat for Helicobacter pylori (H. pylori) and a trial of acid suppression with a proton pump inhibitor (PPI) for 4–8 weeks if eradication is successful, but symptoms do not resolve OR
    - An empiric trial of acid suppression with a PPI for 4–8 weeks.
- NOTE: See imaging for pregnant women **Pregnancy Considerations for Imaging (AB-1.12)**
- For suspicion of superior mesenteric artery syndrome, see: **Superior Mesenteric Artery (SMA) Syndrome (AB-20.4)**

Special Considerations for Suspicion of Pancreatic Cancer

- CT Abdomen with contrast (CPT® 74160), CT Abdomen and Pelvis with contrast (CPT® 74177), or MRI Abdomen without and with contrast (CPT® 74183) is appropriate for suspicion of pancreatic cancer in individuals aged ≥60 years with weight loss and any ONE of the following:
  - Diarrhea
  - Back pain
  - Abdominal pain
  - Nausea

  - Vomiting
  - Constipation
  - New onset diabetes
  - Abnormal lab results raising the possibility of pancreatic cancer (e.g., elevated CA-19-9, GGTP, alkaline phosphatase, or bilirubin)
  - Nondiagnostic or negative prior US
- If none of the above signs or symptoms applies, follow criteria for epigastric pain and dyspepsia
- See also: **Pancreatic Cancer – Suspected/Diagnosis (ONC-13.2)** in the Oncology Imaging Guidelines

Chronic Abdominal Pain (AB-2.6)

AB.AP.0002.6.A
v1.0.2023

- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.
- Evaluation of Chronic Abdominal Pain (defined as continuous or intermittent symptoms >6 months)
  - Epigastric Pain and Dyspepsia
    - See: **Epigastric Pain and Dyspepsia (AB-2.5)**
  - Right Upper Quadrant Pain
    - See: **Right Upper Quadrant Pain Including Suspected Gallbladder Disease (AB-2.3)**
  - Left Upper Quadrant Pain
    - See: **Left Upper Quadrant (LUQ) Pain (AB-2.4)**
  - Nonspecific, generalized, or lower abdominal pain
    - CT Abdomen with contrast (CPT® 74160) or CT Abdomen and Pelvis with contrast (CPT® 74177) as requested (include pelvis for lower abdominal complaints or findings) for the following:
      - Initial laboratory assessment (see below) is negative or does not provide specific causes for more directed workup (for example, colonoscopy or EGD if iron deficiency anemia is found, or CT Urogram if urinalysis shows hematuria)
        - CBC with differential, chemistry profile including electrolytes, glucose, creatinine, BUN and liver chemistries, ESR, urinalysis, amylase and lipase (for generalized or upper abdominal complaints), thyroid function tests, and serology testing for celiac (if celiac is suspected)

Non-operative Treatment of Acute Appendicitis (AB-2.7)

- Recurrent symptoms or routine post-treatment follow-up, if requested:
  - One-time CT Abdomen and Pelvis with contrast (CPT® 74177)

    (Note: Non-operative treatment of acute appendicitis is increasingly utilized. There is an approximately 2% chance of a pathologic finding not initially identified prior to treatment (e.g. Crohn's Disease or an appendiceal neoplasm such as a carcinoid). In view of this, some authors suggest a follow-up imaging study in asymptomatic patients, post-antibiotic treatment.)

Non-chronic Nonspecific Abdominal Pain with No Localizing Findings (AB-2.8)

AB.AP.0002.8.A
v1.0.2023

- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.
- Nonspecific abdominal pain can have multiple etiologies and be a diagnostic dilemma. Often, the history, physical examination, and laboratory data can guide subsequent workup in individuals presenting with abdominal pain (e.g. RUQ pain would lead to US for the evaluation of cholecystitis). If, despite an initial history and physical examination the clinical suspicion cannot be localized, and there is no specific indication of a significant concern for serious pathology, then further workup and appropriate imaging may be directed by the results of initial lab studies or the results of non-advanced imaging relevant to and ordered for the evaluation of the current complaint being investigated.
- When possible, please use the more specific guideline, depending on clinical presentation and the differential diagnosis offered by the provider:
  - **Right Upper Quadrant Pain including Suspected Gallbladder Disease (AB-2.3)**
  - **Left Upper Quadrant (LUQ) Pain (AB-2.4)**
  - **Epigastric Pain and Dyspepsia (AB-2.5)**
  - **Chronic Abdominal Pain (AB-2.6)**
  - **Flank Pain, Rule Out or Known Renal/Ureteral Stone (AB-4)**
  - **Gastroenteritis (AB-5.1)**
  - **Mesenteric Ischemia (AB-6.1)** and **Colonic Ischemia (AB-6.2)**
  - **Post-Operative Pain With-in 60 Days Following Abdominal Surgery – Abdominal Procedure (AB-7)**
  - **Bowel Obstruction (AB-20.1)** and **Gastroparesis (AB-20.2)**
  - **Diarrhea, Constipation, and Irritable Bowel (AB-21)**
  - **Inflammatory Bowel Disease Rule Out Crohn's Disease or Ulcerative Colitis (AB-23)**
  - **Pancreatitis (AB-33)**
- Evaluation of Nonspecific Abdominal Pain:
  - US Abdomen and/or Pelvis OR
  - CT Abdomen and Pelvis with contrast:
    - Preliminary labs such as CBC, electrolytes, lipase or amylase, urinalysis, ESR or CRP, or LFT's are unrevealing or do not point to a specific etiology

that would otherwise direct more appropriate imaging (such as findings suggestive of pancreatitis or biliary tract disease)

- Note: All the specific laboratory studies listed are not required, but there should be some studies performed relating to the current episode in order to help direct imaging appropriately. (Note: Pregnancy test should be performed prior to CT in all appropriate reproductive age females)

- If a prior US Abdomen and/or Pelvis performed for the current complaint is unrevealing or does not explain the pain

- Special Populations:
  - Pregnant women:
    - US Abdomen and/or Transvaginal and/or complete Pelvis as the initial study
    - MRI Abdomen and/or Pelvis without contrast if US is equivocal

References (AB-2)

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Abdominal Sepsis (Suspected Abdominal Abscess) (AB-3)

Abdominal Sepsis (AB-3.1)

AB.AS.0003.1.A
v1.0.2023

- CT Abdomen, or CT Pelvis, or CT Abdomen and 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]
- CT Abdomen and Pelvis with contrast (CPT® 74177) interval imaging as requested for intraperitoneal abscess.
- Serial Ultrasound (CPT® 76705) or CT Abdomen, CT Pelvis, or CT Abdomen and Pelvis with contrast (CPT® 74160, or CPT® 72193, or CPT® 74177) studies may be performed for follow-up of known abnormal fluid collections, especially following catheter drainage. The interval can be days, weeks, or months based on the clinical course of the individual.

Reference (AB-3)

v1.0.2023

1. ACR Appropriateness Criteria® Acute (nonlocalized) Abdominal Pain and Fever or Suspected Abdominal Abscess. American College of Radiology, Published 2012. Rev. 2018.

Flank Pain, Rule Out or Known Renal/Ureteral Stone (AB-4)

Ultrasound (AB-4.0)

AB.US.0004.0.A
v1.0.2023

- Retroperitoneal ultrasound (CPT® 76770 or CPT® 76775) can be used in place of CT Abdomen and Pelvis at any of the initial or follow-up indications, if requested by Provider.

Suspected Renal/Ureteral Stone(s) (AB-4.1)

AB.US.0004.1.A
v1.0.2023

- Suspected renal/ureteral stone with symptoms in non-pregnant adults (flank pain/renal colic)[1,2]
  - CT Abdomen and Pelvis without contrast (CPT® 74176)
- Suspected renal/ureteral stone in pregnant women (flank pain/renal colic)[3,4]
  - 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/ureteral stone in children (flank pain/renal colic)
  - See: **Flank Pain, Renal Stone (PEDAB-4)** in the Pediatric Abdomen Imaging Guidelines
- Suspicion renal/ureteral stones (flank pain/renal colic) with hematuria
  - CT Abdomen and Pelvis without contrast (CPT® 74176) or CT Urogram (CPT® 74178)

Observation of Known Renal/Ureteral Stone(s) (AB-4.2)

AB.US.0004.2.A
v1.0.2023

- Radiopaque Stones
  - Initial follow-up imaging:
    - Retroperitoneal ultrasound (CPT® 76770 or CPT® 76775) and KUB x-ray
  - Subsequent follow-up imaging:
    - If initial follow-up ultrasound and KUB are negative, and there is no hematuria and individual is asymptomatic:
      - See: **(AB-4.4) Annual Surveillance**
    - If initial follow-up ultrasound and KUB demonstrates hydronephrosis, retained stone, or if the individual has persistent hematuria, or is symptomatic:
      - CT Abdomen and Pelvis without contrast (CPT® 74176)
- Non-radiopaque Stones (i.e. radiolucent)
  - Initial follow-up imaging:
    - CT Abdomen and Pelvis without contrast (CPT® 74176)
  - Subsequent follow-up imaging:
    - If CT is negative:
      - See: **(AB-4.4) Annual Surveillance**
    - If CT demonstrates a retained stone, hydronephrosis, or if the individual is being evaluated for surgery:
      - Further imaging can be considered on an individual basis

Background and Supporting Information

- Radiopaque versus radiolucent stones on plain radiograph:
  - Radiopaque
    - Calcium-based stones (70-80%)
    - Struvite stones (triple phosphate) (usually opaque but variable – 15-20%)
  - Radiolucent
    - Uric acid (5-10%)
    - Cystine (1-3%)
    - Medication stones (e.g. indinavir) (1%)

Follow-Up of Treated Renal/Ureteral Stone (AB-4.3)

AB.US.0004.3.A
v1.0.2023

- Post-shock wave lithotripsy (SWL):
  - Retroperitoneal ultrasound (CPT® 76770 or CPT® 76775) is the appropriate initial follow-up imaging.
  - Retroperitoneal ultrasound (CPT® 76770 or CPT® 76775) and/or CT Abdomen and Pelvis (contrast as requested) may be indicated for:
    - Individuals who are symptomatic
    - Individuals with hydronephrosis
    - Individuals who have residual fragments
  - Individuals treated by SWL who have passed fragments, are asymptomatic and without hydronephrosis can be followed according to **Annual Surveillance (AB-4.4)**.
- Post-medical expulsive therapy (MET):
  - Retroperitoneal ultrasound for individuals treated by MET who have passed a stone and are symptomatic.
  - CT Abdomen and Pelvis (contrast as requested) if hydronephrosis is demonstrated with ultrasound.
  - Individuals treated by MET who have passed a stone and are asymptomatic can be followed according to **Annual Surveillance (AB-4.4)**.
- Post-ureteroscopic extraction with an intact stone:
  - Retroperitoneal ultrasound for individuals without symptoms
  - CT Abdomen and Pelvis with contrast (CPT® 74177) for individuals with symptoms or hydronephrosis demonstrated on ultrasound
  - Individuals without symptoms or without hydronephrosis demonstrated on ultrasound can be followed according to **Annual Surveillance (AB-4.4)**.
- Post-ureteroscopic extraction requiring fragmentation of the stone(s):
  - Retroperitoneal ultrasound for individuals without symptoms
  - CT Abdomen and Pelvis without contrast (CPT® 74176) for individuals without symptoms, but hydronephrosis demonstrated on ultrasound
  - Individuals without symptoms or without hydronephrosis demonstrated on ultrasound can be followed according to **Annual Surveillance (AB-4.4)**.
  - Retroperitoneal ultrasound and KUB for individuals with symptoms and a radiopaque stone
  - CT Abdomen and Pelvis without contrast (CPT® 74176) for individuals with symptoms and a non-radiopaque stone
- Retroperitoneal ultrasound and/or CT Abdomen and Pelvis (contrast as requested) may be indicated for individuals with persistent symptoms and/or hydronephrosis.

Annual Surveillance (AB-4.4)

AB.US.0004.4.A
v1.0.2023

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

Nuclear Kidney Imaging (AB-4.5)

AB.US.0004.5.A
v1.0.2023

- Nuclear kidney imaging (CPT® 78707, CPT® 78708, or CPT® 78709) can be considered for evaluation of any of the following:[5,6]
  - Recurrent flank pain when CT and ultrasound are non-diagnostic.
  - Prior imaging (CT or ultrasound) shows hydronephrosis and to determine if this truly obstructive in nature.

References (AB-4)

v1.0.2023

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Gastroenteritis/ Enterocolitis (AB-5)

Gastroenteritis/Enterocolitis (AB-5.1)

AB.GE.0005.1.A
v1.0.2023

- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.
- 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

Background and Supporting Information

Gastroenteritis is a nonspecific term which 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-5)

v1.0.2023

1. Scorza K, Williams A, Phillips D, et al. Evaluation of Nausea and Vomiting. *American Family Physician.* 2007;76(1):76-84. Vol. 92, No. 11.
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Mesenteric/Colonic Ischemia (AB-6)

Mesenteric Ischemia (AB-6.1)

AB.MI.0006.1.A
v1.0.2023

- Suspicion of acute mesenteric ischemia, including secondary to COVID-19, ONE of the following:
  - CTA Abdominal and/or Pelvic (Mesenteric) (CPT® 74174, or CPT® 74175, or CPT® 72191) (preferable), **or**
  - MRA Abdominal and/or Pelvic (CPT® 72198 and/or CPT® 74185), **or**
  - CT Abdomen and Pelvis with contrast (CPT® 74177).
- Post-procedure surveillance imaging following invasive treatment for mesenteric ischemia (celiac, superior mesenteric, and inferior mesenteric angioplasty with or without stenting, or mesenteric artery bypass grafting):
  - Baseline Duplex ultrasound (CPT® 93975 or CPT® 93976) within 1 month of the procedure
  - Duplex ultrasound (CPT® 93975 or CPT® 93976) at 6 months, 12 months, 18 months, and then annually thereafter
  - CT Abdomen or Abdomen and Pelvis with contrast (CPT® 74160 and CPT® 74177) or CTA Abdomen or Abdomen and Pelvis (CPT® 74174 or CPT® 74175) or MRA Abdomen (CPT® 74185) and if requested, MRA Pelvis (CPT® 72198):
    - For symptoms suggesting recurrent ischemia OR
    - In the absence of symptoms, following a Duplex Ultrasound if, on the Duplex study:
      - Celiac axis:
        - PSV >370 cm/s or a substantial increase from the post-treatment baseline PSV (substantial increase has not been defined) or demonstration of restenosis ≥70%
      - Superior mesenteric artery:
        - PSV >420 cm/s, or a substantial increase from the post-treatment baseline PSV (substantial increase has not been defined) or demonstration of restenosis of ≥70%
      - Inferior mesenteric artery:
        - Substantial increase from the post treatment baseline PSV (substantial increase has not been defined).

Background and Supporting Information

- Typical presentation of mesenteric ischemia is based on severe abdominal pain out of proportion to findings on physical exam, usually in individuals with underlying risk factors including cardiovascular disease, atrial fibrillation, hypertension, etc.

Colonic ischemia (including ischemic colitis) (AB-6.2)

AB.MI.0006.2.A
v1.0.2023

- 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 abdominal pain **and:**
  - Rectal bleeding; **or**
  - Moderate or severe tenderness; **or**
  - Fever (≥101 degrees); **or**
  - Guarding, rebound tenderness, or other peritoneal signs; **or**
  - Elevated WBC as per the testing laboratory's range
- Repeat imaging for asymptomatic or improving individuals, including routine post-operative imaging, is generally not needed.
- CTA Abdomen (CPT® 74175) or CTA Abdomen and Pelvis (CPT® 74174) or MRA Abdomen (CPT® 74185) and if requested, MRA Pelvis (CPT® 72198) can be performed for suspicion of right sided or pancolonic ischemia (as suggested on the initial CT Abdomen and Pelvis or by history/physical examination)

Background and Supporting Information

- 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.
- As noted in the ACG Clinical Guideline:
  - "In contrast to AMI (*acute mesenteric ischemia*) in which conventional mesenteric angiography or CTA plays an essential role, vascular imaging studies are not indicated in most patients with suspected CI (*colonic ischemia*) because by the time of presentation, colon blood flow has usually returned to normal and the observed changes are not from ongoing ischemia but rather reflect the ischemic insult with or without reperfusion injury"

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v1.0.2023

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Post-Operative Pain Within 60 Days Following abdominal Surgery – Abdominal Procedure (AB-7)

Post-Op Pain and/or Complication Within 60 Days (AB-7.1)

AB.OP.0007.1.A
v1.0.2023

- 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, anastomotic leak, or post-endoscopic complication).
- Beyond 60 days postoperatively, see: **Abdominal Pain (AB-2)**
- See: **Liver Transplant, Post-Transplant Imaging (AB-42.3)** for post-transplant indications and imaging

References (AB-7)

v1.0.2023

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Abdominal Lymphadenopathy (AB-8)

Abdominal Lymphadenopathy (AB-8.1)

AB.AL.0008.1.A
v1.0.2023

- History of malignancy
  - Refer to oncology guidelines specific for that known malignancy
  - Biopsy may be considered
- Clinical or lab findings suggesting a lymphoproliferative disorder:
  - Biopsy
  - PET/CT (CPT® 78815) may be considered prior to biopsy in order to determine a more favorable site for biopsy, when a prior biopsy was nondiagnostic, or a relatively inaccessible site is contemplated which would require invasive surgical intervention for biopsy attempt.

    Clinical note: Due to its relative lack of specificity as well as higher cost, PET is a less efficient alternative to biopsy.
- Clinical or laboratory findings suggesting benign etiology, and no history of malignancy:
  - CT Abdomen and Pelvis (CPT® 74177) for 3-month follow-up.
  - If no changes at 3 months, 2 additional follow-up scans (at 6 months and one year) can be approved.
  - If no changes by one year, the finding can be considered benign. No further imaging.
- If a follow-up CT demonstrates a concerning change, biopsy should be performed. If biopsy is inconclusive, PET/CT (CPT® 78815) can be approved.

Inguinal Lymphadenopathy (AB-8.2)

CID.AL.0008.2.A
v1.0.2023

There is no evidence-based support for advanced imaging of clinically evidenced inguinal lymphadenopathy without biopsy. Advanced imaging should be directed by results of biopsy. If biopsy results are negative or benign, then no advanced imaging is indicated.

If biopsy is positive for malignancy, advanced imaging is guided by sections specific to the histological diagnosis:

- High suspicion of lymphoma: See **Non-Hodgkin Lymphomas (ONC-27)** and **Hodgkin Lymphoma (ONC-28)** in the Oncology Imaging Guidelines
- Prior history of malignancy: See **Metastatic Cancer, Carcinoma of Unknown Primary Site, and Other Types of Cancer (ONC-31)** in the Oncology Imaging Guidelines

Background and Supporting Information

- Localized inguinal lymphadenopathy should prompt:
  - Search for adjacent extremity injury or infection
  - 3 to 4 weeks of observation if clinical picture is benign
  - Excisional or image guided core needle biopsy under ultrasound or CT guidance of most abnormal lymph node if condition persists or malignancy suspected
- Generalized inguinal lymphadenopathy should prompt:
  - Diagnostic work-up, including serological tests, for systemic diseases and
  - Excisional or image guided core needle biopsy under ultrasound or CT guidance of most abnormal lymph node if condition persists or malignancy suspected.

Sclerosing Mesenteritis and Mesenteric Panniculitis (AB-8.3)

- For new or worsening clinical symptoms, or if not previously performed:
  - CT Abdomen and Pelvis without and with contrast (CPT® 74178)
- Requests for follow-up imaging in asymptomatic individuals or for sequential imaging to monitor for the development of malignancy:
  - Further imaging in these scenarios is not supported in the absence of worsening or new clinical symptoms.
- PET imaging is not indicated for the evaluation of Sclerosing Mesenteritis or Mesenteric Panniculitis

Background and Supporting Information

- Sclerosing mesenteritis and mesenteric panniculitis are rare, incompletely understood entities that are characterized by an idiopathic inflammatory condition of the mesentery, with radiologic findings including:
  - Fatty mass lesion in the small intestinal mesentery
  - “Halo” (fat ring) surrounding lymph nodes or vessels
  - Lymph nodes in the fatty mass
  - A “pseudocapsule”
  - “Misty” mesentery
  - Calcifications from fat necrosis
- Sclerosing mesenteritis may represent a spectrum of diseases (retractile mesenteritis, mesenteric panniculitis, and mesenteric lipodystrophy), or may be stages of one disease with progression.
- The chronic inflammation may result in fibrosis with a mass effect and can involve the gut (causing obstruction), the mesenteric vessels, and other intra-abdominal or retroperitoneal organs. The etiology is uncertain, but may be secondary to trauma (previous abdominal surgery), an autoimmune process, ischemia, infection, and possibly may represent a paraneoplastic syndrome secondary to a malignancy, though this is controversial.
- There is an increased prevalence of malignancy in individuals with sclerosing mesenteritis, and this has resulted in requests for sequential imaging in stable or asymptomatic individuals. In addition, requests may be made to assess the clinical response in those undergoing active treatment.
- However, studies have reported that the data on potentially developing a subsequent malignancy is inconclusive and thus “it does not seem justified to subject patients with MP, especially those in whom other associations such as abdomino-pelvic surgery may explain the MP findings, to multiple follow-up CT

scans with the aim of detecting a future malignancy"[1]. This recommendation is supported by other authors.[2,3,4,5]

- In addition, there is no correlation between radiolologic and clinical findings, and management decisions are guided by the severity and type of symptoms. Thus, sequential radiologic imaging to assess treatment response is not recommended.[2]

References (AB-8)

v1.0.2023

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Bariatric Surgery and Percutaneous Gastrostomy (AB-9)

Bariatric Surgery (AB-9.1)

AB.BS.0009.1.A
v1.0.2023

- Pre-operative Assessment:
  - Abdominal ultrasound (CPT® 76700 or CPT® 76705) to assess the liver and gallbladder
- Post-operative complications:
  - CT Abdomen and Pelvis with contrast (CPT® 74177) or CT Abdomen with contrast (CPT® 74160) may be used for individuals who have had weight loss surgery and present with suspected complications including:
    - Weight loss failure
    - Heartburn
    - Nausea or vomiting
    - Abdominal pain
    - Fever
    - Abdominal distension
    - Suspected hernia
- Note: Internal hernias in patients who have had Roux-en-Y gastric bypasses may have intermittent and relatively mild abdominal symptoms which require immediate evaluation with CT imaging.
- See: **Post-Operative Pain Within 60 Days Following Abdominal Surgery – Abdominal Procedure (AB-7)**

Background and Supporting Information

- Bariatric procedures include gastric banding, gastric bypass, sleeve gastrectomy, and biliopancreatic diversion procedures.
- Though abdominal pain in post-operative bariatric patients may be gallbladder-induced and an ultrasound would be helpful for this diagnosis, the complications of bariatric surgery can become quickly life-threatening, and so any request for CT imaging in the post-operative bariatric individual should not be delayed with recommendations for ultrasound, even if the examination does not indicate any signs or symptoms of more serious or complicated disease.

Percutaneous Gastrostomy (AB-9.2)

AB.BS.0009.2.A
v1.0.2023

- Percutaneous Endoscopic Gastrostomy (PEG)
  - CT or MRI is generally not needed pre-operatively for PEG placement.
  - CT Abdomen with or without contrast (CPT® 74160 or 74150):
    - For pre-operative assessment in the presence of:
      - Abdominal wall defects such as an open abdomen
      - The presence of “ostomy” sites or drain tubes
      - Abdominal surgical scars or prior major abdominal surgery
      - Known situs inversus
      - Known paraesophageal hernia
      - Previous endoscopic attempt did not achieve adequate transillumination through the abdominal wall or compression and a suitable site for PEG placement could not be determined.
  - Percutaneous Gastrostomy via Interventional Radiologist using CT guidance
    - A pre-operative CT Abdomen with or without contrast (CPT® 74150, 74160) may be appropriate for complicated cases in which a safe window cannot be determined via fluoroscopy. See above indications for CT prior to endoscopic gastrostomy tube placement for pre-operative indications.
  - Suspected complication of an endoscopically or IR-placed gastrostomy or jejunostomy tube:
    - CT Abdomen with or without contrast (CPT® 74150, 74160) or CT Abdomen and Pelvis with or without contrast (CPT® 74176 or 74177)

Background and Supporting Information

- A percutaneous endoscopic gastrostomy utilizes endoscopic guidance in order to place the feeding tube.
- The optimal site for gastrostomy placement is determined by illuminating the abdominal wall from the stomach using the scope and simultaneously indenting the wall with the finger, and visualizing that indention endoscopically.
  - Routine CT prior to this is generally not needed.
  - A recent study[5] retrospectively compared complication rates between patients who underwent a pre-procedure CT vs. those that did not, and found no difference in the rate of bleeding events, need for operative intervention, and accidental tube dislodgement.
    - One patient in the non-CT group had an injury due to the tube being placed through the colon, but in that case there was failure of transillumination through the abdominal wall.

- The authors concluded, “routine CT to evaluate for unfavorable anatomy such as overlying liver or transverse colon prior to PEG tube placement does not result in a reduced complication rate. Safe site selection utilizing the correct technique of transillumination of the abdominal wall and visualization of the indentation of the operator’s finger is essential for safe PEG tube placement.”

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v1.0.2023

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Blunt Abdominal Trauma (AB-10)

Blunt Abdominal Trauma (AB-10.1)

AB.BA.0010.1.A
v1.0.2023

- Abdominal and/or Pelvic ultrasound (CPT® 76700 and/or CPT® 76856) can be approved for the evaluation of blunt abdominal trauma when requested.
- CT Abdomen and/or Pelvis with contrast (CPT® 74160, or CPT® 72193, or CPT® 74177):
  - High probability intra-abdominal injury
    - ☐ Abdominal pain or tenderness
    - ☐ Pelvic or femur fracture
    - ☐ Lower rib fracture
    - ☐ Costal margin tenderness or evidence of thoracic wall trauma
    - ☐ Diminished breath sounds
    - ☐ Vomiting
    - ☐ Pneumothorax
    - ☐ Hematocrit <30%
    - ☐ Hematuria
    - ☐ Elevated AST
    - ☐ Non-examinable individual (intoxicated, less than fully conscious, Glasgow Coma Scale Score <13, etc.)
    - ☐ Evidence of abdominal wall trauma or seat-belt sign
  - If ultrasound demonstrates any positive finding(s)

References (AB-10)

v1.0.2023

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Gaucher Disease and Hemochromatosis (AB-11)

Gaucher Disease (AB-11.1)

AB.GD.0011.1.A
v1.0.2023

- See: **Gaucher Disease (Storage Disorders) (PN-6.3)** in the Peripheral Nerve Disorders (PND) Imaging Guidelines

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

- MRI Abdomen without contrast (CPT® 74181) for iron quantification
  - If transferrin iron saturation (TS) ≥45% OR Elevated serum ferritin (males >300 ng/ml, females >200 ng/ml)

AND

- Genetic studies for hemochromatosis have been performed and results are ANY of the following:
  - Negative for hemochromatosis
  - C282Y/H63D compound heterozygote
  - C282Y heterozygote
  - Non-C282Y homozygote
- Note:
  - For C282Y/C282Y homozygote, iron quantification generally not indicated. Workup is as follows:
    - If serum ferritin >1000 ug/L or elevated liver enzymes:
      - Liver biopsy for fibrosis staging and rule out concurrent liver disease
    - If serum ferritin <1000 ug/L and normal liver enzymes:
      - Therapeutic phlebotomy

    (Note: Studies indicate that measurements of hepatic iron concentration by MRI may be more useful in ruling out than diagnosing clinically significant iron overload. MRI can distinguish between primary and secondary iron overload based on iron uptake in the reticuloendothelial system.)
- For the evaluation of suspected hepatic iron overload in chronic transfusional states (e.g., sickle cell disease, thalassemia, oncology patients, bone marrow failure, and stem cell transplant individuals):
  - MRI Abdomen without contrast (CPT® 74181) for iron quantification can be performed annually
- See: **Transfusion-Associated (Secondary) Hemochromatosis (PEDAB-18.2)** in the Pediatric Abdomen Imaging Guidelines regarding transfusion-associated hepatic iron deposition.
- If clinical, biopsy, or radiological findings suggest advanced fibrosis or cirrhosis and HCC surveillance is requested, then follow HCC Screening Guidelines - See **Chronic Liver Disease, Cirrhosis and Screening for HCC (AB-26.1)**.
- Role of MR Elastography (CPT® 76391):

- The role of MR Elastography to assess the degree of fibrosis in the setting of hemochromatosis is not yet clearly defined and thus not currently approvable.
- One of the main limitations of MR Elastography is that artifact from excess iron deposition degrades signal intensity in MRE sequences, leading to technical failure of elastography and a decrease in MRE's diagnostic reliability. The latest ACG Clinical Guideline (2019) indicates that MRI for the purpose of estimating hepatic iron concentration is appropriate in the circumstances described above. However, "if there is a concomitant need to stage hepatic fibrosis, then liver biopsy is the preferred method."[14.] The ACG diagnostic algorithm for the workup of hemochromatosis does not include MR Elastography at any stage, including the evaluation for the presence, absence, or degree of fibrosis.

Background and Supporting Information

- An elevated serum ferritin >1000 mcg/l is associated with an increased risk of cirrhosis and mortality in C282 homozygotes, while a serum ferritin <1000 mcg/l is associated with a very low likelihood of cirrhosis.
- The role of serial MRI for monitoring hepatic iron concentration in hemochromatosis has not been defined. Treatment is phlebotomy and results are monitored by serum ferritin.

References (AB-11)

v1.0.2023

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Hernias (AB-12)

Inguinal or Femoral Hernia, or Indeterminate Groin Pain (AB-12.1)

AB.IH.0012.1.A
v1.0.2023

- Clinical examination alone is usually sufficient for confirming the diagnosis of an evident groin hernia
- Ultrasound, pelvic limited (CPT® 76857) or pelvic complete (CPT® 76856) is the initial imaging study if:
  - Vague groin swelling with diagnostic uncertainty
  - Poor localization of swelling (as might be seen with a small hernia and prominent overlying fat)
  - Intermittent swelling not present on examination
  - Other/indeterminate groin complaints without swelling
- CT Pelvis with contrast (CPT® 72193) or without contrast (CPT® 72192)
  - If ultrasound is indeterminate or non-diagnostic
  - For suspected incarceration or strangulation
- MRI Pelvis without contrast (CPT® 72195) or with and without contrast (CPT® 72197)
  - If ultrasound is indeterminate or non-diagnostic, and musculoskeletal ailments such as osteitis pubis, or athletic pubalgia are in the differential, see: **Pelvis (MS-23)** in the Musculoskeletal Imaging Guidelines.
- For chronic post-surgical groin pain (after hernia repair):
  - Pelvic ultrasound (CPT® 76856 or CPT® 76857) or US-guided nerve block
  - CT Pelvis with contrast (CPT® 72193) or without contrast (CPT® 72192) or MRI Pelvis without contrast (CPT® 72195) or without and with contrast (CPT® 72197) can be approved if either ultrasound or ultrasound-guided nerve block is indeterminate or non-diagnostic, to assess for other, non-neuropathic causes.

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

AB.IH.0012.2.A
v1.0.2023

- Known or suspected primary or recurrent Spigelian hernia (anterior abdominal wall hernia through the semilunar line), ventral hernia, umbilical, or incisional hernia:
  - CT Abdomen without or with contrast (if at or above the umbilicus) (CPT® 74150 or CPT® 74160) **or**
  - CT Pelvis without or with contrast (if below the umbilicus) (CPT® 72192 or CPT® 72193) **or**
  - CT Abdomen and Pelvis without or with contrast (if above and below the umbilicus, or indeterminate) (CPT® 74176 or CPT® 74177)

Hiatal Hernia (AB-12.3)

AB.IH.0012.3.A
v1.0.2023

- CT Chest and/or Abdomen with contrast (CPT® 71260 and/or CPT® 74160) to evaluate ANY of the following:
  - GI specialist or surgeon or any provider in consultation with one of these specialists request for treatment/pre-operative planning.
  - Suspected complication of primary disease or surgery.

Background and Supporting Information

- Some complications might include suspicion of a gastric volvulus (torsion) within the chest cavity, vomiting, chest pain, and difficulty in swallowing

References (AB-12)

v1.0.2023

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Abdominal Mass (AB-13)

Abdominal Wall Mass (AB-13.1)

AB.AM.0013.1.A
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- Abdominal ultrasound and/or Pelvic ultrasound (CPT® 76700 or CPT® 76705 and/or CPT® 76856) is the initial imaging study to assess an abdominal wall or subcutaneous mass.
- MRI Abdomen without and with contrast (CPT® 74183) or CT Abdomen with contrast (CPT® 74160) to assess a suspected malignant or indeterminate mass detected on ultrasound (Pelvic imaging can be included depending on the location of the mass).

Indeterminate Intra-Abdominal Mass (AB-13.2)

AB.AM.0013.2.A
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- Palpable abdominal mass on physical examination:
  - CT Abdomen with contrast (CPT® 74160) if above the umbilicus
  - CT Abdomen and Pelvis with contrast (CPT® 74177) if extending below the umbilicus
  - CT Pelvis with contrast (CPT® 72193) if involving the pelvis
  - Abdominal ultrasound (CPT® 76700) and/or Pelvis ultrasound (CPT® 76856) may be approved if requested
- Indeterminate findings on a prior CT or ultrasound:
  - MRI Abdomen without and with contrast (CPT® 74183)
    - MRI Pelvis without and with contrast (CPT® 72197) may be approved to evaluate if the mass extends below the umbilicus or involves the pelvis
  - Specific lesions mentioned within the Abdomen Imaging Guidelines should be imaged according to those specific sections (e.g., liver lesion, pancreatic cyst, etc.)
- For a pulsatile abdominal mass, suspected aortic aneurysm: See: **Abdominal Aortic Aneurysm (AAA) (PVD-6.3)** in the Peripheral Vascular Disease (PVD) Imaging Guidelines
- For females with a suspected adnexal mass or fibroid: See: **Adnexal Mass/Ovarian Cysts (PV-5)** or **Leiomyomata/Uterine Fibroids (PV-12)** in the Pelvis Imaging Guidelines.
- Pregnant individual:
  - Abdominal and/or Pelvic and/or Transvaginal ultrasound (CPT® 76700 and/or CPT® 76856 and/or CPT® 76830) is appropriate for initial imaging.

Abnormal Findings on Endoscopy/Colonoscopy (AB-13.3)

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- Submucosal colonic lesions above the rectum or unexplained colonic extrinsic compression above the rectum:
  - CT Abdomen and Pelvis with contrast (CPT® 74177)
- Colonic Mucosal Mass or Polypoid Lesion above the rectum:
  - If pathology shows invasive cancer OR if colonoscopic findings describe a fungating, ulcerated, bleeding, irregular, circumferential (partial or complete) mass (i.e., findings that suggest a colonic malignancy based on the endoscopic appearance):
    - CT Abdomen and Pelvis with contrast (CPT® 74177), and if requested, CT Chest with contrast (CPT® 71260) (See: **Colorectal Cancer – Initial Work-up/Staging (ONC-16.2)** in the Oncology Imaging Guidelines)
  - If the lesion is in the distal sigmoid:
    - MRI Pelvis without and with contrast (CPT® 72197) if requested can also be performed
  - Pre-operative planning for the surgical (not endoscopic) removal of a polypoid lesion:
    - CT Abdomen and Pelvis with contrast (CPT® 74177)
- Submucosal gastric lesions:
  - CT Abdomen with contrast (CPT® 74160) or CT Abdomen and Pelvis with contrast (CPT® 74177)
    - If endoscopic ultrasound with or without fine-needle aspiration (which is the preferred initial imaging modality to further characterize a gastric submucosal lesion detected on endoscopy) cannot be performed, is indeterminate, or if the findings of the endoscopic ultrasound indicate a need for further imaging.
- Gastric extrinsic compression:
  - CT Abdomen with contrast (CPT® 74160) or CT Abdomen and Pelvis with contrast (CPT® 74177)
- Submucosal rectal lesions or unexplained extrinsic compression in the rectum:
  - MRI Pelvis without and with contrast (CPT® 72197), or, if requested, MRI Pelvis without contrast (CPT® 72195)
    - If rectal endoscopic ultrasound, which is the preferred initial imaging study, cannot be performed (e.g. anal stricture, or severe inflammatory process prohibiting passage of probe, etc.), is indeterminate, or, if based on

endoscopic ultrasound findings, additional imaging is needed for further characterization

- Rectal Mucosal Mass or Polypoid Lesion:
  - If pathology shows invasive cancer OR if colonoscopic findings describe a fungating, ulcerated, bleeding, irregular, circumferential (partial or complete) mass (i.e., findings that suggest a colonic malignancy based on the endoscopic appearance):
    - CT Abdomen and Pelvis with contrast (CPT® 74177) and if requested, CT Chest with contrast (CPT® 71260)
    - MRI Pelvis without and with contrast (CPT® 72197) or without contrast (CPT® 72195) in addition to the above
  - Pre-operative planning for the surgical (not endoscopic) removal of a polypoid lesion:
    - CT Abdomen and Pelvis with contrast (CPT® 74177)
- For further imaging of a documented colonic or rectal malignancy: See **Colorectal Cancer – Initial Work-up/Staging (ONC-16.2)** in the Oncology Imaging Guidelines
- For further imaging of a suspected Gastrointestinal Stromal Tumor (GIST): See **Gastrointestinal Stromal Tumor (GIST) (ONC-12.5)** in the Oncology Imaging Guidelines
- For further imaging of gastric cancer: See **Gastric Cancer - Initial Work-up/Staging (ONC-14.9)** in the Oncology Imaging Guidelines

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Lower Extremity Edema (AB-14)

Lower Extremity Edema (AB-14)

AB.14.A
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See the **Peripheral Vascular Disease Imaging Guidelines**

Zollinger-Ellison Syndrome (ZES-Gastrinoma) (AB-15)

Zollinger-Ellison Syndrome (ZES-Gastrinoma) (AB-15.1)

AB.15.1.A
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- See: **Neuroendocrine Cancers and Adrenal Tumors (ONC-15)** in the Oncology Imaging Guidelines

Adrenal Cortical Lesions (AB-16)

Adrenal Cortical Lesions (AB-16)

AB.AC.0016.A
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Procedure Code	Description
CPT® 74150	CT Abdomen without contrast
CPT® 74160	CT Abdomen with contrast
CPT® 74170	CT Abdomen without and with contrast
CPT® 74181	MRI Abdomen without contrast
CPT® 74183	MRI Abdomen without and with contrast
CPT® 78812	PET, Skull Base to Mid-Thigh
CPT® 78815	PET/CT, Skull Base to Mid-Thigh

Asymptomatic Adrenal Cortical Lesions (AB-16.1)

AB.AC.0016.1.UOH
v1.0.2023

Overall Considerations

- US is not a prerequisite study for advanced imaging in the evaluation of any adrenal abnormality
- The following recommendations are for asymptomatic individuals
  - Symptomatic refers to signs or symptoms of hormonal excess or abnormal adrenal hormone levels.
  - For symptomatic individuals, see: **Symptomatic Adrenal Cortical Lesions (AB-16.2)**
- Abdominal pain may be present in large or rapidly expanding adrenal tumors due to mass effect or hemorrhage.
  - If the source of abdominal pain is suspected to be an incidental adrenal mass and initial imaging was indeterminate, immediate reimaging with a dedicated adrenal protocol study (see 3 imaging modalities below) is reasonable irrespective of the size of the mass.
  - See: **Abdominal Pain (AB-2)** in the Abdomen Imaging Guidelines for imaging recommendations if abdominal pain is unrelated to the adrenal mass
- The three imaging modalities that can be used for definitive benign characterization of an adrenal mass are:
  - CT Abdomen without contrast (CPT® 74150)
  - CT Abdomen without and with contrast (CPT® 74170)
  - CS-MRI (chemical shift MRI, CPT® 74181)
- The following list represents definitively benign characteristics of the adrenal gland. This list applies wherever "benign characteristics" are mentioned in the table below:
  - ≤10 HFU on CT
  - ≥60% absolute washout or ≥40% relative washout on CT abdomen without and with contrast with calculated washout (adrenal protocol CT, CPT® 74170)
    - An important exception to the washout rule: Non-adenomatous adrenal masses that may show elevated washout on adrenal protocol CT but are not benign include:
      - Adrenal metastasis from hypervascular tumors (e.g. RCC and HCC)
      - Pheochromocytoma
      - Adrenocortical carcinoma

        - Clinical suspicion should be used in these cases to guide further investigation
    - Decreased signal on Chemical Shift MRI (CS-MRI, CPT® 74181)
    - Cyst (if imaging was completed with and without contrast and "no enhancement"-defined as <10HFU change between unenhanced and enhanced/contrasted CT)
    - Adrenal myelolipoma (macroscopic fat)
- If definitively benign diagnosis cannot be made during follow up imaging using dedicated CT adrenal protocol (If <60% absolute washout or <40% relative washout) or lack of signal drop out on MRI chemical shift:
    - Additional imaging is indicated at 6-12 months from initial follow up OR
    - Consider resection for possible primary adrenocortical carcinoma after biochemical evaluation and exclusion of pheochromocytoma.
        - For individuals who are poor surgical candidates, if ordered by or in consultation with an endocrinologist, endocrine surgeon, or urologist:
            - Imaging as requested
- CT Abdomen without and with contrast (CPT® 74170) may be approved in place of any below recommended CT Abdomen without contrast for the following:
    - Facility protocol is to cease imaging if adrenal mass is found to have HFU<10 on initial non-contrasted images
- MRI Abdomen without contrast (CPT® 74181) is indicated in place of CT for the following:
    - Clips that cause artifacts when using CT
    - Allergy to CT contrast
    - Individuals in whom radiation exposure should be limited (children, pregnant individuals, individuals with known germline mutations, and individuals with recent excessive radiation exposure)
- CS MRI may not detect the intracellular lipid in an adrenal mass if HFU is 30 HU or more on CT without contrast. CS MRI is less effective than CT without and with contrast with calculated washout for adenomas with unenhanced attenuation of more than 20 HU
- Below imaging can be applied to bilateral adrenal masses, with each lesion addressed separately.

Mass Characteristics and Appropriate Imaging

Mass Details	Imaging Study
• Asymptomatic AND • Incidentally found on US, CT, or MRI of area OTHER than the abdomen AND	• CT Abdomen without contrast (CPT® 74150)

Mass Details	Imaging Study
• Any size AND • No history of cancer	
• Asymptomatic AND • Incidentally found on CT Chest without contrast, entirely imaged, and fully characterized as indeterminate by HFU score AND • >2 cm AND • No history of cancer	• CT Abdomen without and with contrast (CPT® 74170) in lieu of above recommended CT Abdomen without contrast
• Asymptomatic AND • Incidentally found on CT or MRI of the Abdomen or Abdomen and Pelvis AND • <1 cm in short axis AND • No history of cancer	• No further imaging indicated • It is uncertain as to whether subcentimeter nodularity or adrenal thickening qualifies as an adrenal mass on radiology reports
• Asymptomatic AND • Incidentally found on CT or MRI of the Abdomen or Abdomen and Pelvis AND • No prior imaging for comparison AND • Diagnostic with benign imaging characteristics AND • ≥1 cm AND • No history of cancer	• No further imaging, regardless of size • The risk of malignancy in a mass with diagnostically benign findings on imaging is extremely low[1, 3, 7, 8]

• Asymptomatic AND
• 1 cm to 2 cm AND
• Incidentally detected and indeterminate on any CT or MRI Abdomen or Abdomen and Pelvis AND
• No prior imaging for comparison AND
• No history of cancer
	• Reimaging indicated at 12 months from the initial indeterminate study, as follows:
	  • CT Abdomen without and with contrast (CPT® 74170 - adrenal protocol), CT Abdomen without contrast (CPT® 74150), or CS-MRI (chemical shift MRI, CPT® 74181)
	  • No further imaging is indicated after initial 12 month study if ANY of the following:
	  • Definitively benign characteristics
	  • Stable in size (change <8mm) over >1 year (likely

Mass Details	Imaging Study
	benign adenoma)[1, 7, 8]

• Asymptomatic AND
• >2 cm to <4 cm AND
• Incidentally detected and indeterminate on any CT or MRI Abdomen or Abdomen and Pelvis AND
• No prior imaging for comparison AND
• No history of cancer
	• Reimaging indicated immediately after initial indeterminate study, as follows:
	  • CT Abdomen without and with contrast (CPT® 74170 - adrenal protocol), or CS-MRI (chemical shift MRI, CPT® 74181)
	  • No further imaging is indicated after initial 12 month study if ANY of the following:
	  • Definitively benign characteristics
	  • Stable in size (change <8mm) over >1 year (likely benign adenoma)[1, 7, 8]

• Asymptomatic AND
• ≥4 cm AND
• Incidentally detected and indeterminate on any CT or MRI Abdomen or Abdomen and Pelvis AND
• No prior imaging for comparison AND
• No history of cancer
	• Reimaging indicated immediately after initial indeterminate study, as follows:
	  • CT Abdomen without and with contrast (CPT® 74170) or chemical shift MRI (CPT® 74181)
	• Consider resection for possible primary adrenocortical carcinoma
	  • See: **Adrenocortical Carcinoma (ONC-15.13)** in the Oncology Imaging Guidelines

• History of cancer with a likelihood or propensity to metastasize to the adrenal gland or abdomen • Incidentally detected and indeterminate on any CT or MRI Abdomen or Abdomen and Pelvis	• See: **Adrenal Gland Metastases (ONC-31.4)** in the Oncology Imaging Guidelines
• Known adrenal mass with benign characteristics, but newly symptomatic or new hormonal excess	• Repeat imaging per **Adrenal Hormone Excess/Symptomatic Adrenal Lesions (AB-16.2)**

Background and Supporting Information

Benign Adenoma Imaging Characteristics		
	Findings consistent with Adenoma:	Indeterminate for Adenoma:
CT Abdomen without contrast	≤10 Hounsfield Units	>10 Hounsfield Units
CT Abdomen WWO with calculated washout	≥60% absolute washout or ≥40% relative washout	<60% absolute washout <40% relative washout
Chemical Shift MRI	Signal drop out	Lack of signal drop out

- Endocrine guidelines recommend biochemical evaluation in all incidental adrenal lesions (with the exception of myelolipomas and cysts), however laboratory results are NOT required for imaging in an asymptomatic individual.
- Most benign adenomas, which account for up to 75% of adrenal incidentalomas, are lipid rich and thus easily characterized because they measure 10HFU or less on CT without contrast. CT Abdomen without and with contrast with calculated washout and chemical shift MRI help identify lipid poor adenomas which are the next most common group. Masses which remain indeterminate include pheochromocytomas (up to 7%) and primary adrenal cancers or metastases to the adrenal glands (approximately 4%).
- Adrenal masses are often found incidentally on CT scans performed WITH contrast to evaluate abdominal symptoms. While CT scans performed with contrast only may report the HFU of an adrenal mass, most benign adenomas are labeled "indeterminate" originally because non-contrasted HFU and HFU after washout cannot be measured or calculated.
- An "Adrenal Protocol CT" measures pre-contrast HFU of an adrenal mass as well as the HFU during "wash out" of contrast medium after 60 to 90 seconds [early] and 10 to 15 minutes [delayed]. Benign adenomas show more rapid and efficient contrast washout as compared to malignant adrenal masses.
- When an adrenal mass shows avid enhancement on CT scan (>110 – 120 HU), a pheochromocytoma should be considered.
- In addition to the imaging features in the grid which are considered "diagnostic" of a benign adrenal mass, other radiographic characteristics "suggestive" of a benignity include: smooth/round shape, homogeneous content, lack of calcification/hemorrhage/necrosis, growth rate <1cm/year, lack of FDG avidity on PET, <4cm
- Radiographic characteristics "suggestive" of malignancy include: irregular margins/shape, heterogeneous content, presence of calcification/hemorrhage/necrosis, growth rate >1cm/year, presence of FDG avidity on PET, >4-6cm
- Malignancies most likely to metastasize to the adrenal glands include lung cancer, gastrointestinal cancer, melanoma, and renal-cell carcinoma.

References (AB-16.1)

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Adrenal Hormone Excess/Symptomatic Adrenal Lesions (AB-16.2)

AB.AC.0016.2.A
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Overall Considerations

- Prior to advanced imaging, adrenal hormone excess must be clinically suspected, and then biochemically confirmed via testing listed in the table below
  - The following imaging recommendations can also be followed in asymptomatic individuals with an adrenal incidentaloma who are found to have abnormalities at initial hormonal evaluation.
- For severe hormone elevation or rapidly progressing symptoms for which adrenocortical carcinoma is suspected, see: **Adrenocortical Carcinoma (ONC-15.13)** in the Oncology Imaging Guidelines.

Condition and Indicated Imaging

Condition	Signs/Symptoms (not required to be documented for imaging)	Laboratory requirements PRIOR TO initial adrenal imaging	Indicated Imaging

• Suspected cortisol excess (adrenal Cushing's Syndrome)	• Weight gain
	• Hyperglycemia/ diabetes
	• Low bone mineral density/fractures
	• Hyperpigmented Striae
	• Lipodystrophy ("buffalo hump")
		• ACTH low/suppressed
		AND
		• Cortisol elevation documented by any of the following:
		  • Elevated AM cortisol following overnight 1mg dexamethasone suppression (cortisol >1.8 mcg/dL)
		  • Elevated late night salivary
			• CT Abdomen without contrast (CPT® 74150)
			  • If CT Abdomen without contrast shows an indeterminate adrenal mass, the following is indicated immediately:
			  • CT Abdomen without and with contrast

Condition	Signs/Symptoms (not required to be documented for imaging)	Laboratory requirements PRIOR TO initial adrenal imaging	Indicated Imaging
		• cortisol • Elevated urine free cortisol	• adrenal protocol (CPT® 74170) OR • MRI Abdomen without contrast chemical shift (CPT® 74181)
• Suspected adrenal hyper-androgenism/ virilizing adrenal tumor	• Hirsutism • Virilization (voice deepening, clitoromegaly)	• Elevated serum DHEASAND/OR • Elevated testosterone	• CT Abdomen without contrast (CPT® 74150) • If CT Abdomen without contrast shows an indeterminate mass, the following is indicated immediately: • CT Abdomen without and with contrast adrenal protocol (CPT® 74170) OR • MRI Abdomen without contrast

Condition	Signs/Symptoms (not required to be documented for imaging)	Laboratory requirements PRIOR TO initial adrenal imaging	Indicated Imaging
			chemical shift (CPT® 74181) • In individuals with an elevated testosterone level and an ovarian etiology is suspected, see: **Polycycstic Ovary Syndrome (PV-8.1)** in the Pelvis Imaging Guidelines and **Ovarian Cancer-Suspected/Diagnosis (ONC-21.1)** in the Oncology Imaging Guidelines.
• Suspected feminizing adrenal tumor	• Gynecomastia • Testicular atrophy	• Elevated serum estradiol AND • Non-elevated serum LH AND • No testicular mass seen on dedicated imaging	• CT Abdomen without contrast (CPT® 74150) • If CT Abdomen without contrast shows an indeterminate adrenal mass, the following is indicated immediately: • CT Abdomen

Condition	Signs/Symptoms (not required to be documented for imaging)	Laboratory requirements PRIOR TO initial adrenal imaging	Indicated Imaging
			without and with contrast adrenal protocol (CPT® 74170) OR • MRI Abdomen without contrast chemical shift (CPT® 74181)
• Suspected primary aldosteronism (Conn's Syndrome)	• HTN • Hypokalemia	• Serum aldosterone >15-20ng/dL in the setting of suppressed renin* and spontaneous hypokalemia (K<3.5mEq/L) OR • Confirmatory testing** showing lack of aldosterone suppression. • (See **Background and Supporting Information** on renin* levels and confirmatory testing**)	• CT Abdomen without contrast (CPT® 74150) • If CT Abdomen without contrast shows an indeterminate adrenal mass, the following is indicated immediately: • CT Abdomen without and with contrast adrenal protocol (CPT® 74170) OR

Condition	Signs/Symptoms (not required to be documented for imaging)	Laboratory requirements PRIOR TO initial adrenal imaging	Indicated Imaging
			• MRI Abdomen without contrast chemical shift (CPT® 74181)
• Suspected pheo-chromocytoma/ paraganglioma	• HTN • Palpitations • Tremor • Pallor • Flushing • Hyperadrenergic spells	• Elevated plasma free metanephrines OR • Elevated urinary fractionated metanephrines	• CT Abdomen and Pelvis without and with contrast (CPT® 74178), CT Abdomen and Pelvis with contrast (CPT® 74177), or MRI Abdomen (CPT® 74183) and Pelvis (CPT® 72197) without and with contrast • See also: **Adrenal Nuclear Imaging(AB-16.4)** and **Adrenal Tumors (ONC-15.10)** in the Oncology Imaging Guidelines and **Hereditary Paraganglioma-Pheochromocytoma Syndromes (PEDONC-2.13)** in the Pediatric and Special Populations Oncology

Condition	Signs/Symptoms (not required to be documented for imaging)	Laboratory requirements PRIOR TO initial adrenal imaging	Indicated Imaging
			Imaging Guidelines
• Suspected adrenocortical carcinoma	• Rapidly progressive symptoms • Elevation of multiple adrenal hormones	• NA	• See: **Adrenocortical Carcinoma (ONC-15.13)** in the Oncology Imaging Guidelines
• Confirmed adrenal hormone excess AND • Requested for surgical planning AND • Requested by or in consultation with an Endocrinologist, endocrine surgeon, or Urologist	NA	NA	• Repeat imaging as requested

Background and Supporting Information

- Surgery is the management of choice for patients with virilizing adrenal tumors, feminizing adrenal tumors, pheochromocytoma/PGL and suspected adrenocortical carcinoma due to an increased risk of malignancy and/or comorbidity. Adrenal masses that secrete excess cortisol (adrenal Cushing's syndrome) or aldosterone (primary hyperaldosteronism/Conn's syndrome) are rarely malignant; however, surgery is also definitive management.

Suspected cortisol excess (adrenal Cushing's syndrome)

- Low or suppressed ACTH levels (<10 pg/mL) are consistent with an adrenal source.
- DHEAS levels are also low in adrenal Cushing's syndrome.
- The diagnosis of Cushing's syndrome can be delayed for years due to the insidious nature of clinical presentation and the complexity of diagnostic testing.

Suspected adrenal hyperandrogenism/virilizing adrenal tumor

- Testosterone is produced by both the ovary (primary source) and adrenal gland while DHEA and DHEAS are produced almost exclusively by the adrenal gland.
- The magnitude of the androgen level is of poor predictive value for tumors, although a very high testosterone (adult-male range) or DHEAS level (>700 µg/dL) is suggestive.

Suspected feminizing adrenal tumor

- Adrenal tumors, mainly carcinomas (extremely rare, 0.5–2.0per million), can secrete both estrogens and high amounts of adrenal androgens, which aromatize to estrogens. In this case, gynecomastia is usually of recent onset, progresses rapidly and testicular atrophy can also be seen.
- Common causes of excessive endogenous estrogens should be excluded prior to adrenal imaging. These include increased secretion from testis (Leydig cell or Sertoli cell tumors, stimulation of normal Leydig cells by LH or hCG) and increased aromatization of androgens to estrogens (aging, obesity, alcoholic cirrhosis, hyperthyroidism, drugs, hCG-secreting tumors, aromatase excess syndrome).

Suspected primary aldosteronism (Conn's syndrome)

- A positive screen for primary aldosteronism is an aldosterone level >15-20ng/dL in the setting of suppressed renin* (plasma renin activity <0.6-1.0ng/mL/hour or plasma renin concentration <5-8.2 mU/L) and spontaneous hypokalemia (K<3.5mEq/L).
- The most common dynamic confirmatory tests include the oral sodium suppression test, the seated intravenous saline suppression test, the fludrocortisone suppression test, and the captopril challenge test and results that indicate a "positive" result are unique to the each test. For example, if oral sodium loading is used, a 24-hour urine aldosterone excretion of more than 12 mg in the setting of 24-hour urine sodium excretion of more than 200 mEq is diagnostic of primary aldosteronism (and values of more than 10 mg/24 hours are strongly suggestive).
- Primary hyperaldosteronism may be managed medically with mineralocorticoid receptor antagonists (spironolactone and eplerenone) in cases of bilateral adrenal disease or poor surgical candidacy. If there has been no recent adrenal imaging, reimaging can be considered in cases of diagnostic uncertainty or poor response to medical therapy.

Suspected pheochromocytoma/paraganglioma

- A pheochromocytoma (85% of chromaffin tumors) arises from the chromaffin cells in the adrenal medulla and commonly produces one or more of the following catecholamines: epinephrine, norepinephrine and dopamine.
- A paraganglioma (15-20% of chromaffin tumors) arises from the extra-adrenal chromaffin cells of the sympathetic paravertebral ganglia of the thorax, abdomen

and pelvis (catecholamine producing) or the parasympathetic ganglia along the glossopharyngeal and vagal nerves in the neck and base of skull (not catecholamine producing).

- Cases of pheochromocytoma/paraganglioma can be sporadic but 1/3 are hereditary and due to germ-line mutations that may increase malignant potential.

Suspected adrenocortical carcinoma

- Adrenocortical carcinoma may be suspected radiographically or clinically. Approximately 60% of patients present with evidence of adrenal steroid hormone excess, with or without virilization. Hormonally inactive ACCs typically produce symptoms related to tumor burden, including abdominal pain, back pain, early satiety, and weight loss.
- See: **Adrenocortical Carcinoma (ONC-15.13)**

References (AB-16.2)

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Adrenal Insufficiency (AB-16.3)

- CT Abdomen (contrast as requested), or MRI Abdomen (contrast as requested) if CT is contraindicated, if the cause of primary adrenal insufficiency is unclear.
- Imaging is NOT indicated if clinical presentation and labs are consistent with any of the following:
  - Primary autoimmune destruction of the adrenal cortex (Addison's disease)
  - Congenital adrenal hyperplasia
  - Adrenoleukodystrophy

Background and Supporting Information

- Imaging can detect infiltrative disease, adrenal hemorrhage, infections, and malignant tumors which may be the cause of adrenal dysfunction

References (AB-16.3)

v1.0.2023

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Adrenal Nuclear Imaging (AB-16.4)

AB.AC.0016.4.A
v1.0.2023

Nuclear medicine imaging can assist in the evaluation of adrenal masses not adequately characterized by CT or MRI.

- Evaluation of SUSPECTED pheochromocytoma or paraganglioma:
  - MIBG (Any ONE of the following codes can be approved: CPT® 78801, CPT® 78802, or CPT® 78804
    - Any ONE of the following codes may also be approved, individual or in combination with CPT® 78801, 78802, 78804: SPECT studies (CPT® 78803 or CPT® 78831), or hybrid SPECT/CT studies (CPT® 78830 or CPT® 78832)
  - Octreotide scans can be approved in place of MIBG scans (with the same CPT codes) as requested in rare clinical circumstances including head and neck paragangliomas
- For PET/CT indications and for cases of KNOWN pheochromocytoma or paraganglioma, see: **Adrenal Tumors (ONC-15.10-15.12)** in the Oncology Imaging Guidelines
- Evaluation of SUSPECTED neuroblastoma, ganglioneuroblastoma, or ganglioneuromas:
  - MIBG (Any ONE of the following codes can be approved: CPT® 78801, CPT® 78802, or CPT® 78804)
    - Any ONE of the following codes may also be approved, individual or in combination with CPT® 78801, 78802, 78804: SPECT studies (CPT® 78803 or CPT® 78831), or hybrid SPECT/CT studies (CPT® 78830 or CPT® 78832)
- For KNOWN neuroblastoma, ganglioneuroblastoma, or ganglioneuroma, see **Neuroblastoma (PEDONC-6)** in the Pediatric and Special Populations Oncology Imaging Guidelines
- Adrenal Nuclear Imaging of the cortex and/or medulla (single site, planar imaging of the adrenal gland only) (CPT® 78075) includes the adrenal scintigraphy scans for 131I-iodocholesterol (NP-59) as well as MIBG (Iodine i-123 iobenguane and Iodine i-131 iobenguane sulfate) scans
  - 131I-iodocholesterol (NP-59) scans for adrenal cortex imaging can be useful in cases of suspected hyperaldosteronism and adrenal Cushing's, however NP-59 is not readily available for use in the United States
  - MIBG (Iodine i-123 iobenguane and Iodine i-131 iobenguane sulfate) scans for adrenal medulla imaging can be helpful in cases of known pheochromocytoma or neuroblastoma
    - CPT® 78075 is insufficient for the initial evaluation of a suspected pheochromocytoma, paraganglioma or neuroblastoma as this study does not evaluate extra-adrenal sites of disease, but can be considered in rare circumstances

- SPECT and SPECT/CT codes as listed above for MIBG can be added to CPT® 78075 as requested

- History of multiple endocrine neoplasia syndromes: See **Multiple Endocrine Neoplasias (MEN) (PEDONC-2.8)** in the Pediatric and Special Populations Oncology Imaging Guidelines.
- History of neurofibromatosis: See **Neurofibromatosis 1 and 2 (NF1 and NF2) (PEDONC-2.3)** in the Pediatric and Special Populations Oncology Imaging Guidelines.
- History of von Hippel-Lindau disease: See **Von Hippel-Lindau Syndrome (VHL) (PEDONC-2.10)** in the Pediatric and Special Populations Oncology Imaging Guidelines.

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

Abdominal Aortic Aneurysm (AAA) (AB-17.1)

AB.17.1.A
v1.0.2023

- See the **Peripheral Vascular Disease Imaging Guidelines**

Iliac Artery Aneurysm (IAA) (AB-17.2)

AB.17.2.A
v1.0.2023

- See the **Peripheral Vascular Disease Imaging Guidelines**

Visceral Artery Aneurysm (AB-17.3)

AB.17.3.A
v1.0.2023

- See the **Peripheral Vascular Disease Imaging Guidelines**

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

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

AB.18.1.A
v1.0.2023

- See the **Peripheral Vascular Disease Imaging Guidelines**

Aortic Dissection and Imaging for Other Aortic Conditions (AB-19)

Aortic Dissection and Other Aortic Conditions (AB-19.1)

AB.19.1.A
v1.0.2023

- See the **Peripheral Vascular Disease Imaging Guidelines**

Imaging for Other Aortic Conditions (AB-19.2)

AB.19.2.A
v1.0.2023

- See the **Peripheral Vascular Disease Imaging Guidelines**

Bowel Obstruction, Gastroparesis, and Bloating (AB-20)

Bowel Obstruction (AB-20.1)

AB.BO.0020.1.A
v1.0.2023

- Suspected bowel obstruction:
  - CT Abdomen and Pelvis with contrast (CPT® 74177)
  - Pediatric individuals:
    - MRI Abdomen and Pelvis without and with contrast (CPT® 74183 and CPT® 72197) can be approved if requested
  - Pregnant individuals:
    - MRI Abdomen and Pelvis without contrast (CPT® 74181 and CPT® 72195)
  - If the etiology or level of suspected intermittent or low-grade small bowel obstruction remains undetermined and additional imaging is needed after CT Abdomen and Pelvis:
    - CT Enteroclysis (CPT® 74176 or CPT® 74177) or
    - CT Enterography (CPT® 74177) or
    - MR Enteroclysis (CPT® 74183 and CPT® 72197) or
    - MR Enterography (CPT® 74183 and CPT® 72197)
- If there is a suspected small bowel tumor as a cause of the small bowel obstruction (including a history of no prior abdominal or pelvic surgery, no known hernia and/or concomitant obscure GI bleeding):
  - CT Enterography (CPT® 74177)
- Small bowel obstruction suspected to be secondary to Crohn's Disease:
  - See: **IBD (Crohn's Disease or Ulcerative Colitis) (AB-23.1)** and **Known IBD (AB-23.2)**
- Bariatric surgery patients, see: **Bariatric Surgery (AB-9.1)**

Background and Supporting Information

- Complete or high-grade obstruction can be defined as no fluid or gas passing beyond the site of obstruction. In incomplete or partial obstruction (low-grade), some fluid or gas passes beyond the point of obstruction. However, a plain film is not required prior to advanced imaging for suspicion of either high- or low- grade obstruction.

Gastroparesis and Dumping Syndrome (AB-20.2)

AB.BO.0020.2.A
v1.0.2023

Gastroparesis

- Gastric Emptying Study (CPT® 78264) for suspicion of delayed gastric emptying and ONE of the following:
  - Nausea, or vomiting of old food ingested several hours earlier
  - Bloating
  - Early satiety, or postprandial fullness
  - Recurrent aspiration
  - Unexplained poor glucose control in diabetes
  - Gastroesophageal reflux refractory to medical management
  - Non-ulcer dyspepsia
  - Retained gastric contents on endoscopy
- Gastric emptying study with small bowel transit (CPT® 78265) can be used in the evaluation of suspected abnormalities in both total and regional times for gastrointestinal transit in small bowel.
- Gastric emptying study with small bowel and colon transit (CPT® 78266) can be used in the evaluation of suspected abnormalities in both total and regional time for gastrointestinal transit to the colon.

Dumping Syndrome

- Gastric Emptying Study (CPT® 78264) to evaluate signs or symptoms of dumping syndrome is not indicated
- Dumping syndrome is a common complication of gastric and bariatric surgery in which changes in anatomy and innervation promote a rapid emptying of gastric contents into the small bowel. This triggers a series of physiologic responses. “Early dumping”, occurring within the first hour after a meal is characterized by abdominal pain, bloating, gassiness, nausea, vomiting, and diarrhea as well as vasomotor symptoms such as flushing, sweatiness, tachycardia, and hypotension). “Late dumping” symptoms occurring between 1 and 3 hours after meals are usually related to hypoglycemia (e.g., weakness, confusion, syncope).
- Dumping syndrome is usually a clinical diagnosis and the recommended diagnostic testing is an oral glucose tolerance test.
- Evidence-based guidelines have recently concluded that gastric emptying tests have low sensitivity and specificity for dumping syndrome, and that a gastric emptying test showing rapid emptying rate would not be used to confirm a diagnosis of dumping syndrome. Rapid emptying can occur in other conditions, and it has been demonstrated that the initial rapid emptying in dumping may produce symptoms such as nausea, which then delays gastric emptying, such that the

results of a gastric emptying study are in the normal range. Because of these limitations, recent guidelines have concluded that "…gastric emptying testing seems to be of low utility in diagnosing dumping syndrome".[18]

Note: If both a solid-phase and a liquid-phase gastric emptying imaging study are performed on the same day by any protocol, CPT® 78264 may not be reported with two units, only 1 unit. However, if a solid-phase study is performed, and then on a later date a liquid-phase study is performed, one unit of CPT® 78264 may be reported for each date of service. This occurrence should be rare, however, as there are dual-phase imaging protocols that should be employed if both are known to be needed prior to the start of the first study.

Nausea and Vomiting as the Primary Symptom (AB-20.3)

AB.BO.0020.3.A
v1.0.2023

- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria
- Nausea and vomiting as the Primary Symptom
  - An initial assessment should be performed prior to imaging requests. The initial assessment should include a history with a delineation of the duration, frequency, and severity of symptoms, including a description of their characteristics and any associated symptoms. The purpose of the initial assessment is to define whether the symptom complex suggests a central (neurologic), endocrine (e.g. pregnancy, thyroid disorder), iatrogenic (chemotherapy/medication-induced), obstructive (e.g., low-grade small bowel obstruction), or a mucosal (gastritis, peptic ulcer disease) etiology. Diagnostic testing for nausea and vomiting should be targeted at finding the etiology suggested by a thorough history and physical examination. In the absence of more complicated or serious disease, if the cause is not obvious or suggestive from the history and physical, laboratory data including a CBC, chemistry profile, and, in a reproductive-age female, pregnancy testing, should be performed prior to advanced radiographic imaging. Imaging is based on the findings of the initial evaluation as follows:
    - ☐ CT Abdomen and Pelvis with contrast (CPT® 74177) for ANY of the following:
      - If the initial assessment does not suggest a specific cause
      - If the evaluation proves unproductive
    - ☐ Symptoms suggesting mucosal disease (e.g. GERD, suspicion of ulcer disease):
      - EGD prior to advanced imaging
    - ☐ If nausea and vomiting remains unexplained despite workup and CT Abdomen and Pelvis is negative:
      - Gastric emptying study (CPT® 78264)
    - ☐ Symptoms suggesting an intracranial etiology (vertigo/nystagmus, associated headache, or neurogenic vomiting suggested by a positional nature and/or associated with other neurologic signs and symptoms):
      - See: **Headache (HD-11)** , **Dizziness, Vertigo and Syncope (HD-23)** , or other Head Imaging Guidelines depending on the predominant neurologic presentation
    - ☐ Nausea and vomiting associated with RUQ pain and suspicion of gallbladder disease, see: **Right Upper Quadrant Pain including Suspected Gallbladder Disease (AB-2.3)**
    - ☐ Nausea and vomiting associated with dyspeptic symptoms, or epigastric pain, see: **Epigastric Pain and Dyspepsia (AB-2.5)**

Superior Mesenteric Artery (SMA) Syndrome (AB-20.4)

AB.BO.0020.4.A
v1.0.2023

- CTA Abdomen (CPT® 74175) or MRA Abdomen (CPT® 74185) are indicated for clinical suspicion of SMA syndrome and ANY of the following:
  - Risk factors or radiographic/EGD findings as noted below:
    - Recent significant weight loss which leads to a loss of retroperitoneal fat
    - Presence of a severe debilitating illness such as malignancy, malabsorption syndromes, AIDS, trauma, and burns.
    - History of corrective spine surgery for scoliosis
    - Anorexia Nervosa
    - Abdominal surgery
    - Congenital short ligament of Treitz
  - Radiologic findings or history suggestive of duodenal obstruction
  - Failure to diagnose either persistent nausea and vomiting despite the workup outlined in **Nausea and Vomiting as the Primary Symptom (AB-20.3)**

Background and Supporting Information

- SMA syndrome is a rare cause of duodenal obstruction in which there is a decrease in the aortomesenteric angle with resulting compression of the duodenum by the SMA.
- The typical clinical scenario includes an episode of weight loss followed by chronic food intolerance with nausea and vomiting, further weight loss, and epigastric pain, and can be relieved by lying prone or in the left lateral decubitus position.
- The diagnosis can be suspected with barium studies demonstrating delayed passage of contrast beyond the duodenum, dilatation of the first and second portions of the duodenum, anti-peristaltic flow of barium proximal to the obstruction, and relief of obstruction when placed in the prone, knee-chest, or left lateral position, or with an upper endoscopy revealing pulsatile extrinsic compression of the duodenum, or plain films suggesting duodenal obstruction.

Bloating, Gas, and Distention (AB-20.5)

AB.BO.0020.5.A
v1.0.2023

- For bloating as the primary symptom, present for at least 3 months, see: **Irritable Bowel Syndrome (AB-21.4)**
- For documented suspicion of bowel obstruction (e.g., patients with prior abdominal surgery, previous history of SBO, known adhesions, history of Crohn's Disease, etc.) see: **Bowel Obstruction (AB-20.1)**
- If associated with constipation, see: **Constipation (AB-21.3)**
- If associated with dyspeptic symptoms, see: **Epigastric Pain/Dyspepsia (AB-2.5)**
- CT Abdomen and Pelvis with contrast (CPT® 74177) if any of the following is present:
  - History of malignancy with a likelihood or propensity to metastasize to abdomen
  - Fever (≥101 degrees Fahrenheit)
  - Elevated WBC >10,000, or above the upper limit of normal for the particular lab reporting the result
  - Palpable mass of clinical concern and/or without benign features
  - GI bleeding, overt or occult, not obviously hemorrhoidal
  - Abdominal tenderness documented as moderate or severe
  - Peritoneal signs, such as guarding or rebound tenderness
  - Suspected complication of bariatric surgery
  - Notation by the ordering provider that the patient has a "surgical abdomen"
  - Age >60 years with unintentional weight loss of ≥10 lbs. or ≥5% of body weight over 6 months or less, without an identifiable reason

Background and Supporting Information

Bloating and distension are among the most common gastrointestinal complaints, and appears in 96% of patients with IBS, and 20-30% of the general population. Bloating is the subjective perception of increased abdominal pressure. Distension is the objective finding of increased abdominal girth.

References (AB-20)

v1.0.2023

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Diarrhea, Constipation, and Irritable Bowel (AB-21)

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

AB.DC.0021.1.A
v1.0.2023

- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.
- 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.[9,10,11]
- CT Abdomen and Pelvis with contrast (CPT® 74177) can be used if:
  - Suspected ischemia (See: **Mesenteric Ischemia (AB-6.1)** and **Colonic Ischemia (AB-6.2)**)
  - Older (>50) individuals with significant abdominal pain
  - Previous gastric bypass
  - Immunocompromised
  - Obstruction, toxic megacolon, or perforation suspected

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

AB.DC.0021.2.A
v1.0.2023

- Basic lab work including routine CBC, chemistries, as well as stool tests for pathogens.
- CT Abdomen with contrast (CPT® 74160), CT Abdomen and Pelvis with contrast (CPT® 74177), CT Enterography (CPT® 74177), or MR Enterography (CPT® 74183 or CPT® 74183 and CPT® 72197), can be approved if all of the following have been performed:
  - Colonoscopy has been performed and is nondiagnostic or suggestive of inflammatory bowel disease
  - Fecal calprotectin or fecal lactoferrin
  - Testing for giardia antigen or PCR for giardia
  - Testing for celiac disease with serum IgA tissue transglutaminase (tTG)
- See: **IBD (Crohn's Disease or Ulcerative Colitis) (AB-23.1)** for concerns regarding inflammatory bowel disease.

Constipation (AB-21.3)

AB.DC.0021.3.UOH
v1.0.2023

- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria
- CT Abdomen and Pelvis with contrast (CPT® 74177) if:
  - Concern for obstruction
- MRI (MRI Pelvis without contrast CPT® 72195) for Defecography is considered investigational/experimental by UnitedHealthcare.

Background and Supporting Information

- The work-up and treatment of constipation usually proceeds with a history and physical followed by empiric medication or dietary trials.
  - In general, a colonoscopy is performed prior to advanced imaging in an individual presenting with chronic constipation if the alarm symptoms of blood in the stool, anemia, or weight loss are present.

Irritable Bowel Syndrome (AB-21.4)

AB.DC.0021.4.A
v1.0.2023

- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.
- Advanced imaging in the absence of alarm symptoms has a very low yield, but can be considered in the following circumstances:
  - CT Abdomen (CPT® 74160) or CT Abdomen and Pelvis (CPT® 74177) can be considered in the following circumstances:
    - Presence of any of the following alarm symptoms:
      - Weight loss
      - Frequent nocturnal awakenings due to gastrointestinal symptoms
      - Fever
      - Blood in the stool or iron deficiency anemia (See: **GI Bleeding (AB-22)** for appropriateness of imaging in this circumstance)
      - New onset and progressive symptoms
      - Onset of symptoms after age 50
      - Family history of colon cancer or inflammatory bowel disease
      - Findings of an abdominal mass
      - Presence of lymphadenopathy
    - Fecal calprotectin ≥50ug/g or fecal lactoferrin ≥4.0ug/g or CRP >0.5 in individuals with diarrhea-predominance
    - Celiac testing should also be performed in individuals with diarrhea-predominance IBS, and if positive see: **Celiac Disease (AB-24.1)** for imaging guidance. (See background and supporting information in **IBD (Crohn's Disease or Ulcerative Colitis) (AB-23.1)**

Background and Supporting Information

- Irritable bowel syndrome is characterized by abdominal pain associated with altered bowel habits, abdominal distention, and bloating. It is important to understand that IBS is a positive diagnosis, not a diagnosis of exclusion. ACG guidelines (2021) strongly suggest that IBS be assessed with a "positive diagnostic strategy as compared to a diagnostic strategy of exclusion". Subtypes include IBS-C (constipation-predominant), IBS-D (diarrhea-predominant), IBS-M (mixed), and unclassified IBS. Rome IV Criteria for the diagnosis of irritable bowel syndrome are:
  - Recurrent abdominal pain, on average ≥1 d/wk in the past 3 months, related to ≥2 of the following:
    - Defecation
    - Change in stool frequency
    - Change in stool appearance (form)

References (AB-21)

v1.0.2023

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GI Bleeding (AB-22)

GI Bleeding (AB-22.1)

AB.GI.0022.1.A
v1.0.2023

- 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):
  - Active bleeding and if endoscopy is negative
  - If conventional angiography is being considered
  - If surgery is being considered
  - If colonoscopy cannot be performed in an individual with GI bleeding
  - GI bleeding and severe abdominal pain
  - GI bleeding and hemodynamic instability (shock)
  - If there is concern for an aorto-enteric fistula (known or suspected aortic aneurysm, history of any type of aortic aneurysm repair).
- Meckel's scan (CPT® 78290) can be approved if bleeding is suspected from a Meckel's diverticulum.
- Gastrointestinal Bleeding Scintigraphy (CPT® 78278) can be considered if there is brisk active bleeding with negative endoscopy
- For TIPS placement, see: **Portal Hypertension (AB-26.3)**

Small Bowel Bleeding Suspected (AB-22.2)

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v1.0.2023

- If small bowel bleeding is suspected as the source of bleeding, and if upper and lower endoscopies are negative:
  - Video capsule endoscopy (VCE) is performed prior to advanced imaging.
    - VCE is not required prior to advanced imaging if small bowel obstruction or stricture of the gastrointestinal tract is suspected, if there is dysphagia, or in individuals with implantable devices such as pacemakers or defibrillators.
  - CT Enterography (CPT® 74177) if upper and lower endoscopy are negative and if VCE is negative. If there is a contraindication to CT Enterography, MR Enterography (CPT® 74183 or CPT® 74183 and CPT® 72197) may be performed.
  - Note: Providers occasionally request a CT or MR Enterography prior to the administration of a VCE, in order to assess whether there is pathology that might impede passage of the capsule and cause retention. This is not supported as a routine procedure prior to VCE. It should be noted that a patency capsule is available, and that this may identify patients at higher risk of retention. However, guidance from the consensus group of the American College of Gastroenterology recommends that in individuals with obstructive symptomatology, imaging (MR Enterography or CT Enterography) should be performed prior to VCE. This group would also include high risk individuals with a known history of Crohn's Disease, known history of strictures or other obstruction, history of previous pelvic or abdominal radiation, or suspected tumor.
- Iron Deficiency Anemia
  - If the bleeding is determined to be non-gastrointestinal (e.g. hematuria or vaginal bleeding), refer to the appropriate guideline for these conditions.
  - If the source is determined to be gastrointestinal:
    - Upper endoscopy and colonoscopy should be performed, unless contra-indicated.
    - Small bowel video capsule endoscopy is next, if endoscopies are negative (unless contraindicated).
    - CT Abdomen and Pelvis with contrast (CPT® 74177), CT Enterography (CPT® 74177), or MR Enterography (CPT® 74183 or CPT® 74183 and CPT® 72197) (if CT Enterography is contraindicated) can be performed, if small bowel video capsule endoscopy is negative, or for further evaluation of abnormal video capsule findings. CT Enterography should be considered the test of choice given the lack of motion artifact and its superior spatial resolution.

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Inflammatory Bowel Disease (AB-23)

IBD (Crohn's Disease or Ulcerative Colitis) (AB-23.1)

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v1.0.2023

- Suspected Crohn's Disease or Ulcerative Colitis
  - CT Abdomen and Pelvis with contrast (CPT® 74177) or CT Enterography (CPT® 74177) or MR Enterography (CPT® 74183 or CPT® 74183 and CPT® 72197) for ANY of the following:
    - ☐ History of malignancy with a likelihood or propensity to metastasize to abdomen
    - ☐ Fever (≥101 degrees Fahrenheit)
    - ☐ Elevated WBC >10,000, or above the upper limit of normal for the particular lab reporting the result
    - ☐ Palpable mass of clinical concern and/or without benign features
    - ☐ GI bleeding, overt or occult, not obviously hemorrhoidal
    - ☐ Abdominal tenderness documented as moderate or severe
    - ☐ Peritoneal signs, such as guarding or rebound tenderness
    - ☐ Suspected complication of bariatric surgery
    - ☐ Notation by the ordering provider that the patient has a "surgical abdomen"
    - ☐ Age >60 years with unintentional weight loss of ≥10 lbs. or ≥5% of body weight over 6 months or less, without an identifiable reason
  - Chronic diarrhea without the above signs or symptoms, see: **Diarrhea, Constipation, and Irritable Bowel (AB-21)**
  - CT Enterography (CPT® 74177) or MR Enterography (CPT® 74183 or CPT® 74183 and CPT® 72197) if none of the above signs or symptoms are present and request is for the evaluation of chronic abdominal pain associated with diarrhea due to a concern for inflammatory bowel disease if:
    - ☐ There is a positive family history of inflammatory bowel disease, **OR**
    - ☐ There are endoscopy or colonoscopy findings suggestive of inflammatory bowel disease, **OR**
    - ☐ Elevated inflammatory markers (fecal lactoferrin ≥4.0 ug/g, CRP >0.5 mg/dL, or fecal calprotectin ≥50 ug/g), **OR**
    - ☐ Diagnosis is still in doubt after colonoscopy and evaluation of inflammatory markers, and Crohn's disease is suspected
  - CT Abdomen and Pelvis with or without contrast (CPT® 74177 or CPT® 74176) can be performed prior to endoscopy if requested by or in consultation with the provider who will be performing the endoscopy.

- NOTE: Serologic markers

Serologic and genetic markers are currently under investigation with regards to their value in diagnosing inflammatory bowel disease, and are sometimes used as a screening test for IBD in which other examinations are negative. At the current time they are not considered suitable as a screening test for inflammatory bowel disease in patients with GI symptoms, and the routine use of serologic or genetic markers for the diagnosis of IBD is not indicated. Thus, an isolated positive marker result in a patient without any other findings to suggest IBD, especially in the presence of negative inflammatory markers and endoscopic examinations, is not, in and of itself, an indication for advanced imaging.

- Note: Serologic markers include anti-glycan antibodies, such as ASCA, ACCA, ALCA, AMCA, Anti-L, Anti-C, Anti-OmpC, Anti-Is, Anti-Cbir, pANCA, PAB, GAB

Background and Supporting Information

Studies have demonstrated the negative predictive value of a low fecal calprotectin and CRP with regards to inflammatory bowel disease. Chey, et al. in a meta-analysis demonstrated that a fecal calprotectin <40mcg/g or a CRP ≤0.5 mg/dl effectively excludes inflammatory bowel disease in patients with IBS. Katsinelos, et al. reviewed wireless capsule endoscopy results in patients with abdominal pain and diarrhea. The diagnostic yield of capsule endoscopy in patients with abdominal pain and diarrhea with positive inflammatory markers was 90.1%, and 0% in patients with abdominal pain and diarrhea with negative inflammatory markers. This led the Canadian Association of Gastroenterology to recommend against the use of capsule endoscopy in persons with chronic abdominal pain or diarrhea as their only symptoms and no evidence of biomarkers associated with Crohn's Disease, stating "CE (capsule endoscopy) is not warranted in most patients who present with chronic abdominal pain in the absence of positive tests for inflammatory markers or abnormal findings on endoscopy or imaging".

Known IBD (AB-23.2)

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- CT Abdomen and Pelvis (CPT® 74177), CT Enterography (CPT® 74177), or MR Enterography (CPT® 74183 or CPT® 74183 and CPT® 72197) for known Crohn's Disease or Ulcerative Colitis and ANY of the following:
  - Suspected complications including abscess, perforation, fistula, or obstruction
  - Monitoring response to therapy
  - To determine change in treatment
- MR Enterography is the test of choice for the follow up of young patients with IBD given the lack of ionizing radiation and the need for lifetime follow up in many patients.

Perirectal/Perianal Disease (AB-23.3)

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v1.0.2023

This section is applicable to individuals with Crohn's disease. See: **Fistula in Ano (PV-21.1)** and **Perirectal Abscess (PV-21.2)** in the Pelvis Imaging Guidelines for non-Crohn's related perirectal and/or perianal fistulae

- Perirectal/Perianal Fistula:
  - MRI Pelvis without and with contrast (CPT® 72197)
  - Endoscopic ultrasound is preferential to CT in this setting
  - CT Pelvis with contrast (CPT® 72193) is an inferior study in this setting, and should be used when MRI or Endoscopic ultrasound cannot be performed.
- Perirectal/Perianal Abscess:
  - MRI Pelvis without and with contrast (CPT® 72197)
  - CT Pelvis with contrast (CPT® 72193) is inferior but can be approved as an alternative if desired.

Primary Sclerosing Cholangitis (PSC) (AB-23.4)

- Primary Sclerosing Cholangitis:
  - MRCP can be considered to assess for PSC in those:
    - With IBD and any elevated liver study (including alkaline phosphatase, GGTP, bilirubin, AST, or ALT).
    - Without IBD, but with persistent cholestatic liver tests. (See: **Abnormal Liver Chemistries (AB-30)**)
  - Ultrasound or MRI/MRCP can be done as surveillance for cholangiocarcinoma in individuals with PSC every 6 months.

Background and Supporting Information

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.[6,7,8]

See: **Chronic Liver Disease, Cirrhosis and Screening for HCC (AB-26.1)** Background and Supporting Information PSC (Primary Sclerosing Cholangitis) vs PBC (Primary Biliary Cholangitis)

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Celiac Disease (Sprue) (AB-24)

Celiac Disease (AB-24.1)

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- Endoscopy and biopsy of the small bowel is performed to confirm the diagnosis if the anti-tTG and/or EMA tests are positive.
- CT Abdomen and Pelvis with contrast (CPT® 74177), CT Enteroclysis (CPT® 74176 or CPT® 74177), or CT Enterography (CPT® 74177) is appropriate for:
  - One time study after initial, confirmed diagnosis of Celiac Disease.
  - Confirmed Celiac disease and despite adherence to a gluten free diet the individual is experiencing new or continued weight loss, diarrhea, abdominal distention, anemia, or other symptoms suggesting complications of celiac disease.

Background and Supporting Information

- Celiac is an autoimmune disease in which the villi of the small intestine are damaged from eating gluten (found in wheat, barley, and rye).
- Complications of celiac disease include ulcerative jejunitis, lymphoma, and small intestinal adenocarcinoma.
- Diagnosis is made by blood testing[1]:
  - Anti-tissue transglutaminase antibody [anti-tTG], anti-endomysium antibody (EMA), total IgA count, CBC to detect anemia, ESR, C-reactive protein, complete metabolic panel, vitamin D, E, B12 levels.

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CT Colonography (CTC) (AB-25)

CTC (AB-25.1)

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Note: A screening CTC (CPT® 74263) can ONLY be used for an individual who is a candidate for average risk screening as defined below. It cannot be used for any other indication. If the request for a CTC is for any other reason than average risk screening, please refer to diagnostic CTC indications. A diagnostic CTC would be the appropriate code, if approvable, for any other reason than average risk screening. This would include surveillance for a history of colon polyps, the evaluation of a change in bowel habits, abdominal pain, bleeding, etc. Please refer to the definition below of an average-risk individual, as well as the circumstances for which a diagnostic CTC is appropriate.

- Screening CTC (CPT ® 74263) for colorectal cancer is NOT indicated if:
  - FIT-DNA (multi-targeted stool DNA test) within the last 3 years, OR
  - Colonoscopy within the last 10 years
- Screening CTC (CPT® 74263) can be approved every 5 years for colorectal cancer[1,2,3] for:
  - Average-risk individuals ages 45 to 75
    - Average risk is defined as:
      - No previously diagnosed colorectal cancer, or colonic adenomas, or inflammatory bowel disease involving the colon
  - Individuals between 76 to 85 if there is no history of a previously negative colonoscopy or CTC, or, if in the opinion of the provider, the benefits of screening outweigh the risks.
  - Individuals with a SINGLE first-degree relative diagnosed at age >60 years with colorectal cancer or an advanced adenoma can be screened with CTC beginning at age 40.
    - If there are 2 or more first degree relatives at any age with CRC or an advanced adenoma, or a first degree relative <60, the individual should be screened via colonoscopy, not CTC.
- Diagnostic CTC without contrast (CPT® 74261) can be approved for:
  - 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 ≥80 years of age
    - Recent (within the last 60 days) myocardial infarction (MI)
- Diagnostic CTC with contrast (CPT® 74262) can be approved if:

  - There is a known obstructing colorectal malignancy so that staging prior to surgery can be performed, if desired.
  - There is a clearly stated indication for IV contrast to evaluate extra-colonic organs. When performed in this setting, a CTC with contrast will substitute for a CT Abdomen and Pelvis such that an additional CT Abdomen and Pelvis would generally not be needed.
- MRI Colonography: Currently, no published society-endorsed guideline with respect to colorectal cancer screening lists MRI Colonography as an alternative screening study. As such, requests for MRI Colonography would be considered investigational at this time. There is no specific CPT assigned for this procedure. It is sometimes requested as an MRI Abdomen and MRI Pelvis.

Background and Supporting Information

CT Colonography is routinely performed without contrast, and IV contrast is not needed in most cases

References (AB-25)

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

Chronic Liver Disease, Cirrhosis and Screening for HCC (AB-26.1)

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v1.0.2023

- Note: for HCC surveillance in Budd-Chiari Syndrome/Hepatic Vein Thrombosis, see: **Hepatic Arteries and Veins (AB-43.1)**
- Ultrasound (CPT® 76700 or CPT® 76705) every 6 months for screening for HCC in individuals with chronic liver disease or cirrhosis is appropriate in the following circumstances:
  - All individuals, regardless of etiology, with cirrhosis or advanced fibrosis (e.g., Fibrosis Score F3 or greater on an elastography study, or results of a lab study such as FIB-4 or a biopsy indicative of severe activity or advanced fibrosis). See below for any exceptions.
  - All individuals with Hepatitis B, regardless of the presence of cirrhosis or advanced fibrosis.
  - See: **Hepatic Arteries and Veins (AB-43.1)** for individuals with Chronic Budd-Chiari Syndrome (BCS).
  - See: **Monitoring After Fontan Procedure (AB-26.4)** for individuals who have undergone the FONTAN procedure.
  - The presence of liver disease in the absence of advanced fibrosis or cirrhosis, with the exception for those circumstances indicated above, is not an indication for screening. This would include, for example, NAFLD (Non-alcoholic fatty liver disease), the presence of which is not an indication for screening in the absence of either advanced fibrosis or cirrhosis.
- If liver nodule is identified on screening:
  - Less than 1cm
    - Repeat US in 3 months, then every 3 to 6 months.
    - If stable for 2 years, then return to US every 6 months
  - Greater than or equal to 1cm
    - Multiphase CT Liver (either CPT® 74160 or CPT® 74170) or MRI Abdomen (CPT® 74183) should be performed.
      - If negative, return to routine surveillance via US in 6 months.
      - If Li-RADS NC (non-categorizable): repeat the same study or an alternative diagnostic imaging ≤3 months. (Note: non-categorizable refers to a technical problem with the study, such as image omission or severe degradation)
      - If Li-RADS 1 (definitely benign): Return to routine surveillance via US in 6 months.

- If Li-RADS 2 (probably benign): CT or MRI in 6 months can be approved (US requests are approvable if desired). If unchanged, return to routine surveillance via US.
- If Li-RADS 3 (intermediate): CT or MRI in 3-6 months, and can be repeated every 6 months 2 more times, for a total of 18 months from the initial finding. If no change by 18 months, return to US surveillance every 6 months.
- If Li-RADS 4 (probable HCC): Repeat or alternative imaging in ≤3 months. If HCC confirmed: See: **Upper GI Cancers (ONC-14)** in the Oncology Imaging Guidelines.
- If Li-RADS 5 (HCC confirmed): See: **Upper GI Cancers (ONC-14)** in the Oncology Imaging Guidelines.
- If Li-RADS M (Malignant, not definitely HCC): Repeat or alternative imaging in ≤3 months, and follow appropriate Oncology guidelines upon diagnosis.

- Exceptions to the above algorithms:
  - Advanced imaging for surveillance may be substituted for US in the following circumstances:
    - Obesity (BMI >35)
    - Marked parenchymal heterogeneity noted on US.
    - Other specifically noted technical limitations of US such as obscuration by intestinal gas, chest wall deformity, etc.
  - For individuals on the Liver Transplant list: See: **Liver Transplant, Pre-Transplant (AB-42.1)**
- Alpha-fetoprotein ≥20 ng/mL: Multiphasic CT or MRI Abdomen:
  - Further imaging should follow the above algorithm, depending on the findings of the CT or MRI.
  - If the initial CT or MRI does not reveal a lesion, but the AFP increases on subsequent testing, additional advanced imaging by CT or MRI may be approved.
- Contrast-Enhanced Ultrasound (CEUS)
  - Further studies are needed to assess the value of CEUS in this setting, and it should be considered investigational and experimental at this time.

Background and Supporting Information

When performed for liver lesion evaluation, a multiphase CT protocol may include non-contrast imaging as well as arterial, portal venous, and delayed-phase post-contrast imaging. However, these protocols do not always require non-contrast imaging which may not provide additional information in many scenarios. Therefore, a multiphase CT for liver lesion evaluation can be requested as CPT® 74160 (CT Abdomen with contrast) or CPT® 74170 (CT Abdomen without and with contrast).

The American Association for the Study of Liver Diseases (AASLD) revised its guidelines with respect to surveillance for HCC in patients with cirrhosis in 2018. The recommended algorithm now includes either US alone or US with serum AFP every 6 months. It should be noted that "modification of this surveillance strategy based on the etiology of liver diseases or risk stratification models cannot be recommended at this time."[1]

In addition, the AASLD also issued a subsequent Practice Guidance in 2018 and this document forms the basis of UnitedHealthcare's guidelines. The AASLD has adopted the Li- RADS classification of liver lesions with respect to HCC surveillance imaging for patients with advanced liver disease, and follow-up imaging protocols are based on this system. In view of this, the Li-RADS classification now informs imaging protocols used by UnitedHealthcare.

Note: PSC (Primary Sclerosing Cholangitis) vs. PBC (Primary Biliary Cholangitis)

These 2 entities sound similar, and both are cholestatic, but they are different diseases, and as such have different monitoring requirements.

PSC is an idiopathic cholestatic disease characterized by chronic inflammation, progressive fibrosis, and stricturing of the *medium and large-sized* extra-hepatic or intra-hepatic bile ducts. Segmental bile duct dilation proximal to areas of stricturing creates the characteristic beaded appearance on a cholangiogram, such as MRCP. This may progress and eventually lead to cirrhosis as well. It is most commonly associated with inflammatory bowel disease. From a surveillance standpoint, PSC may be complicated by disease-associated malignancies, including cholangiocarcinoma, hepatocellular carcinoma, and pancreatic cancer. Thus, follow-up imaging in this setting is generally via MRCP +/- MRI Abdomen (CPT® 74181 or CPT® 74183) – See: **Primary Sclerosing Cholangitis (PSC) (AB-23.4)**.

PBC is a complex, chronic, and slowly progressive autoimmune liver disease that predominately affects women, and is characterized by cholestatic liver biochemistries as well as the presence of AMA (Anti-Mitochondrial Antibodies), and results in T-lymphocyte-mediated destruction of *small* intrahepatic bile ducts. This may ultimately lead to cirrhosis, and thus an increased risk of hepatocellular carcinoma. Because of this, surveillance via US screening protocols for HCC are followed in PBC.

It may be necessary, when the diagnosis of PBC is uncertain, for an MRCP to be performed in order to distinguish between PBC and PSC. However, MRI or MRCP is not used for serial monitoring for PBC, once the diagnosis is established. This is in contradistinction to PSC, in which MRCP is used to surveil for cholangiocarcinoma, as discussed above.

Ascites (AB-26.2)

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- Abdominal ultrasound (CPT® 76700 or CPT® 76705) and/or Doppler (CPT® 93975) with diagnostic paracentesis required for all initial evaluations of ascites to determine the need for further or advanced imaging.
- Further advanced imaging is determined by the nature of etiology of the ascites (e.g., portal hypertension secondary to cirrhosis, malignancy such as ovarian or pancreatic, heart failure, etc.).
- Peritoneal-venous shunt patency study (CPT® 78291) is considered for evaluation of shunt patency and function in an individual with ascites

Background and Supporting Information

- Guidance from the American Association for the Study of Liver Diseases (2021) indicates that the initial evaluation of patients with ascites should include a medical history, physical examination, abdominal US with Doppler, lab studies including CBC, Liver function tests, serum and urine electrolytes and paracentesis with ascitic fluid analysis, which then guides further management. They specifically note that "A diagnostic paracentesis should be performed in all patients with new-onset ascites that is accessible for sampling".

Portal Hypertension (AB-26.3)

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- For noninvasive abdominal imaging:
  - Abdominal US (CPT® 76700 or CPT® 76705) (including Duplex Doppler US [CPT® 93975] of the liver and upper abdomen) is required for all initial evaluations to assist in determining the cause (pre-hepatic [e.g. portal vein thrombosis, extrinsic compression from a tumor], intrahepatic [e.g. cirrhosis], and post-hepatic [e.g. hepatic vein thrombosis]). US is very accurate for detecting portal vein or hepatic vein thrombosis.
- For additional imaging indications, see: **Hepatic Arteries and Veins (AB-43.1)**
- TIPS (transjugular intrahepatic portosystemic shunt)
  - See: **Hepatic Arteries and Veins (AB-43.1)**
- 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.

Background and Supporting Information

- Most cases of portal hypertension are caused by cirrhosis, and the most feared complication is that of esophageal variceal hemorrhage. Causes of portal hypertension can be divided into prehepatic (e.g. portal vein thrombosis, extrinsic compression from a tumor), intrahelpatic (e.g. cirrhosis) and post-hepatic (e.g. hepatic vein thrombosis) causes. The differentiation of some of these causes may require work-up which includes measurement of the hepatic venous pressure gradient (HVPG) which is considered the gold standard for the evaluation of portal hypertension.
- The gold standard for the assessment of portal hypertension is the Hepatic Venous Pressure Gradient (HPVG [pressure gradient between portal vein and the inferior vena cava]), which is an invasive test.

Monitoring After Fontan Procedure (AB-26.4)

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- Abdominal ultrasound (CPT® 76700 or CPT® 76705) and Doppler (CPT® 93975) every 6 months
- MR Elastography (CPT® 76391) every 6 months
- If any sized lesions are detected on ultrasound:
  - MRI Abdomen without contrast, or without and with contrast (CPT® 74181 or CPT® 74183) with follow-up timeframes as requested
- If advanced fibrosis or cirrhosis is detected:
  - HCC monitoring every 6 months with MRI Abdomen without contrast, or without and with contrast (CPT® 74181 or CPT® 74183) is indicated
- CT Abdomen and Pelvis with contrast, CT Abdomen with contrast, or other elastography techniques (i.e., Fibroscan) can be used to assess and monitor individuals with contraindications to MRI (e.g., pacemaker devices, etc.)

Background and Supporting Information

- Individuals with single-ventricle physiology who have undergone the Fontan Procedure which redirects venous blood flow to the pulmonary circulation invariably develop liver complications, which can include the development of nodules and cirrhosis secondary to the altered vascular anatomy, and thus are at risk for hepatocellular carcinoma. In addition, the congestive hepatopathy associated with the Fontan procedure makes differentiation of focal liver lesions from congestive changes more challenging than other cirrhotic conditions. Thus, most institutions use MRI rather than US for monitoring in the setting of cirrhosis. In addition, the evaluation for HCC is challenging due to the vascular changes associated with the Fontan procedure, because the typical HCC pattern of delayed venous-phase contrast washout may not be appreciated within the background congestive hepatopathy. Thus, biopsy is usually required. Also, distinguishing dysplastic lesions from true HCC based on LiRADS criteria is very challenging as well. There are no current society endorsed guidelines, and institutions may vary in the monitoring of chronic liver disease in this patient population. The above algorithm represents an accepted approach and is consistent with the consensus from the Fontan-Associated Liver Disease proceedings from the American College of Cardiology Shareholders Meeting (2015) as well as the consensus of a multidisciplinary group of American Society of Transplantation members (2020).

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MR Cholangiopancreatography (MRCP) (AB-27)

MRCP (AB-27.1)

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- MRCP (Magnetic Resonance Cholangio Pancreatography) is a non-invasive imaging procedure, which is used to visualize the biliary and pancreatic ductal system. It is used most often in the following circumstances:
  - Suspected gallstone pancreatitis (See: **Pancreatitis (AB-33)**)
  - Suspected biliary pain (See: **Right Upper Quadrant Pain (AB-2.3)** including Suspected Gallbladder Disease and **Epigastric Pain and Dyspepsia (AB-2.5)**)
  - Pancreatic cyst and pseudocyst evaluation (See: **Pancreatic Lesion (AB-31)**, and **Pancreatitis (AB-33)**)
  - Evaluation of abnormal liver chemistries (See: **Abnormal Liver Chemistries (AB-30.1)**)
  - Evaluation of the pancreas secondary to abdominal trauma with suspected duct injury or pseudocyst
  - Recurrent pancreatitis of unknown etiology (See: **Pancreatitis (AB-33)**)
  - Evaluation and follow-up of Primary Sclerosing Cholangitis (See: **Primary Sclerosing Cholangitis (PSC) (AB-23.4)**)
  - Evaluation of jaundice (See: **Abnormal Liver Chemistries (AB-30.1)**)
  - Evaluation of congenital anomalies of the cystic and hepatic ducts
  - Post-surgical biliary anatomy and complications (See: **Liver Transplant, Post-Transplant Imaging (AB-42.3)**)
  - For the further evaluation of abnormal ultrasound or CT findings of dilated pancreatic duct, enlargement, or fullness of the pancreas.
- Code assignment for MRCP
  - In general, there is no specific CPT code to describe MRCP. To report an MRCP, one of the MRI Abdomen codes should be selected, depending on contrast needs (CPT® 74181, CPT® 74182, or CPT® 74183).
  - There is a Level ll HCPCS code for MRCP, S8037.
  - Reporting or billing a *second* MRI code to represent the “MRCP portion” of the study is not supported. When this occurs, it is usually seen as two simultaneous MRI requests, an MRI Abdomen without and with contrast (CPT® 74183) AND an additional MRI Abdomen without contrast (CPT® 74181). This second MRI code, as noted, is not supported. Both the primary MRI Abdomen AND the MRCP portion of the study are covered by the single MRI Abdomen code (CPT® 74183).
  - Requests for 3D rendering (either CPT® 76376 or CPT® 76377) are approvable, if requested, in addition to the primary MRI Abdomen code (CPT® 74181, CPT® 74182, or CPT® 74183).

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Gallbladder (AB-28)

Gallbladder (AB-28.1)

- Findings on ultrasound or EUS suspicious for malignancy:
  - CT Abdomen with or without and with contrast (CPT® 74160 or CPT® 74170)
- For confirmed gallbladder malignancy:
  - See: **Gallbladder and Biliary Tumors - Initial Work-up/Staging (ONC-14.6)** in the Oncology Imaging Guidelines
- Individuals at increased risk for gallbladder malignancy (if surgery not chosen):
  - Age >50
  - Primary Sclerosing Cholangitis
  - Indian ethnicity
  - Sessile polyp or gallbladder wall thickening >4mm

Gallbladder Polyps

- Increased risk for gallbladder malignancy:
  - Polyp <6 mm
    - Ultrasound at 6 months, then yearly for 5 years
  - Polyp 6-9 mm (If cholecystectomy is not chosen)
    - Ultrasound at 6 months, then yearly for 5 years
- No increased risk for gallbladder malignancy:
  - Polyp <6 mm
    - Ultrasound at 1, 3, and 5 years
  - Polyp 6-9 mm
    - Ultrasound at 6 months, and then yearly for 5 years
- Gallbladder polyp ≥10 mm:
  - Surgery recommended. If surgery not performed, follow guidelines for increased risk of gallbladder malignancy as noted above.
- Alternative Imaging:
  - Endoscopic ultrasound (EUS) may provide additional information in the diagnosis of gallbladder polyps. There is insufficient data that advanced imaging (CT or MRI) should be used ahead of conventional ultrasound in the investigation of gallbladder polyps.[1]

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Liver Lesion Characterization (AB-29)

Liver Lesion Characterization (AB-29.1)

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Note: Advanced imaging approvals in this section refers to MRI Abdomen without and with contrast (CPT® 74183), CT Abdomen with contrast (CPT® 74160), CT Abdomen without and with contrast (CPT® 74170) and Contrast-Enhanced Ultrasound (CPT® 76978-initial lesion, CPT® 76979-additional lesions). In the following section, if only CT Abdomen with contrast (CPT® 74160) is noted as the appropriate study, it is because the American College of Radiology has determined that a prior without contrast study does not provide any added benefit. It should also be noted that a standard "triple-phase CT" liver does not involve a prior without contrast study (See: **CT Imaging (AB-1.2)**)

- **Low-risk** individuals defined as:
  - No known primary malignancy
  - No hepatic dysfunction (abnormal liver tests)
  - No known underlying chronic liver disease
  - No history of alcoholism, sclerosing cholangitis, choledochal cysts, hemochromatosis, or anabolic steroid use[2]
- High-risk individual would have one or more of the above conditions.
- Liver Lesion discovered on US:
  - Indeterminate Liver Lesion ≥1cm on initial imaging
    - No suspicion or evidence of extrahepatic malignancy or underlying liver disease
      - MRI Abdomen without and with contrast (CPT® 74183) or CT Abdomen with contrast (CPT® 74160) or Contrast-Enhanced US (CEUS, CPT® 76978, CPT® 76979)
    - Known history of an extrahepatic malignancy:
      - MRI Abdomen without and with contrast (CPT® 74183) or CT Abdomen with contrast or without and with contrast (CPT® 74160 or CPT® 74170)
    - Known history of chronic liver disease:
      - See: **Chronic Liver Disease, Cirrhosis, and Screening for HCC (AB- 26.1)**
  - Indeterminate Liver Lesion <1cm on initial imaging
    - Known underlying chronic liver disease
      - See: **Chronic Liver Disease, Cirrhosis, and Screening for HCC (AB- 26.1)**
    - Known history of an extrahepatic malignancy:

        - MRI Abdomen without and with contrast (CPT® 74183) is the preferred study
        - Contrast-Enhanced US (CPT® 76978, CPT® 76979) is appropriate
        - CT Abdomen is generally not the appropriate study in this scenario. In most circumstances, the resolution of CT does not allow for definitive characterization of lesions <1cm.
- Liver Lesion discovered on CT (non-contrast or single-contrast) or non-contrast MRI
    - Indeterminate, ≥1cm on initial imaging:
        - No suspicion or evidence of extrahepatic malignancy or underlying liver disease
            - Multiphase CT Abdomen with contrast (CPT® 74160), MRI Abdomen without and with contrast (CPT® 74183), or CEUS (CPT® 76978 and/or CPT® 76979)
        - Known history of an extrahepatic malignancy:
            - MRI Abdomen without and with contrast (CPT® 74183), CT Abdomen with contrast or without and with contrast (CPT® 74160 or CPT® 74170), or CEUS (CPT® 76978 or CPT® 76979)
        - Known chronic liver disease:
            - See: **Chronic Liver Disease, Cirrhosis, and Screening for HCC (AB-26.1)**
    - Indeterminate liver lesion <1cm on initial imaging:
        - Known history of an extrahepatic malignancy:
            - MRI Abdomen without and with contrast (CPT® 74183), Multiphase CT Abdomen (CPT® 74160), or CEUS (CPT® 76978 and/or CPT® 76979)
        - Known chronic liver disease:
            - See: **Chronic Liver Disease, Cirrhosis, and Screening for HCC (AB-26.1)**
- Additional scenarios and follow-up imaging for an Indeterminate lesion[2]:
    - Indeterminate lesion <1cm on US, CT, or MRI, **low-risk** individual (See above “Low-Risk individuals”) and no suspicious imaging features noted on the study
        - No further imaging
    - Indeterminate lesion <1cm in high-risk individuals on US, CT, or unenhanced MRI (See above ‘High Risk”) not specifically dealt with in the above guidelines:
        - MRI Abdomen without and with contrast (CPT® 74183)
        - If, after MRI, the lesion remains indeterminate or not fully characterized
            - See: **Liver Metastases (ONC-31.2)** or malignancy-specific guidelines in the Oncology Imaging Guidelines
            - If **biopsy cannot be performed**, follow-up MRI can be obtained in 3-6 months. Additional imaging in this setting can be considered on an

individual basis. This timeframe would also apply if the lesion is indeterminate and an MRI with Eovist is requested for further evaluation in this setting.

- Most lesions ≥1cm can be categorized by MRI or histology. For lesions which have been categorized, regardless of size, see below.

- For the imaging of specific focal liver lesions:
  - Suspected hepatic adenoma[3]:
    - MRI is considered the best technique for characterization. Follow-up imaging can be CT Abdomen (CPT® 74160 or CPT® 74170) or MRI Abdomen (CPT® 74183) every 6 months for 2 years, and then annually, to establish any growth patterns and assess for malignant transformation.
  - Hepatic Hemangioma (if not completely characterized on initial CT without a liver protocol):3
    - Multiphase CT Abdomen (CPT® 74160 or CPT® 74170) or MRI Abdomen (CPT® 74183)
    - Additional follow-up imaging is not required if the advanced imaging study demonstrates classic features of hemangioma with the following exception:
      - Giant hemangiomas (>4cm) can be followed by limited abdominal US in 6-12 months. If no change in size, no further follow-up is indicated, unless it becomes symptomatic.
      - See below for pre-operative considerations
  - Focal Nodular Hyperplasia (FNH)[3]:
    - MRI Abdomen (CPT® 74183) or CT Abdomen (CPT® 74160 or CPT® 74170) to confirm a diagnosis of FNH. The use of Eovist contrast is often diagnostic in differentiating FNH from other lesions seen on MRI or CT.
    - Additional follow-up is annual US for 2 to 3 years in women diagnosed with FNH who are continuing to use oral contraceptives. Follow-up with CT or MRI can be done if the lesion is not adequately visualized on US.
  - Hepatic cysts[3]:
    - Asymptomatic, simple cysts do not require additional follow-up.
    - For complicated cysts (US shows internal septations, fenestrations, calcifications, irregular walls, as well as the presence of daughter cysts):
      - CT Abdomen (CPT® 74160 or CPT® 74170) or MRI Abdomen (CPT® 74183) can be performed

- Additional indications for advanced imaging (MRI Abdomen or CT Abdomen):
  - If documented that a percutaneous liver biopsy is to be considered if imaging is atypical or inconclusive.[1]
  - Fatty liver on US with a focal liver lesion.

- **If there is a technical limitation to US (e.g. marked heterogeneity, or other specifically noted technical limitations of US such as obscuration by intestinal gas, chest wall deformity, etc.)[5]
- For suspected liver metastases, see: **Liver Metastases (ONC-31.2)** in the Oncology Imaging Guidelines

- Preoperative studies for individuals with large hemangiomas or adenomas considered for resection:
  - MRA Abdomen (CPT® 74185) or CTA Abdomen (CPT® 74175) can be considered
- For Indeterminate Lesions ≥1cm in categories for which defined guidelines do not exist (i.e., underlying chronic liver disease, **Chronic Liver Disease, Cirrhosis, and Screening for HCC (AB-26.1)** , underlying malignancy, **Liver Metastases (ONC-31.2)** or the specific malignancy in the Oncology Imaging Guidelines, hepatic adenoma, etc.) a biopsy should be considered when the findings from advanced imaging are inconclusive. In clinical situations when a biopsy cannot be performed (such as a medical contraindication or a liver transplant candidate due to the risk of needle-tract seeding), or is inconclusive, a short-term surveillance MRI can be performed in 3-4 months to monitor lesion stability.
- This can be repeated every 6 months, as necessary in this scenario.[1] This timeframe would also apply if an MRI with Eovist is requested for short-term follow-up of an indeterminate lesion imaged on MRI Abdomen without and with contrast performed with other contrast, such as gadolinium. An exception would be if the differential is between FNH vs. hepatic adenoma or other benign lesions. FNH follow-up is yearly, and hepatic adenoma would require a 6 month follow-up study; if the differential of the lesion is between FNH and hepatic adenoma, then the follow-up study should be 6 months.
- Nuclear Medicine imaging of the Liver (CPT® 78201, CPT® 78202, CPT® 78803, CPT® 78215, CPT® 78216, or CPT® 78830) are rarely performed, but can be considered when US, CT, and MRI are unavailable or contraindicated for:
  - Evaluation of liver mass, trauma, or suspected focal nodular hyperplasia (FNH)
  - Differentiation of hepatic hemangioma from FNH
  - Diffuse hepatic disease or elevated liver function tests

Fatty Liver (Non-Alcoholic Fatty Liver Disease – NAFLD) (AB-29.2)

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- Non-Alcoholic Fatty Liver Disease
  - Fatty liver incidentally discovered on imaging (US/CT/MRI) or suspected:
    - Magnetic Resonance Elastography (MRE) (CPT® 76391)
      - See: **Liver Elastography (AB-45)** for MRE indications
    - Magnetic Resonance-Protein Density Fat Fraction (MRI-PDFF, usually requested as CPT® 74181 or 74183), MR Spectroscopy (MR-S, CPT® 76390), and the multiparametric MRI referred to as Liver Multiscan (LMS, Category III CPT® code 0648T or 0649T) for evaluation of fatty liver disease:
      - With regards to the above procedures, their main current utility is in assessing response to therapy in clinical trials. Their role in clinical practice, or with what frequency one would image, has not been defined. In view of this, they are considered investigational at this time.
    - HCC Screening for Fatty Liver with cirrhosis or advanced fibrosis:
      - See: **Chronic Liver Disease, Cirrhosis, and Screening for HCC AB-26.1)**
    - MRI or CT for the further evaluation of incidentally discovered fatty liver on US, in the absence of a specific finding needing further characterization such as a nodule, is generally not indicated. See: **Liver Lesion Characterization and Additional Indications for Advanced Imaging AB-29.1** . In addition, the finding of fatty liver alone on CT with contrast does not require MRI for confirmation.
  - Requests for imaging studies to screen individuals at high-risk for NAFLD (e.g., diabetes or obesity) or for screening family members of individuals with NAFLD is not approvable at this time.[4]

Polycystic Liver Disease (AB-29.3)

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- Polycystic Liver Disease
  - Defined as >20 cysts, or the presence of cysts occupying ½ the volume of the hepatic parenchyma
  - Most commonly seen as an extra-renal manifestation of Autosomal Dominant Polycystic Kidney Disease, though may occur as Autosomal Dominant Polycystic Liver Disease.
  - Imaging:
    - For prognostication purposes MRI Abdomen (CPT® 74183) or CT Abdomen (CPT® 74160 or CPT® 74170) can be performed initially to assess liver volume.
    - At this time, there is no evidence that the asymptomatic patient requires surveillance imaging or monitoring.
    - Suspected complications such as cyst rupture or hemorrhage (manifested by acute pain in the upper abdomen):
      - MRI Abdomen (CPT® 74183) or CT Abdomen (CPT® 74160 or CPT® 74170)

Isolated or Incidental Hepatomegaly (AB-29.4)

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- Initial imaging of hepatomegaly discovered or suspected on physical examination:
  - US Abdomen (CPT® 76700 or CPT® 76705) and Duplex (CPT® 93975 or CPT® 93976)
- Further evaluation of abnormalities on initial ultrasound that require further characterization:
  - Refer to specific guidelines for the abnormality detected on US
    - Fatty liver, see: **Fatty Liver (Non-Alcoholic Fatty Liver Disease - NAFLD) (AB-29.2)**
    - Hepatic lesion, see: **Liver Lesion Characterization (AB-29.1)**
- Hepatomegaly discovered on ultrasound and no indeterminate abnormalities:
  - Medical workup, including lab studies such as liver tests, and history and physical should be performed to assess for suspected underlying disease (e.g. infiltrative disease such as amyloid, lymphoma, etc.)
    - Lab abnormalities and/or symptoms of a specific disease process should follow imaging studies outlined in the guideline for that disease process
    - Advanced imaging in the absence of symptoms or lab abnormalities indicative of an underlying disorder is not indicated

Background and Supporting Information

As noted by the AASLD "…imaging tests, such as ultrasound, computed tomography (CT), and MR, do not reliably reflect the spectrum of liver histology in patients with NAFLD." In addition, "MR imaging, either by spectroscopy or by proton density fat fraction is an excellent noninvasive modality for quantifying hepatic fat and is being widely used in NAFLD clinical trials…..However, the utility of noninvasively quantifying HS (hepatic steatosis) in patients with NAFLD in routine clinical care is limited".[4]

- Hints for liver lesion imaging:
  - Imaging accuracy:
    - A non-contrast CT is less sensitive than ultrasound
    - A non-contrast MRI is better than a non-contrast CT, but inadequate to define the etiology of a lesion
    - Triple-phase scanning is essential in characterizing a liver lesion
- How to interpret the radiologist's descriptors:
  - Hemangioma:
    - Hyperechoic
    - Peripheral nodular enhancement

- Fills in from the periphery (nodular centripedal fill-in on venous and delayed phases)

- Focal nodular hyperplasia:
  - Homogenous enhancement
  - Washout. No delayed rim enhancement
  - Central scar (with fibrous-appearing septae radiating from the scar)
  - MRI specifics:
    - Homogenous on T1
    - Scar hyperintense on T2
    - Uniformly hyperintense with contrast
- Hepatic adenoma:
  - Irregular enhancement
  - Fat-containing
  - Washout
  - Central hemorrhage
  - No rim enhancement
  - No central scar
  - MRI specifics: Hyperintense signal on T1 and T2-weighted imaging with intra-lesional lipid
- Hepatocellular carcinoma:
  - HCC's are hypervascular and receive 100% of their blood supply from the hepatic artery, whereas the liver parenchyma receives 30% from the hepatic artery and 70% from the portal vein, and this discrepancy can be exploited during imaging.
  - Dynamic imaging via MRI and CT follows tumor density with time after IV contrast bolus.
  - During the early arterial phase: HCC appears brighter than surrounding liver (hyperintense) due to hepatic arterial supply.
  - May have a necrotic central region
  - Washes out rapidly
  - Delayed post-contrast phase: rim enhancement (a "tumor capsule")
- Focal fat (pseudo-mass)
  - Area with sharply demarcated borders
  - Absence of mass effect of surrounding architecture
  - Vessels can course through the region
  - No rim enhancement
  - No central scar

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Abnormal Liver Chemistries (AB-30)

Abnormal Liver Chemistries (AB-30.1)

AB.LC.0030.1.A
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- The major patterns of elevation which affect work-up are:
  - Hepatocellular (AST and ALT disproportionately elevated to ALKP)
  - Cholestatic (ALKP elevated disproportionately to AST and ALT)
  - Mixed pattern (ALKP, AST, and ALT all elevated)
  - Isolated hyperbilirubinemia (elevated bilirubin and normal ALKP, ALT and AST)
  - "R" Ratio
    - "R" Ratio: The so-called "R" ratio can be used to determine whether a pattern of multiple elevated liver chemistries is predominately cholestatic or hepatocellular in origin
    - R=(ALT/Upper limit of normal (ULN))/(ALKPH/ULN ALKPH)
      - If the "R" ratio:
        - >5 = hepatocellular
        - <2 = cholestatic
        - 2-5 = mixed pattern
    - For hepatocellular, use AST or ALT elevation guidelines
    - For cholestatic, use ALKPH elevation guidelines
    - Use ULN for ALT as noted below, and ULN for alkphos based on the individual lab report
- For elevated AST and/or ALT (>33 IU/l for males, >25 IU/l for females) and other LFTs are normal:
  - <2X normal:
    - Repeat lab after 3 weeks and discontinuation of medications associated with elevated LFTs (such as statins, niacin, sulfa, rifampin, tetracycline, estrogen) if applicable.
    - If LFTs remain elevated: Abdominal US (CPT® 76700 or CPT® 76705)
  - 2 to 15X normal:
    - Abdominal US (CPT® 76700 or CPT® 76705)
  - >15X normal:
    - Abdominal US with Doppler (CPT® 76700 or CPT® 76705 and CPT® 93975)
- CT Abdomen with contrast (CPT® 74160) may be approved if the above studies do not explain the cause of the elevated transaminases AND the following labs have been performed and are inconclusive:
  - HAV IgG, HBsAg, HBcAb, HBsAb, HCV Ab, iron panel (may include ferritin, serum iron, iron-binding capacity, or transferrin saturation).

- Additional labs, which may be useful, but not required, are: serum ceruloplasmin, anti-nuclear antibody (ANA), anti-smooth muscle antibody (ASMA), lipid profile, prothrombin time, creatine kinase (CK)

- If the findings suggest chronic liver disease, see: **Chronic Liver Disease, Cirrhosis and Screening for HCC (AB-26.1)**
- If the findings suggest hemochromatosis, see: **Hereditary (Primary) Hemochromatosis (HH) and Other Iron Storage Diseases (AB-11.2)**
- Elevated alkaline phosphatase level (or GGT), and other LFTs are normal
  - Etiology of elevated ALKP should be determined prior to imaging.
    - If isolated ALKP elevation, GGT should be obtained for confirmation of hepatic etiology, prior to imaging. If ALKP is elevated with other LFTs, no confirmatory test is necessary.
    - For confirmed hepatic etiology of elevated ALKP, Abdominal or RUQ ultrasound (CPT® 76700 or CPT® 76705)
      - If dilated biliary ducts on US: MRCP
    - If no dilated biliary ducts: anti-mitochondrial antibody (AMA) should be checked prior to advanced imaging.
      - If AMA is negative, and ALKP >2X ULN: MRCP
      - If AMA is negative, and ALKP 1 to 2X ULN: observe for 6 months, if ALKP remains elevated: MRCP
    - CT Abdomen with contrast (CPT® 74160) if the above studies are unrevealing or individual cannot undergo MRCP.
- Isolated elevated bilirubin (no other LFTs elevated).
  - An isolated elevated bilirubin should be fractionated into direct (conjugated) and indirect (unconjugated) levels.
    - No advanced imaging if elevation is unconjugated, and no other LFT elevations
    - RUQ ultrasound if elevation is conjugated
      - MRCP if biliary ducts dilated
      - Check AMA prior to advanced imaging if biliary ducts not dilated
        - MRCP or liver biopsy can be considered if negative and elevation persists or is unexplained
    - CT Abdomen with contrast (CPT® 74160) if the above studies are unremarkable or the individual cannot undergo MRCP.
- For individuals with elevated LFTs and suspicion of sclerosing cholangitis, such as those with IBD, see: **Primary Sclerosing Cholangitis (PSC) (AB-23.4)**.
- For individuals with elevated LFTs and history of underlying malignancy, please refer to the specific oncology guidelines, when appropriate.
- Requests for additional advanced imaging (CT, MRI, etc.) are based on the prior imaging results, as appropriate to the finding (for example, if a lesion is identified

that needs further characterization, refer to liver lesion imaging as per **Liver Lesion Characterization (AB-29.1)**).

- Clinical jaundice, no known predisposing condition
  - Abdominal ultrasound (CPT® 76700 or CPT® 76705)
  - For further imaging, follow guideline for elevated bilirubin
- Clinical jaundice, suspected mechanical obstruction based on clinical condition or laboratory values (e.g., known choledocholithiasis, acute and chronic pancreatitis, suspected stricture from a recent invasive procedure, previous biliary surgery, suspected tumor), or US findings suggesting mechanical biliary obstruction, non-diagnostic or technically limited US (e.g., large amounts of intestinal gas, obesity with BMI >35):
  - CT Abdomen with contrast (CPT® 74160) or
  - MRI and/or MRCP (CPT® 74183 or CPT® 74181)

Background and Supporting Information

- The standard laboratory tests commonly referred to as “LFTs” include bilirubin, alkaline phosphatase (alkphos or ALKP), aspartate transaminase (AST), alanine transaminase (ALT), and gamma-glutamyl transferase (GGT).

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Pancreatic Lesion (AB-31)

Pancreatic Cystic Lesions (AB-31.1)

AB.PC.0031.1.A
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Screening studies for pancreatic cancer can be considered in those who are considered high risk in the following guideline: **Pancreatic Cancer (ONC-13)** in the Oncology Imaging Guidelines.

- Note:
  - Individuals who are not medically fit for surgery should not undergo further surveillance of incidentally found pancreatic cysts, irrespective of size.
  - Surveillance should be discontinued if an individual is no longer a surgical candidate. However, follow-up imaging can be performed if requested for a symptomatic cyst (such as the development of jaundice secondary to cyst), in which palliative treatment might be available.
- This guideline applies to the following pancreatic cystic lesions:
  - Intraductal papillary mucinous neoplasms (IPMN)
  - Mucinous cystic neoplasms (MCN)
  - Serous Cystadenomas (SCA)
  - Solid-pseudopapillary neoplasms (SPN)
- Pancreatic Cyst seen on Imaging-Initial Management:
  - MRI Abdomen (CPT® 74183) and/or MRCP are the tests of choice for initial evaluation.
    - Both MRI Abdomen and MRCP may be performed, but only one CPT® 74183 should be used, not two.
  - CT Pancreatic protocol (CPT® 74160) or EUS are alternatives in patients who are unable to undergo MRI.
  - Indeterminate cysts may benefit from a second imaging modality or EUS prior to proceeding with surveillance. MRI/MRCP can be approved to better characterize the lesion, without reference to the timeframe for follow-up imaging, if a previous US or CT Abdomen has been performed.
  - Radiographic diagnosis of a non-neoplastic cyst or classic features of a serous cystadenoma
    - No further imaging
  - If any of the following are present the individual should proceed to EUS + FNA and depending on findings, surgical consultation:
    - Main duct >5mm
    - Cyst ≥3cm
    - Change in main duct caliber with upstream atrophy

- If EUS does not reveal findings of main duct involvement, patulous ampulla, cytology with high-grade dysplasia or pancreatic malignancy, or a mural nodule, then follow up MRI should performed in 6 months.

- Pancreatic Cyst Follow up Imaging
  - If high risk features (See below High Risk Considerations and Features) are not present, then the next follow-up imaging proceeds as follows:
    - Cyst <1cm: MRI in 2 years
    - Cyst 1-<2cm: MRI in 1 year
    - Cyst 2-3cm: if cyst is not clearly an IPMN or MCN then proceed with EUS. If it is an IPMN or MCN, then MRI at 6-12 months.
    - If the cyst is determined to be a serous cystadenoma, then no further evaluation unless symptomatic.
- Additional Surveillance for a presumed IPMN or MCN (imaging from time of presentation):
- (Note: MRCP or MRI/MRCP is the preferred modality for surveillance due to non-invasiveness, lack of radiation, and improved delineation of the main pancreatic duct. In addition, since the timeframes for surveillance imaging are based on the size of the cyst as well as characteristics such as the presence or absence of high-risk features, it is necessary to have an adequate description of these findings from the previous imaging study, either by inclusion of the previous imaging report, or an adequate description of the findings. Finally, the date of the previous study is needed so that the appropriate timing for the next study can be determined.)
  - Cyst <1cm
    - MRI every 2 years for 4 years.
    - If stable after 4 years consider lengthening of interval imaging.
    - If increase in cyst size, then MRI or EUS in 6 months.
    - If stable, repeat again in 1 year and if stable return to MRI every 2 years.
  - Cyst 1-<2cm
    - MRI yearly for 3 years
    - If stable for 3 years, then change to MRI every 2 years for 4 years
    - If stable after the additional 4 years, consider lengthening of interval for surveillance.
    - If increase in cyst size, repeat MRI in 6 months. If stable, repeat MRI in 1 year and if remains stable, resume original surveillance schedule.
  - Cyst 2-<3cm
    - MRI every 6-12 months for 3 years
    - If stable after 3 years, change to MRI every year for 4 years
    - If remains stable, consider lengthening of surveillance interval
  - Cyst ≥3cm
    - MRI alternating with EUS every 6 months for 3 years

- If stable for 3 years, increase interval to MRI alternating with EUS yearly for 4 years.
- If remains stable, consider lengthening of surveillance interval.
- If increase in cyst size, EUS + FNA

- Additional considerations
  - Individuals with asymptomatic cysts that are diagnosed as pseudocysts on initial imaging and clinical history, or are determined to be serous cystadenomas, do not require further evaluation.
  - High-Risk Considerations and Features
    - Individuals with IPMNs or MCNs with new onset or worsening diabetes
    - Rapid increase in cyst size (>3mm/year) during surveillance may have an increased risk of malignancy and should undergo a short-interval MRI or EUS.
    - Additional high-risk features which may prompt early evaluation are:
      - Jaundice secondary to the cyst
      - Acute pancreatitis secondary to the cyst
      - Significantly elevated CA 19-9
      - Presence of a mural nodule or solid component either within the cyst or in the pancreatic parenchyma
      - Dilation of the main pancreatic duct >5mm
      - Focal dilation of the pancreatic duct concerning for main duct IPMN or an obstructing lesion
      - IPMNs or MCNs measuring ≥3cm in diameter
      - Presence of high-grade dysplasia or pancreatic cancer on cytology. In this circumstance, imaging should be at the discretion of the provider.

- Post-op surveillance
  - Surgically resected serous cystadenomas, pseudocyst, or other benign cyst:
    - No additional imaging after resection
  - Surgically resected mucinous cystic neoplasms (MCNs) without an associated pancreatic malignancy (can have low, intermediate, or high-grade dysplasia):
    - No additional post-op surveillance
  - Surgically resected MCNs with invasive cancer:
    - Standard surveillance-based pancreatic cancer guidelines (See: **Pancreatic Cancer-Surveillance/Follow-up (ONC-13.5)** in the Oncology Imaging Guidelines) for 5 years. No surveillance required after 5 years.
  - Surgically resected IPMNs
    - IPMN with cancer

- Pancreatic cancer surveillance guidelines (See: **Pancreatic Cancer-Surveillance/Follow-up (ONC-13.5)** in the Oncology Imaging Guidelines)

- IPMN with high-grade dysplasia
  - MRI Abdomen (CPT® 74183) or EUS every 6 months
- IPMN with low- or intermediate-grade dysplasia
  - MRI Abdomen (CPT® 74183) every 2 years

- Surgically resected solid-pseudopapillary neoplasm with negative margins:
  - MRI Abdomen (CPT® 74183) yearly for 5 years.

- See: **MR Cholangiopancreatography (MRCP) (AB-27)** for coding guidelines for MRCP.

Incidental Pancreatic Mass or Suspected Metastatic Disease to Pancreas (AB-31.2)

AB.PC.0031.2.A
v1.0.2023

- CT Abdomen with contrast with dual phase imaging (CPT® 74160), or MRI Abdomen without and with contrast (CPT® 74183).
- Note: A pancreatic protocol CT involves scan acquisition during a parenchymal and portal venous phase, each of which are post-contrast administration.

References (AB-31)

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Pancreatic Pseudocysts (AB-32)

Pancreatic Pseudocysts (AB-32.1)

AB.32.1.A
v1.0.2023

See: **Acute Pancreatitis (AB-33.1)** or **Chronic Pancreatitis (AB-33.2)**

Pancreatitis (AB-33)

Acute Pancreatitis (AB-33.1)

AB.PX.0033.1.A
v1.0.2023

- Knowledge base:

  - Acute pancreatitis (2 of 3 of the following criteria):
    - Characteristic abdominal pain (typically epigastric or left upper quadrant pain with radiation to the back, chest, or flank)
    - Amylase or lipase >3 times the upper limit of normal
    - Radiographic evidence of pancreatitis on cross-sectional imaging
  - Early Phase takes place in the first week
    - Goals of imaging:[1]
      - Establish the correct diagnosis or provide an alternative diagnosis
      - Establish the etiology
      - Stage the morphologic severity
      - Assess for complications in patients who deteriorate or fail to improve
  - Late phase can last weeks to months thereafter
    - Goals of imaging:[1]
      - Monitor established pancreatic collections
      - Delineate the presence of symptomatic and asymptomatic complications
      - Guide interventional procedures
  - Etiologies of pancreatitis:
    - Gallstones and alcohol account for 75-80% of all causes[1]
    - Hypercalcemia, hypertriglyceridemia, medications, a benign or malignant obstruction, pancreatic mass, genetic causes (hereditary pancreatitis), autoimmune pancreatitis (IgG4), infectious etiologies, ischemia secondary to vascular disease, anatomic abnormalities (e.g., pancreas divisum), physiologic abnormalities (Sphincter of Oddi dysfunction), idiopathic causes.
  - Complications:
    - Early Phase:[2]
      - Generally manifests as a systemic inflammatory response
      - In the first week, imaging findings correlate poorly with clinical severity[1]
      - Advanced imaging is most useful when performed 5-7 days after admission, when local complications have developed and pancreatic necrosis can be clearly defined.
      - IEP = acute interstitial edematous pancreatitis
      - Necrotizing Pancreatitis
    - Late Phase:[2]

- APFC (Acute peripancreatic fluid collection) occurs during the first 4 weeks. If it does not resolve within 4 weeks, it can become organized and develop into a pseudocyst, which contains only fluid with no nonliquefied components
- Walled-off necrosis (sequelae of necrotizing pancreatitis): inhomogenous nonliquefied components, encapsulated with a wall

- Note: Most cases of pancreatitis are mild. More severe cases are usually hospitalized and imaging performed in that setting is generally not managed by UnitedHealthcare. The majority of imaging requests are for the initial evaluation of suspected pancreatitis in individuals with epigastric pain, and then the follow-up imaging of discharged individuals with respect to complications experienced during the hospitalization, to further elucidate the etiology of the pancreatitis if this was not previously established, or to evaluate continued post-discharge symptoms.
- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.
- Imaging:
  - Initial imaging for suspicion of pancreatitis (typical symptoms, <48 to 72 hours, first-time presentation)[3]
    - Abdominal ultrasound (CPT® 76700 or CPT® 76705)
      - Purpose is to establish the presence/absence of gallstones and biliary ductal dilation.
      - Doppler ultrasound (CPT® 93975) can be approved to assess vasculature, if requested
    - If ultrasound or CT is performed and is nondiagnostic due to technical limitation (obesity, overlying gas, etc.):
      - MRI/MRCP (CPT® 74183 or CPT® 74181)
      - CT Abdomen and Pelvis with contrast (CPT® 74177) or CT Abdomen with contrast (CPT® 74160) if ultrasound is nondiagnostic and MRI/MRCP cannot be performed.
    - In suspected acute biliary pancreatitis and/or cholangitis (dilated ducts or choledocholithiasis on ultrasound, elevated liver chemistries with a negative ultrasound, suspicion of cholangitis (classic triad is RUQ pain, fever, and jaundice))[4]
      - MRI/MRCP (CPT® 74183 or CPT® 74181)
  - Initial imaging with atypical signs and symptoms when diagnoses other than pancreatitis are being considered (e.g., bowel perforation, bowel ischemia):
    - CT Abdomen and Pelvis with contrast (CPT® 74177) or CT Abdomen with contrast (CPT® 74160)
    - MRI/MRCP* (CPT® 74181 or CPT® 74183) can be considered for pregnant patients (non-contrast), or those with renal insufficiency (without or without and with depending on request)
  - Follow-up imaging (late phase and thereafter):

- Continued or worsening symptoms:
  - CT Abdomen and Pelvis with contrast (CPT® 74177), CT Abdomen with contrast (CPT® 74160) or MRI and/or MRCP (CPT® 74183 or CPT® 74181)
- Follow-up of known pancreatic or peri-pancreatic fluid collections (including pseudocysts), to follow-up symptomatic collections, or for interventional planning:
  - MRI/MRCP (CPT® 74183 or CPT® 74181) or CT Abdomen and Pelvis (CPT® 74177)
    - Note: If requested, CT Abdomen with contrast (CPT® 74160) or Abdominal ultrasound (CPT® 76705 or CPT® 76700) can be approved

    (Note: Frequency or intervals for additional follow-up is not defined and depends on clinical circumstances, response to therapy, etc.)
- If, despite initial imaging, the etiology of the pancreatitis is still in doubt:
  - MRI/MRCP (CPT® 74183 or CPT® 74181) or CT Abdomen and Pelvis with (CPT® 74177)
    - Note: If requested, CT Abdomen with contrast (CPT® 74160) can be approved.

- Acute recurrent pancreatitis
  - Abdominal ultrasound (CPT® 76705 or CPT® 76700)
  - MRI/MRCP (CPT® 74183 or CPT® 74181)
  - CT Abdomen and Pelvis with contrast (CPT® 74177)
  - See: **Chronic Pancreatitis (AB-33.2)**

Background and Supporting Information

- *NOTE: While MRI/MRCP will give better evaluation of the pancreatic parenchyma as well as biliary and pancreatic ducts, it does NOT provide coverage and adequate evaluation of the bowel to assess alternative diagnoses such as bowel ischemia or perforation.

Chronic Pancreatitis (AB-33.2)

AB.PX.0033.2.A
v1.0.2023

- If chronic pancreatitis is suspected:
  - Initial imaging:
    - CT Abdomen with contrast or without and with contrast (CPT® 74160 or CPT® 74170) or MRI Abdomen without and with contrast (CPT® 74183)
      - If diagnostic criteria are met (pancreatic calcification in combination with pancreatic atrophy and/or dilated pancreatic duct):
        - No further imaging indicated (See below regarding worsening symptoms)
    - If initial CT is inconclusive or nondiagnostic of chronic pancreatitis:
      - MRI/MRCP with secretin enhancement (CPT® 74183 or CPT® 74181)
    - If MRI/MRCP are inconclusive or nondiagnostic of chronic pancreatitis:
      - Endoscopic ultrasound (EUS) is the appropriate next imaging study
    - If EUS is inconclusive, pancreatic function testing and/or ERCP can be performed
    - Note: If abdominal ultrasound is requested at any stage for evaluation of chronic pancreatitis, this can be approved in lieu of advanced imaging
  - If initial imaging fails to confirm chronic pancreatitis, but the clinical suspicion remains, the above testing can be repeated in 6 months.
- Known chronic pancreatitis with worsening symptoms or pain
  - CT Abdomen with or without and with contrast (CPT® 74160 or CPT® 74170), MRI/MRCP (CPT® 74183 or CPT® 74181) or Abdominal ultrasound (CPT® 76700 or CPT® 76705) can be approved
  - Note: Possible etiologies of worsening pain include:
    - Peptic ulcer disease
    - GI cancers
    - Pseudocysts
    - Duodenal or common bile duct obstruction
    - Pancreatic duct stone or strictures
    - Inflammatory masses at the head of the pancreas
- For pre-surgical planning or post-surgical evaluation for treatment of complications of chronic pancreatitis
  - CT Abdomen with or without and with contrast (CPT® 74160 or CPT® 74170), or MRI/MRCP (CPT® 74183 or CPT® 74181) or Abdominal ultrasound (CPT® 76700 or CPT® 76705)
- Routine screening for pancreatic cancer in chronic pancreatitis

- As noted in the American College of Gastroenterology Clinical Guideline for Chronic Pancreatitis (2020)[14] "There is a lack of evidence to suggest that performing screening examinations on patients with CP (chronic pancreatitis) to detect malignancy is beneficial…..Although the overall prevalence of pancreatic malignancy is increased in patients with CP, there are no RCTs (randomized controlled trials), systematic reviews, or meta-analyses to support screening this patient population for pancreatic malignancy." As such, the ACG Guideline concludes "At this time there is no definitive benefit to screen patients with CP for pancreatic ductal adenocarcinoma. This is based on the invasive and costly nature of testing, the inherent difficulty in screening given the structural changes of CP, and the inability to alter in many cases the natural history of the disease even if malignancy is detected at an early stage."
  - Therefore, routine surveillance to monitor for the occurrence of pancreatic cancer in individuals with chronic pancreatitis is not supported at this time. For other indications for imaging in chronic pancreatitis, see the above. For pancreatic cancer screening guidelines in inherited syndromes, including hereditary pancreatitis, see: **Screening Studies for Pancreatic Cancer (ONC-13.1)** in the Oncology Imaging Guidelines

Background and Supporting Information

- Clinical signs of chronic pancreatitis include history of alcohol use, abdominal pain, weight loss, steatorrhea, malabsorption, recurrent pancreatitis, fatty food intolerance, low fecal elastase.

Exocrine Pancreatic Insufficiency (AB-33.3)

AB.PX.0033.3.A
v1.0.2023

- The presence of any red flag findings per **General Guidelines (AB-1.0)** precludes adjudication based on any other criteria.
- Pancreatic Insufficiency
  - The initial evaluation for pancreatic insufficiency should include one of the following laboratory results:
    - Elevation in fecal fat
    - Fecal elastase <200 mcg/g
    - Serum trypsinogen <20ng/mL
  - CT Abdomen with (CPT® 74160) or without and with contrast (CPT® 74170) or MRI/MRCP (CPT® 74183 or 74181) for the evaluation of suspected pancreatic insufficiency:
    - For suspected pancreatic insufficiency with any one of the above laboratory findings
  - For suspected pancreatic insufficiency due to known chronic pancreatitis, see: **Chronic Pancreatitis (AB-33.2)**
  - For suspected pancreatic insufficiency due to known cystic fibrosis, see: **(PEDAB-16)** and **(PEDCH-5.1)**
  - For suspected pancreatic cancer, see: **Pancreatic Cancer – Suspected/Diagnosis (ONC-13.2)**

Background and Supporting Information

- Exocrine pancreatic insufficiency (EPI) reflects reduced pancreatic enzymes with resulting maldigestion/malabsorption. When intraduodenal levels of lipase fall below 5-10% of normal output, individuals may manifest with abdominal pain, bloating/cramping, flatulence, and progressive steatorrhea.

Asymptomatic Elevation of Pancreatic Enzymes (AB-33.4)

AB.PX.0033.4.A
v1.0.2023

- If there is the incidental elevation of amylase or lipase:
  - If isolated amylase elevation, prior to imaging, the source of the elevation should be confirmed as pancreatic by the performance of amylase isoenzymes demonstrating that the source is not salivary, or the absence of macroamylase should be ascertained by blood test.
  - If the lipase is elevated alone or in combination with an elevated amylase, or If the amylase is confirmed as pancreatic in origin:
    - Abdominal Ultrasound can be performed initially
    - If US is inconclusive, nondiagnostic, or the elevated pancreatic enzymes persist:
      - MRI/MRCP can be performed (CPT® 74183). Note: It is best performed as a secretin-stimulation test in this setting.
      - Note: CT Abdomen can be performed if there is a contraindication to MRI.
  - If the pancreatic enzyme elevation persists at one year, either of the above studies can be repeated

References (AB-33)

v1.0.2023

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Spleen (AB-34)

Spleen (AB-34.1)

AB.SP.0034.1.A
v1.0.2023

- Incidental splenic findings on US:
  - CT Abdomen (CPT® 74170) or MRI Abdomen (CPT® 74183) can be obtained.
- Incidental splenic findings on CT or MRI:
  - Imaging is diagnostic of a benign lesion (simple cyst, hemangioma) or characteristics are benign-appearing (homogeneous, low attenuation, no enhancement, smooth margins):
    - No follow-up imaging.
  - Imaging characteristics are not diagnostic:
    - Prior imaging available:
      - One year stability: no follow up imaging
      - Lack of stability: consider MRI if not done, biopsy, or PET/CT (CPT® 78815).
    - No prior imaging:
      - No known malignancy:
        - Suspicious imaging features: (suggesting possible malignancy)
          - MRI Abdomen (CPT® 74183) if not already done or biopsy
          - If MRI still inconclusive and biopsy is not feasible then PET/CT (CPT® 78815) can be considered
        - Indeterminate imaging features: (equivocal but not suspicious for malignancy)
          - Follow up MRI Abdomen (CPT® 74183) in 6 and 12 months.
      - Known malignancy:
        - <1 cm: follow up MRI Abdomen (CPT® 74183) in 6 and 12 months.
        - ≥1 cm: consider MRI Abdomen (CPT® 74183) if not done, biopsy
          - If MRI still inconclusive and biopsy is not feasible then PET/CT (CPT® 78815) can be considered
        - (See diagnosis-specific in the **Oncology Imaging Guidelines**).
- Clinically detected splenomegaly
  - Abdominal US (CPT® 76700 or CPT® 76705) should be the first imaging study to evaluate splenic size.

- If splenomegaly is confirmed, the following evaluation is indicated prior to advanced imaging:
  - CBC, evaluation of the peripheral blood smear, LFTs, UA, chest x-ray, HIV testing.
    - CT Abdomen without and with contrast or with (CPT® 74170 or CPT® 74160) can be performed if the etiology of the splenomegaly remains unexplained.
    - MRI Abdomen (CPT® 74183) can be considered for pregnant patients, or individuals with iodinated contrast allergy.
- Nuclear medicine imaging of the liver/spleen (CPT® 78201, CPT® 78202, CPT® 78803, CPT® 78215, CPT® 78216, or CPT® 78830) is rarely performed, but can be considered if CT and MRI are contraindicated, as well as for evaluation of an accessory spleen.

Background and Supporting Information

Our current guidelines are consistent with ACR recommendations for the follow-up of incidental splenic masses. It is noteworthy, however, that a recent study from Beth Israel Deaconess Medical Center in which the authors retrospectively reviewed 379 patients who were found to have an incidental splenic mass on CT found that in patients without a history of malignancy, constitutional symptoms of fever or weight loss, or left upper quadrant or epigastric pain (205/379) there were 2 incidences of malignancy. However, in both of these cases the splenic masses were neither isolated nor indeterminate findings as the CTs demonstrated disease in other locations. An isolated splenic malignancy (which can occur but is very rare) was found only in 2 patients and both of these had constitutional symptoms. Thus, the authors claim that “the isolated and incidentally found splenic mass is of unlikely clinical significance, regardless of its appearance”, They concluded that “in patients with an incidental splenic mass identified at imaging and with the absence of a history of malignancy, fever, weight loss, or pain in the left upper quadrant or epigastrium, such masses are highly likely to be benign regardless of their appearance. Additional imaging or follow-up is not warranted, even if the mass does not show the appearance of simple cyst. Further work-up is only needed if the splenic mass is seen in conjunction with other findings worrisome for malignancy”. These authors challenge the use of the ACR guidelines.

Trauma – Spleen (AB-34.2)

AB.SP.0034.2.A
v1.0.2023

- Ultrasound Abdomen (CPT® 76700 or CPT® 76705) and Pelvis (CPT® 76856 or CPT® 76857) or CT[3,4,5] Abdomen and Pelvis without and with contrast (CPT® 74178) or with contrast (CPT® 74177) for ANY of the following:
  - Blunt abdominal trauma with suspected splenic rupture, or
  - Suspected post-procedural injury, or
  - Individuals with penetrating trauma to the left upper quadrant. See: **Blunt Abdominal Trauma (AB-10)**

Background and Supporting Information

Splenomegaly is usually the result of systemic disease, and diagnostic studies are directed toward identifying the causative disease. Complete blood count with differential, LFT's, 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 (AB-34)

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Indeterminate Renal Lesion (AB-35)

Indeterminate Renal Lesion – General Information (AB-35.0)

AB.RL.0035.0.A
v1.0.2023

For acute flank pain, rule out renal stone, see: **Flank Pain, Rule Out or Known Renal/ Ureteral Stone (AB-4)**

Indeterminate Renal Lesion (AB-35.1)

RL.AB.0035.1.A
v1.0.2023

- Incidental Renal Mass on Ultrasound
  - If categorized as simple cyst or Bosniak I or II, no further imaging
  - Otherwise, CT Abdomen without and with contrast (CPT® 74170), MRI Abdomen without and with contrast (CPT® 74183), or Contrast-Enhanced Ultrasound (CPT® 76978 for one lesion, and CPT® 76979 if there are additional lesions).
- CT Abdomen without and with contrast (CPT® 74170) or MRI Abdomen without and with contrast (CPT® 74183) can be approved for further characterization if the original study reveals incomplete visualization of a renal lesion (for example, if only partially visualized on a CT Chest).
- Incidental Renal Mass on Non-Contrast CT
  - If characterized as heterogeneous (thick or irregular wall, mural nodule, septa or calcification):
    - Considered indeterminate. MRI Abdomen without and with contrast (CPT® 74183) or CT Abdomen without and with contrast (CPT® 74170)
  - If characterized as homogeneous (thin or imperceptible wall, NO mural nodule, septa or calcification):
    - 10 to 20 HU (Hounsfield units)
      - Likely benign, not fully characterized: no further work-up
    - 21 to 69 HU
      - Indeterminate: MRI or CT Abdomen without and with contrast (CPT® 74183 or CPT® 74170)
    - ≥70 HU
      - Hemorrhagic or proteinaceous cyst, unlikely to be neoplastic: no further work-up
  - If characterized as TSTC (too small to characterize) and homogeneous:
    - If labelled likely benign cyst, not fully characterized:
      - No further work-up
    - If labelled inconclusive based on subjective evaluation:
      - Considered indeterminate. MRI Abdomen without and with contrast (CPT® 74183) (preferred) or CT Abdomen without and with contrast (CPT® 74170) within 6-12 months
- Incidental Renal Mass on Contrast-Enhanced CT
  - If characterized as heterogeneous: thick or irregular wall, mural nodule, septa or calcification:

- Considered indeterminate. MRI Abdomen without and with contrast (CPT® 74183) or CT Abdomen without and with contrast (CPT® 74170)

- If characterized as homogeneous: thin or imperceptible wall, NO mural nodule, septa or calcification:
  - 10 to 20 HU
    - No further work-up
  - >20 HU (solid or complicated cystic mass)
    - Considered indeterminate. MRI Abdomen without and with contrast (CPT® 74183) or CT Abdomen without and with contrast (CPT® 74170)
- If characterized as TSTC, homogeneous:
  - If labelled likely benign cyst, not fully characterized:
    - No further work-up
  - If labelled inconclusive based on subjective evaluation:
    - Considered indeterminate. MRI Abdomen without and with contrast (CPT® 74183) (preferred), or CT Abdomen without and with contrast (CPT® 74170) within 6-12 months

- Incidental cystic renal mass on CT or MRI without and with contrast (completely characterized, and does NOT contain fat)
  - Bosniak I (benign simple) or II (minimally complicated)
    - No further work-up
  - Bosniak IIF
    - CT Abdomen without and with contrast (CPT® 74170) or MRI Abdomen without and with contrast (CPT® 74183) at 6 and 12 months, then yearly for 5 years
    - If no changes for 5 years, cyst is considered benign and of no clinical significance
  - Bosniak III or IV should be referred for additional management or if chosen, active surveillance see: **Surveillance (ONC-17.4)** in the Oncology Imaging Guidelines
- Incidental solid renal mass or incidental mass too small to characterize evaluated on CT or MRI without and with contrast and does NOT contain fat
  - TSTC
    - If labelled likely benign cyst:
      - No further work-up
    - If labelled inconclusive based on subjective evaluation:
      - MRI Abdomen without and with contrast (CPT® 74183) (preferred), or CT Abdomen without and with contrast (CPT® 74170) within 6 months
  - If solid mass <1.0cm

- MRI Abdomen without and with contrast (CPT® 74183) (preferred), or CT Abdomen without and with contrast (CPT® 74170) beginning at 6-12 months, then yearly for 5 years
- If stable at 5 years (average growth ≤3mm per year): No further work-up
- If mass shows growth (≥4mm per year) or morphologic change: refer for management, consider renal biopsy. If biopsy is technically challenging or relatively contraindicated, a T2 weighted image MRI Abdomen without and with contrast (CPT® 74183) can be performed

- Solid mass 1.0-4.0cm:
  - Considered a small renal neoplasm: refer for management, consider biopsy. If biopsy is technically challenging or relatively contraindicated, a T2 weighted imaging MRI Abdomen without and with contrast (CPT® 74183) can be performed. If active surveillance chosen due to limited life expectancy or co-morbidities, see: **Surveillance (ONC-17.4)** in the Oncology Imaging Guidelines
- Solid renal mass >4.0cm
  - Considered a renal neoplasm: refer for management, or biopsy. If biopsy is technically challenging or relatively contraindicated, a T2 weighted image MRI Abdomen without and with contrast (CPT® 74183) can be performed. If active surveillance chosen due to limited life expectancy or co-morbidities, see: **Surveillance (ONC-17.4)** in the Oncology Imaging Guidelines

- Incidental renal mass containing fat (contains a region of interest measuring <-10 HU)
  - No calcification angiomyolipoma (AML)
    - Solitary and without documentation of growth:
      - <4cm: no further work-up
        - If no prior imaging study for comparison, one follow-up MRI Abdomen (CPT® 74183) or CT Abdomen (CPT® 74170) can be repeated in 6-12 months to assess for any growth.
      - ≥4cm, and considered an AML with potential for clinical symptoms: refer for management.
    - Multiple lesions or growth documented based on old studies:
      - Refer for management. If active surveillance chosen due to limited life expectancy or co-morbidities, see: **Surveillance (ONC-17.4)** in the Oncology Imaging Guidelines.
  - With calcification (suspected renal cell carcinoma):
    - CT Abdomen without and with contrast (CPT® 74170) or MRI Abdomen without and with contrast (CPT® 74183) if only a non-contrast CT has been performed. If active surveillance chosen due to limited life expectancy or co-morbidities, see: **Surveillance (ONC-17.4)** in the Oncology Imaging Guidelines.

- Active Surveillance: For all Active Surveillance indications, see: **Surveillance (ONC-17.4)** in the Oncology Imaging Guidelines

NOTE: PET/CT or PET/MRI are not recommended because their role evaluating the incidental renal mass is limited.[1]

Bosniak Classification:

I- Benign simple cyst with a hairline thin wall without septa, calcification, or solid component. Homogeneous near-water attenuation density (10 to 20 HU) without enhancement.

II- Benign minimally complicated cyst that may contain a few hairline thin septa that may have “perceived” but not measurable enhancement. Fine calcification or a segment of slightly thickened calcification may be present in the wall or septa. Also, a well-marginated nonenhancing homogeneous mass <3cm with density above simple fluid attenuation (hyperdense cyst).

IIF- Usually benign complicated renal cyst with multiple hairline thin septa or minimal smooth thickening of the wall or septa. Wall or septa may contain thick and nodular calcification and may have “perceived” but not measurable enhancement. Also, a well-marginated intrarenal nonenhancing mass >3cm with density above simple fluid.

III -Indeterminate complicated cystic renal mass with thickened irregular walls or septa that have measurable enhancement.

IV- Malignant cystic renal mass with enhancing soft tissue components (cystic renal cell carcinoma).

From the Journal of the American College of Radiology[1]

Pre-operative Assessment (AB-35.2)

RL.AB.0035.2.A
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- Pre-operative assessment for robotic kidney surgery
  - If not previously performed:
    - CT Abdomen without and with contrast (CPT® 74170) OR
    - MRI Abdomen without and with contrast (CPT® 74183)
  - CTA Abdomen (CPT® 74175) or CTA Abdomen and Pelvis (CPT® 74174) OR
  - MRA Abdomen (CPT® 74185), or MRA Abdomen and Pelvis (CPT® 74185 and CPT® 72198)

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Renal Failure (AB-36)

Renal Failure (AB-36.1)

AB.RF.0036.1.A
v1.0.2023

- Ultrasound kidney and bladder (CPT® 76770 or CPT® 76775), preferably with Doppler (CPT® 93975 or CPT® 93976), is the preferred imaging study for the evaluation of acute or chronic renal failure[1].
- MRA Abdomen (CPT® 74185) can be utilized when there is suspected[1]:
  - Renal vein/caval thrombosis
  - Renal artery stenosis as cause of renal failure
  - MRA with contrast may be contraindicated in severe renal failure or patients on dialysis due to the risk of gadolinium agents in causing nephrogenic systemic sclerosis.
- CT Abdomen without contrast (CPT® 74150) is not needed except to rule out ureteral obstruction or retroperitoneal mass.[1]
- Nuclear renal imaging (CPT® 78701, CPT® 78707, CPT® 78708, CPT® 78709) can be considered for ANY of the following:[3,4]
  - Renal transplant follow-up
  - Kidney salvage vs. nephrectomy surgical decisions
  - Acute renal failure with no evidence of obstruction on recent ultrasound.
  - Chronic renal failure to estimate prognosis for recovery.
- Nuclear medicine studies of the kidney (CPT® 78700 or CPT® 78701) can be considered for evaluation of the following anatomic renal anomalies:[3]
  - Suspected horseshoe kidney
  - Suspected solitary or ectopic kidney

References (AB-36)

v1.0.2023

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Renovascular Hypertension (AB-37)

Renovascular Hypertension (AB-37.1)

AB.37.1.A
v1.0.2023

- See: **Renovascular Hypertension/Renal Artery Stenosis (PVD-6.6)** in the Peripheral Vascular Disease Imaging Guidelines

Polycystic Kidney Disease (AB-38)

Polycystic Kidney Disease (AB-38.1)

AB.PK.0038.1.A
v1.0.2023

- Retroperitoneal ultrasound[1] (CPT® 76770 or CPT® 76775) can be performed for:
  - Suspected polycystic kidney disease
  - Screening individuals at risk for autosomal dominant polycystic disease (ADPKD)
    - In the absence of any clinical change, follow-up screening is not indicated if a screening ultrasound was performed at age 40 or later and was negative for any cysts (The negative predictive value of an ultrasound in this age group is 100% for both PKD1 and PKD2, if no cysts are identified.).
    - If an initial ultrasound is negative for any cysts, a follow-up ultrasound can be performed at the discretion of the ordering provider for individuals <40 years of age.
- MRI Abdomen without contrast (CPT® 74181) can be performed:
  - If a cystic renal lesion is detected in an individual at-risk of PKD, for prognostic purposes
  - For volume averaging (Total Kidney Volume – TKV) prior to treatment for PKD (Jynarque, tolvaptan)
    - Optimal follow-up imaging intervals in this setting have not yet been established. Requests for follow-up imaging can be considered on a case-by-case basis.

Background and Supporting Information

- Ultrasound is very effective in establishing a diagnosis of ADPKD, though may miss early small cysts. However, the negative predictive value in the various age groups of a negative ultrasound is as follows:
  - ≥40: 100% for PKD1 and PKD2
  - 30-39: 100% for PKD1 and 96.8% for PKD2
  - 5-29: 99.1% for PKD1 and 83.5% for PKD2
- In addition, the preferable advanced imaging study is MRI Abdomen without contrast (CPT® 74181). This is because of the increased risk of gadolinium-induced nephrogenic fibrosis in individuals with PKD.

References (AB-38)

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Hematuria and Hydronephrosis (AB-39)

Hematuria with Urinary Tract Infection (UTI) (AB-39.1)

AB.HH.0039.1.A
v1.0.2023

- Individuals suspected to have a UTI as the etiology of microscopic hematuria should be treated for the UTI and should then undergo repeat urinalysis to confirm resolution of the hematuria. If the hematuria persists following treatment, proceed with the risk-based evaluation as per **Asymptomatic Hematuria (AB-39.2)**.
- Also see: **Urinary Tract Infection (UTI) (AB-40)** for additional imaging considerations

Background and Supporting Information

- Signs and symptoms of UTI: urinary frequency, burning on urination, urgency, dysuria, positive urine leukocyte esterase, presence of WBCs in the urine, fever, elevated WBC as per the testing laboratory's range

Asymptomatic Hematuria (AB-39.2)

AB.HH.0039.2.A
v1.0.2023

- Microscopic hematuria is defined as ≥3 red blood cells per high power field. Hematuria is NOT defined as a positive dipstick. A positive dipstick should prompt a microscopic examination. A positive dipstick is not considered as defining microhematuria.
- Prior to imaging, individuals should be stratified into low, intermediate, or high risk, based on the following criteria[7]
  - Low risk (individual meets ALL criteria listed)
    - Women <50 years of age or Men <40 years of age
    - Never smoker or <10 pack years
    - 3-10 RBC/HPF on a single urinalysis
    - No additional risk factors for urothelial cancer:
      - Irritative lower urinary tract symptoms
      - Prior pelvic radiation therapy
      - Prior cyclophosphamide/ifosfamide chemotherapy
      - Family history of urothelial cancer or Lynch Syndrome
      - Occupational exposures to benzene chemicals or aromatic amines (e.g. rubber, petrochemicals, dyes)
      - Chronic indwelling foreign body in the urinary tract
  - Intermediate risk (individual meets any one of these criteria)
    - Women age 50-59 years, Men age 40-59 years
      - 10-30 pack years of smoking
      - 11-25 RBC.HPF on a single urinalysis
      - Low-risk individual with no prior evaluation and 3-10 RBC/HPF on repeat urinalysis
      - Any one of the Additional risk factors for urothelial cancer (see above)
  - High-risk (individual meets any one of these criteria)
    - Women or Men ≥60 years
    - >30 pack-years of smoking
    - >25 RBC/HPF on a single urinalysis
    - History of gross hematuria

- Low- or intermediate-risk individuals:
  - Renal ultrasound (combined with cystoscopy)
    - Note: Low-risk individuals may opt for observation with repeat urinalysis within 6 months. If no imaging was performed initially, and follow-up urinalysis reveals persistent hematuria with 3-10 RBC/HPF the individual may be imaged according to Intermediate-Risk criteria. If >10 RBC/HPF, they should be imaged according to High-risk guidelines.
- High-risk individuals
  - CT Urogram (CPT® 74178) (3D imaging is appropriate if requested)
    - If CT is contraindicated, MR Urography may be performed (CPT® 74183 and 72197)
      - If both CT and MR are contraindicated due to contrast, non-contrast CT urography or renal ultrasound should be performed. See also: **Pregnancy Considerations for Imaging (AB-1.12)**.
- Persistent microscopic hematuria if previously evaluated by renal ultrasound
  - Imaging as per High-risk individuals above
- Hematuria in individuals with inherited risk factors for renal cortical tumors
  - Renal ultrasound or
  - CT Abdomen without and with contrast (CPT® 74170) or
  - MRI Abdomen without and with contrast (CPT® 74183)
  - Note: Inherited risk factors include:
    - Von-Hippel-Lindau
    - Birt-Hogg-Dube
    - Hereditary Papillary RCC
    - Hereditary Leiomyomatosis Renal Cell Cancer
    - Tuberous Sclerosis
- Follow-up
  - Individuals with a negative hematuria evaluation who undergo repeat urinalysis
    - If repeat urinalysis is negative:
      - No further workup
    - If repeat urinalysis demonstrates persistent hematuria
      - Repeat imaging as requested (Renal Ultrasound or CT urography)
- NOTE: 3-D Reconstruction enhances a CT Urogram. Requests for 3-D reconstruction (CPT® 76377 or 76376) for a CT Urogram can be approved.

Hematuria and Flank Pain (suspicion for renal/ureteral stones) (AB-39.3)

AB.HH.0039.3.A
v1.0.2023

- CT Abdomen and Pelvis without contrast (CPT® 74176) or CT Urogram (CPT® 74178)
- NOTE:
  - 3-D Reconstruction enhances a CT Urogram. Requests for 3-D reconstruction (CPT® 76377 or CPT® 76376) for a CT Urogram can be approved.
  - US abdomen or retroperitoneum can be performed in lieu of a CT for any of the above indications

Hydronephrosis of unexplained or indeterminate cause[3, 4] (AB-39.4)

AB.HH.0039.4.A
v1.0.2023

- CT Urogram (CPT® 74178)
- NOTE:
  - 3-D Reconstruction enhances a CT Urogram. Requests for 3-D reconstruction (CPT® 76377 or CPT® 76376) for a CT Urogram can be approved.
  - US abdomen or retroperitoneum can be performed in lieu of a CT for any of the above indications
- Patients with known uncomplicated hydronephrosis, neurogenic bladder, myelomeningocele (open spinal dysraphism), or spina bifida can have follow-up/surveillance imaging with Retroperitoneal Ultrasound (CPT® 76770) every 6 to 12 months

References (AB-39)

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Urinary Tract Infection (UTI) (AB-40)

Urinary Tract Infection (AB-40.0)

AB.UT.0040.0.A
v1.0.2023

These guidelines refer to UTI without Hematuria.
For UTI with Hematuria, see: **Hematuria and Hydronephrosis (AB-39)**

Upper (Pyelonephritis) (AB-40.1)

AB.UT.0040.1.A
v1.0.2023

- CT Abdomen and Pelvis without and with contrast (CPT® 74178) or CT Abdomen and Pelvis with contrast (CPT® 74177) if[1]:
  - Suspected complicated: diabetes, immune-compromised, history of stones, prior renal surgery, 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.
- MRI Abdomen without or with and without contrast (CPT® 74181 or CPT® 74183)
  - Elevated creatinine
- Pregnant women should be evaluated initially by renal ultrasound[2] (CPT® 76770 or CPT® 76775) and if further imaging is necessary, MRI Abdomen and Pelvis[3] without contrast (CPT® 74181 and CPT® 72195).

Lower (AB-40.2)

AB.UT.0040.2.A
v1.0.2023

- CT Abdomen and Pelvis without and with contrast (CPT® 74178) if[3]:
  - Suspected complicated: diabetes or immunocompromised or history of stones or prior renal surgery, 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 or in consultation with a urologist or specialist.
- MRI Abdomen and MRI Pelvis without or with and without contrast (CPT® 74181 and CPT® 72195 or CPT® 74183 and CPT® 72197) can be approved if requested when ALL of the following apply:
  - Criteria (as above) for CT Abdomen and Pelvis without and with contrast are met and
  - Elevated creatinine
- See: **Periurethral Cysts and Urethral Diverticula (PV-13)** in the Pelvis Imaging Guidelines

References (AB-40)

v1.0.2023

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Patent Urachus (AB-41)

Patent Urachus (AB-41.1)

AB.41.1.A
v1.0.2023

See: **Patent Urachus (PV-23.1) i**n the Pelvis Imaging Guidelines

Transplant (AB-42)

Liver Transplant, Pre-Transplant (AB-42.1)

- Cardiac studies specific to liver transplantation:
  - Stress echocardiogram which should be pharmacologic, or MPI, initially and can be repeated annually prior to transplant. Requests for cardiac catheterization for an abnormal stress study should be reviewed by cardiologist.
  - Echocardiography or Echocardiography with bubble studies to exclude portopulmonary hypertension (POPH) and/or Hepatopulmonary Syndrome (HPS). Request for right heart catheterization if there is evidence of POPH should be reviewed by cardiologist. (Note: AASLD guidelines suggest right heart catheterization for POPH with RSVP ≥45).
  - See: **Transplant Individuals (CD-1.6)** in the Cardiac Imaging Guidelines
- Individuals on transplant list, or for placement on transplant list, without Hepatocellular Carcinoma (HCC):
  - CT Chest with or without contrast (CPT® 71260 or CPT® 71250) for placement on the transplant list, with repeat studies based on clinical indications per Chest Imaging Guidelines
  - CT or MRI Abdomen (CPT® 74160 or CPT® 74170 or CPT® 74183) for placement on the transplant list (i.e., initial placement or part of a transplant evaluation) and can be repeated annually
  - Abdominal US (CPT® 76700 or CPT® 76705) and Doppler (CPT® 93975) every 6 months
  - MRI Bone Marrow Blood Supply (CPT® 77084) or bone-scan one time
  - Vascular evaluation in anticipation of transplant:
    - CTA or MRA Abdomen (CPT® 74175 or CPT® 74185)
  - Immediately prior to transplant:
    - ANY of the above studies can be repeated immediately prior to transplant, if requested.
    - In addition, CT Abdomen and Pelvis (CPT® 74177) or CT Pelvis (CPT® 72193) if requested, can be performed
- Individual on transplant list with known HCC:
  - CT or MRI Abdomen (CPT® 74170 or CPT® 74160, or CPT® 74183) every 3 months
  - CT Chest (CPT® 71260) every 6 months
  - Bone scan (CPT® 78306) every 6 months
  - If under active locoregional therapy to control tumor growth in waitlisted individuals (i.e., tumor ablation), CT or MRI Abdomen (CPT® 74160, or CPT®

74170, or CPT® 74183) and CT Chest (CPT® 71260) can be approved as requested according to the transplant center's protocol
    - Abdominal US (CPT® 76700 or CPT® 76705) with Doppler (CPT® 93975) every 6 months
    - MRI Bone Marrow Blood Supply (CPT® 77084), CTA or MRA Abdomen (CPT® 74175 or CPT® 74185) and imaging immediately prior to transplant, as per the guideline note above in individuals without HCC
- Individual on transplant list with known cholangiocarcinoma
    - As per guidelines for individuals without HCC except that CT or MRI Abdomen (CPT® 74160, or CPT® 74170, or CPT® 74183) and CT Chest (CPT® 71260) can be repeated according to the transplant institution's protocol.
- Individual on the transplant list with known Primary Sclerosing Cholangitis (PSC):
    - In addition to the standard studies for an individual on the transplant list without HCC:
        - MRCP (See: **MRCP (AB-27.1)** for acceptable CPT codes) can be requested as per the transplant institution's protocol.

Liver Transplant, Living Donor Pre-Transplant Imaging (Donor Imaging) (AB-42.2)

AB.TX.0042.2.A
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- CT Abdomen or MRI Abdomen (CPT® 74160, or CPT® 74170, or CPT® 74183) to assess liver anatomy and volumetrics.
- MRCP to assess biliary anatomy (See: **MRCP (AB-27.1)** for proper coding)
- CTA or MRA Abdomen (CPT® 74175 or CPT® 74185) to assess vascular anatomy

Liver Transplant, Post-Transplant Imaging (AB-42.3)

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v1.0.2023

- Cardiac Imaging:
  - See: **Transplant Patients (CD-1.6)** in the Cardiac Imaging Guidelines
- Suspected post-operative complications:
  - Vascular thrombosis (suspected hepatic artery thrombosis)
    - Doppler ultrasound (CPT® 93975)
    - CTA or MRA Abdomen (CPT® 74175 or CPT® 74185)
  - Suspicion of biliary anastomotic strictures:
    - MRCP (See: **MRCP (AB-27.1)** for appropriate CPT codes)
    - Vascular imaging as above for vascular thrombosis may also be requested and approved for this indication
  - Other suspected post-operative complications (e.g., infection, etc.)
    - Imaging as requested by the transplant institution or team
- Transplant individuals without prior HCC or cholangiocarcinoma:
  - Routine post-transplant imaging is not indicated.
  - If cirrhosis develops post-transplant:
    - See: **Cirrhosis and Liver Screening for Hepatocellular Carcinoma (HCC) (AB-26.1)**, **Ascites (AB-26.2)**, and **Portal Hypertension (AB-26.3)** for HCC screening guidelines.
  - Fibrosis assessment post-liver transplant:
    - Transient elastography (CPT® 91200), which is the most studied modality in this setting.
- Surveillance after transplant for HCC:
  - Based on RETREAT score
    - 0 points: No additional screening needed
    - 1-3 points: CT or MRI Abdomen (CPT® 74160, or CPT® 74170, or CPT® 74183) and CT Chest (CPT® 71260 or CPT® 71250) every 6 months for 2 years.
    - 4 points: CT or MRI Abdomen (CPT® 74160, or CPT® 74170, or CPT® 74183) and CT Chest (CPT® 71260 or CPT® 71250) every 6 months for 5 years
    - ≥5 points: CT or MRI Abdomen (CPT® 74160, or CPT® 74170, or CPT® 74183) and CT Chest (CPT® 71260 or CPT® 71250) every 3 months for 2 years, then every 6 months between the 2nd and 5th years.

- If there is a suspicion of recurrent tumor based on clinical findings and/or sequentially increasing AFP:
  - CT Abdomen (CPT® 74160 or CPT® 74170) or MRI Abdomen (CPT® 74183)
- Imaging after transplant for primary sclerosing cholangitis (PSC):
  - Suspected recurrence of PSC;
    - MRCP (See: **MRCP (AB-27.1)** for proper coding)
- Imaging after transplant for cholangiocarcinoma:
  - Liver ultrasound (CPT® 76705 or CPT® 76700) or MRI Abdomen and MRCP (CPT® 74183) every 6 months for 5 years post-transplantation.
  - CT Chest (CPT® 71250 or CPT® 71260) every 6 months for 5 years post-transplantation

Background and Supporting Information

Consensus guidelines regarding post-transplant surveillance imaging have not yet been established. There have been recent attempts to establish evidence-based guidelines, including the development of the RETREAT score, validated recently in a study conducted at University of California, San Francisco, Mayo Clinic-Rochester, and Mayo Clinic-Jacksonville. This scoring system has been adopted for use by UCSF and guides post-transplant imaging for individuals who have undergone transplant for HCC. The RETREAT score is a protocol used to estimate the risk of tumor recurrence after liver transplantation in patients who have been transplanted for the treatment of hepatocellular carcinoma. It is comprised of three factors which are assessed before and after transplant. Points are assigned based on criteria which include the alpha-fetoprotein level before liver transplantation, the presence or absence of microvascular invasion, and the sum of the diameter of the largest viable tumor and the number of viable nodules on pathologic examination of the explant liver. The RETREAT score is calculated as follows:

Risk Factor	Score
Alpha-fetoprotein level before LT	
0-20	0
21-99	1
100-999	2
≥1000	3
Microvascular invasion present	2
Sum of the diameter of the largest viable tumor and the number of viable nodules	
0	0
1.1-4.9	1
5.0-9.9	2
≥10	3

Post-Transplant Lymphoproliferative Disorder (PTLD) (AB-42.4)

AB.TX.0042.4.A
v1.0.2023

- CT Chest/Abdomen/Pelvis with contrast (CPT® 71260 and CPT® 74177) for known or suspected PTLD.
- Additional evaluation of suspected PTLD is the same as the evaluation of lymphoma. See: **Diffuse Large B Cell Lymphoma (DLBCL) (ONC-27.2)** in the Oncology Imaging Guidelines for further recommendations
- There is insufficient evidence to support the routine use of imaging to screen for PTLD.

Background and Supporting Information

- Post-transplant lymphoproliferative disease (PTLD) is a major complication of solid organ transplantation and the spectrum ranges from benign hyperplasia to malignant lymphoma. It has an incidence of 1-20%, and is usually related to Epstein-Barr virus infection in the setting of immunosuppression.

Kidney Transplant, Pre-Transplant Imaging Studies (AB-42.5)

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Pre-Transplant Evaluation (Per Institution Protocol)
Individuals referred to a transplant center for kidney or kidney-pancreas transplant can undergo the following advanced imaging per that institution's protocol:

Imaging Study	Interval	Comments
ONE of the following abdomen/pelvis imaging studies: • CT Abdomen and Pelvis without contrast (CPT® 74176) • CT Abdomen and Pelvis with contrast (CPT® 74177) • CTA Abdomen (CPT® 74175 • CTA Abdomen and Pelvis (CPT® 74172 • CTA Pelvis (CPT® 72191)	One-time	
ONE of the following echocardiography studies: • TTE with 2-D, M-mode, doppler and color flow, complete (CPT® 93306) (preferred) • TTE with 2-D, M-mode, without doppler or color flow (CPT® 93307) • TTE with 2-D, M-mode, follow-up or limited (CPT® 93308)	Annual	See also: **Transthoracic Echocardiography (TTE) - Indications/initial evaluation (CD-2.2)**
ONE of the following stress imaging studies: • Echo, transthoracic, with (2D), includes M-mode,	Annual	See also: **Transplant (CD-1.6)**, **Stress Echocardiography (Stress Echo) (CD-2.7)**,

Imaging Study	Interval	Comments
during rest and exercise stress test and/or pharmacologically induced stress, with report (CPT® 93350) • Echo, transthoracic, with (2D), includes M-mode, during rest and exercise stress test and/or pharmacologically induced stress, with report: including performance of continuous electrocardiographic monitoring, with physician supervision (CPT® 93351) • MPI, tomographic (SPECT) (including attenuation correction, qualitative or quantitative wall motion, ejection fraction by first pass or gated technique, additional quantification, when performed); multiple studies, at rest and/or stress (CPT® 78452) (exercise or pharmacologic) and/or redistribution and/or rest reinjection • Cardiac magnetic resonance imaging for morphology and function without and with contrast and further sequences; with stress imaging (CPT® 75563) • Myocardial imaging, positron emission tomography (PET),		**Myocardial Perfusion Imaging (MPI) - Coding (CD-3.1)**, **Cardiac MRI - Coding (CD-5.1)**, **Cardiac PET - Coding (CD-6.1)**, **Cardiac PET - Perfusion - Indications (CD-6.2)**

Imaging Study	Interval	Comments
perfusion study (including ventricular wall motion[s] and/or ejection fraction[s], when performed); multiple studies at rest and stress (exercise or pharmacologic) (CPT® 78492) • Myocardial imaging, positron emission tomography (PET), perfusion study (including ventricular wall motion[s] and/or ejection fraction[s], when performed); multiple studies at rest and stress (exercise or pharmacologic), with concurrently acquired computed tomography transmission scan (CPT® 78431)		

Additional Pre-Transplant Evaluation (Per Indication)

Individuals referred to a transplant center for kidney or kidney-pancreas transplant evaluation can undergo the following additional advanced imaging when the listed indications are met:

Indication	Imaging Study	Interval	Comments
• 20 pack-year history of smoking	ONE of the following: • CT Chest without contrast (CPT® 71250) • CT Chest with contrast (CPT® 71260)	Annually	See: U.S. Preventative Services Task Force: Lung Cancer Screening (Commercial and Medicaid) **(CH-33.1)** or National Coverage Determination (NCD) for Lung Cancer Screening

Indication	Imaging Study	Interval	Comments
			with Low Dose Computed Tomography (LDCT) (210.14) **(CH-33.2)** for Low-Dose CT Chest without contrast
• Autosomal dominant polycystic kidney disease	ONE of the following: • MRA Head (CPT® 70544, 70545, or 70546) • CTA Head (CPT® 70496)	One-time	Repeat imaging as per **Intracranial Aneurysms (HD-12.1)**
• History of stroke, or • History of TIA, or • Carotid bruit on exam	ONE of the following: • Carotid duplex bilateral study (CPT® 93880 or CPT® 73882)	One-time	Repeat imaging as per **Initial Imaging (PVD-3.1)**
• Presence of systemic amyloidosis	ONE of the following: • Cardiac MRI for morphology and function without contrast (CPT® 75557) • Cardiac MRI for morphology and function without and with contrast and further sequences (CPT® 75561)	One-time	See also: **Cardiac MRI - Coding (CD-5.1)**, **Cardiac MRI - Indications (excluding Stress MRI)(CD-5.2)**
BOTH of the following: • Presence of systemic amyloidosis AND • Cardiac MRI is either	ONE of the following: • Radiopharmaceutical localization imaging SPECT (CPT® 78803) • Radiopharmaceu	One-time	See also: **Myocardial Tc-99m Pyrophosphate Imaging (CD-3.7)**, **Cardiac Amyloidosis (CD-3.8)**

Indication	Imaging Study	Interval	Comments
contraindicated or indeterminate	tical localization of tumor, inflammatory process or distribution of radiopharmaceutical agent(s) (includes vascular flow and blood pool imaging, when performed); tomographic (SPECT) with concurrently acquired computed tomography (CT) (CPT® 78830)		

• In place of stress imaging for initial pre-transplant evaluation, or
• Stress imaging is positive for ischemia
	ONE of the following:
	• Left heart catheterization with native coronary angiography (CPT® 93458)
	• Native coronary angiography (CPT® 93454)
	• If prior CABG:
	  • Left heart catheterization with native coronary angiography and bypass graft angiography (CPT® 93459), or
	  • Native coronary
		One-time	Repeat imaging as per **Diagnostic Heart Catheterization - Code Sets (CD-7.1)** and **Evaluation of structural heart disease (CD-7.3.5)**

Indication	Imaging Study	Interval	Comments
	angiography and bypass graft angiography (CPT® 93455)		

Kidney Donor Nephrectomy or Pre-Transplant Nephrectomy

Indication	Imaging Study	Comments
• Individuals being evaluated for living kidney donation, or • Individual is planning removal of one or both kidneys	ONE of the following: • CTA Abdomen (CPT® 74175) • MRA Abdomen (CPT® 74185) • MRI Abdomen without and with contrast (CPT® 74183)	For CTA and MRA, 3D rendering is included with the original study

Kidney Transplant, Post-Transplant (AB-42.6)

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- Ultrasound of transplanted kidney:
  - 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.
  - Ultrasound of the transplanted kidney performed without duplex Doppler should be reported as a limited retroperitoneal ultrasound (CPT® 76775).

Heart Transplant (AB-42.7)

AB.TX.0042.7.A
v1.0.2023

See: **Transplant Patients (CD-1.6)** in the Cardiac Imaging Guidelines

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v1.0.2023

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Hepatic and Abdominal Arteries (AB-43)

Hepatic Arteries and Veins (AB-43.1)

AB.HA.0043.1.A
v1.0.2023

- Portal Vein Thrombosis (PVT):
  - Doppler US (CPT® 93975) is the initial noninvasive modality for the diagnosis of Portal Vein Thrombosis
  - CT Abdomen with contrast (CPT® 74160 or 74170 – 4 phase CT), MRI Abdomen without and with contrast (CPT® 74183) or CTA Abdomen (CPT® 74175)
    - To assess the extension of thrombus into the mesenteric veins when Doppler US (or other imaging, such as abdominal US) is positive for PVT
    - To exclude tumor thrombus among individuals with cirrhosis who develop new portal and/or mesenteric vein thrombosis
    - For continued concern for PVT (for example in an individual with a hypercoagulable state or abdominal malignancy) if Doppler US is negative or inconclusive
  - To assess for development of intestinal ischemia among individuals with known portal and/or mesenteric vein thrombosis (MVT) (e.g., development of fever, rebound, leukocytosis, elevated serum lactate levels):
    - In lieu of the above imaging modalities, if requested: CT Abdomen and Pelvis with contrast (CPT® 74177)
  - For suspicion of portal hypertensive or portal cavernoma cholangiopathy in individuals with known PVT or MVT (cholestatic liver chemistry profile (See **Abnormal Liver Chemistries (AB-30.1)**), known portal cavernoma, extrahepatic biliary abnormalities on imaging):
    - MRCP (CPT® 74183 or CPT® 74181)

(Note: Portosystemic collaterals in the region surrounding the common bile duct in individuals with chronic PVT can be associated with common bile duct obstruction.)

- For routine follow-up of PVT:
  - US/Doppler every 6 months. If these are reported as not providing adequate visualization, CT Abdomen (CPT® 74160), MRI Abdomen (CPT® 74183), or CTA Abdomen (CPT® 74175), can be performed.
- For follow-up of PVT being treated with anticoagulation:
  - US/Doppler, CT Abdomen (CPT® 74160), MRI Abdomen (CPT® 74183), or CTA Abdomen (CPT® 74175) in 3-6 months.
  - Further follow-up every 6 months with US/Doppler unless these are reported as not providing adequate visualization, in which case any of the above studies can be approved.
- TIPS (transjugular intrahepatic portosystemic shunt)
  - Pre-procedure evaluation:

- Abdominal US, including Doppler (CPT® 76700 and/or CPT® 93975), Multiphase CT Abdomen (CPT® 74160 or CPT® 74170), Multiphase CTA Abdomen (CPT® 74175), Multiphase MRA Abdomen (CPT® 74185), or MRI Abdomen liver protocol (CPT® 74183)

- For routine follow-up to monitor stent patency:
  - US with Doppler (CPT® 93975) 7-14 days after shunt creation, and then at 3 months, 6 months, and then every 6 months thereafter.
    - Note: If requested earlier than the above intervals because of a clinical deterioration or suspicion of stent occlusion, the Doppler can be approved.
- If Doppler imaging is indeterminate or if there is a negative Doppler with clinical signs of worsening portal hypertension:
  - Multiphase CT Abdomen (CPT® 74160 or CPT® 74170), Multiphase CTA Abdomen (CPT® 74175), Multiphase MRA Abdomen (CPT® 74185), or MRI Abdomen liver protocol (CPT® 74183)

- Budd-Chiari Syndrome
  - Primary Budd-Chiari Syndrome (BCS) is due to thrombotic obstruction of the hepatic venous outflow tract, and Secondary BCS is caused by malignant tumors or extrinsic compression of the hepatic vein. Guidelines refer to Primary BCS.
    - LI-RADS assessment should not be applied to individuals <18 years old or those with cirrhosis from congenital hepatic fibrosis or secondary to vascular disorders (e.g., Budd-Chiari syndrome, chronic portal vein occlusion, cardiac congestion, hereditary hemorrhagic telangiectasia).
  - Doppler US (CPT® 93975) is the initial diagnostic test for the evaluation of BCS.
  - CT Abdomen with contrast (CPT® 74160), or MRI Abdomen without and with contrast (CPT® 74183) or CTA Abdomen (CPT® 74175)
    - To assess thrombus extension
    - Rule out tumor thrombus
    - Assess response to anticoagulation therapy
    - If there is high suspicion of BCS despite a negative or inconclusive Doppler US
    - To additionally assess indeterminate hepatic nodules detected on the prior US (any of the above studies or CT Abdomen without and with contrast CPT® 74170)
  - For pre-operative evaluation of anticipated interventional vascular therapies or TIPS:
    - Abdominal US, including Doppler (CPT® 76700 and/or CPT® 93975), Multiphase CT Abdomen (CPT® 74160 or CPT® 74170), Multiphase CTA Abdomen (CPT® 74175), Multiphase MRA Abdomen (CPT® 74185), or MRI Abdomen liver protocol (CPT® 74183)

  - For HCC Surveillance in patients with chronic BCS:
    - Abdominal US (CPT® 76700 or CPT® 76705) and serum alpha-fetoprotein every 6 months
    - Triphasic CT Abdomen (CPT® 74160 or CPT® 74170), or MRI Abdomen (CPT® 74183) for the evaluation of hepatic nodules seen on US or AFP ≥15 ng/ml.
    - The LiRADS reporting system does not apply to HCC surveillance in this population, due to the vascular origin of many of the hepatic imaging abnormalities.
- Hereditary Hemorrhagic Telangiectasia (HHT)
  - Note: The liver may be involved in individuals with HHT, and artery-to-vein or vein-to-vein shunting may occur resulting in liver vascular malformations (LVMs).
  - Screening the liver for LVMs is not indicated. As per recent ACG Guidelines[6] "There is no evidence to suggest that making a diagnosis in an asymptomatic patient has clinical benefits or prevents death".
  - For symptoms suggestive of LVMs (including an audible bruit or palpable thrill over the hepatic region on physical examination, abnormal liver tests) or for the development of signs or symptoms of heart failure, biliary ischemia, hepatic encephalopathy, mesenteric ischemia, or portal hypertension:
    - CT Abdomen (CPT® 74160), CTA Abdomen (CPT® 74175), MRI Abdomen with and without (CPT® 74183), MRCP (CPT® 74183), or MRA Abdomen (CPT® 74185)
- CTA Abdomen and Pelvis (CPT® 74174), or CTA Abdomen (CPT® 74175) or MRA Abdomen (CPT® 74185) additional indications:
  - Evaluation of portal and hepatic veins prior to or following surgical intervention for the treatment of portal hypertension (See: **Portal Hypertension (AB-26.3)**)
  - Evaluation of hepatic vasculature prior to and following embolization procedure (See: **Hepatocellular Carcinoma (HCC) – Restaging/Recurrence (ONC-14.4)** and **Hepatocellular Carcinoma (HCC) – Surveillance/Follow-up (ONC-14.5)** and **Liver Metastases (ONC-31.2)** in the Oncology Imaging Guideline)
  - Evaluation of hepatic vasculature prior to planned hepatectomy (See: **Liver Transplant, Pre-Transplant (AB-42.1)**)
  - Evaluation of liver donor (See: Liver Transplant, **Living Donor Pre-Transplant Imaging (Donor Imaging) (AB-42.2)** for specific guidance)
- Hepatic arterial aneurysms:
  - See: **Visceral Artery Aneurysm (PVD-6.5)** in the Peripheral Vascular Disease Imaging Guidelines

Background and Supporting Information

Primary Budd-Chiari Syndrome is due to thrombotic occlusion of the hepatic venous outflow tract. Most individuals have an underlying prothrombotic condition such as a myeloproliferative disease, an inherited thrombophilia (e.g. Factor V Leiden), a systemic disease such as vasculitis, or hormonal factors, such as recent oral contraceptive use. Secondary Budd-Chiari Syndrome is caused by malignant tumors or extrinsic compression of the hepatic veins.

Abdominal Veins other than Hepatic and Portal Veins (AB-43.2)

AB.HA.0043.2.A
v1.0.2023

- CTA Abdomen and Pelvis (CPT® 74174), or CTA Abdomen (CPT® 74175) or MRA Abdomen (CPT® 74185) if ONE of the following:
  - Nephrotic syndrome
  - Suspicion of iliac vein thrombus
  - Suspicion of inferior vena cava thrombus
  - Renal vein thrombosis
  - Mesenteric vein thrombosis

Renal Vein Thrombosis (AB-43.3)

AB.HA.0043.3.A
v1.0.2023

- MRA Abdomen (CPT® 74185) if ONE of the following:
  - Nephrotic syndrome
  - Proteinuria – 3 grams or more in 24 hours
  - Lupus nephritis
  - Hypercoagulable state, ONE of the following:
    - Antiphospholipid antibodies
    - Behçet's syndrome
    - Protein C deficiency
    - Protein S deficiency

References (AB-43)

v1.0.2023

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Suspected Neuroendocrine Tumors of the Abdomen (AB-44)

Suspected Neuroendocrine Tumors of the Abdomen (AB-44)

AB.44.A
v1.0.2023

For the evaluation of a suspected neuroendocrine tumor of the abdomen: See **Gastrointestinal/Pancreatic Neuroendocrine Cancers - Suspected/Diagnosis (ONC-15.2)** in the Oncology Imaging Guidelines.

Liver Elastography (AB-45)

Liver Elastography (AB-45)

AB.LE.0045.A
v1.0.2023

- Vibration-Controlled Transient Elastography (VCTE) (e.g. Fibroscan, CPT® 91200) may be considered appropriate to assess for advanced fibrosis and cirrhosis in the following conditions: (Note: UnitedHealthcare does not currently review for this procedure code and providers should contact the insurer directly for any pre-authorization requirements.)
  - Hepatitis C
  - Hepatitis B
  - Chronic alcoholic liver disease
  - All other chronic liver diseases
- Special consideration for Magnetic Resonance Elastography (MRE, CPT® 76391):
  - Suspected NAFLD (Non-alcoholic fatty liver disease) or other chronic liver diseases (For MRE requests in the setting of hemochromatosis, see: **Hereditary (Primary) Hemochromatosis (HH) and Other Iron Storage Diseases (AB-11.2)**):
    - Transient Elastography (CPT® 91200) is the initial imaging modality to stage fibrosis
  - MRE (CPT® 76391) can be approved for either of the following:
    - If Transient Elastography failure despite use of an XL-probe, OR BMI ≥35
    - Conflict between clinical picture and transient elastography results (e.g., patient with portal hypertension but VCTE suggests no fibrosis)
  - Note: The correct CPT code for MR Elastography is CPT® 76391. It is a stand-alone code and it does not require an additional CPT code such as MRI Abdomen (CPT® 74183). An additional MRI Abdomen code should only be approved if there is another appropriate indication for it, other than the Elastography study (for example, MRE for fibrosis scoring in NAFLD due to a BMI ≥35, AND further evaluation of an indeterminate hepatic lesion).
- The use of other ultrasound elastographic techniques (CPT® 76981, CPT® 76982, and CPT® 76983), including but not limited to acoustic radiation force impulse imaging or real-time tissue elastography for any indication is considered experimental or investigational at this time.
  - Note: Transient Elastography (VCTE) is the most studied elastography technique and informs multiple evidence-based guidelines with respect to fibrosis scoring. No national evidence-based guideline recommends the use of either ARFI or real-time tissue elastography (RTTE) over the use of VCTE for any clinical protocol, nor is there direct evidence that ARFI or RTTE improves health outcomes over and above VCTE.

Background and Supporting Information

For the assessment of cirrhosis in individuals with hepatitis C, the AGA noted that MRE has little to no increase in identifying cirrhosis, but had poorer specificity and thus higher false-positive rates than VCTE. In view of this, the AGA concluded that MRE has a poorer diagnostic performance in this setting, compared to VCTE. In their recommendations for the assessment of fibrosis in chronic liver disease, VCTE was recommended over MRE with the exception of NAFLD in high risk populations, in which MRE resulted in a lower rate of false positives compared to VCTE. This was considered a conditional recommendation with a low quality of evidence. The role of MRE was reviewed again in 2019 (Castera, et. al.) in Gastroenterology[8] and the pathway recommendations form the basis of our current guideline with respect to the role of MRE in fatty liver disease.

References (AB-45)

v1.0.2023

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Hiccups (AB-46)

Hiccups (AB-46.0)

AB.HI.0046.0.A
v1.0.2023

- Note: Hiccups may be associated with cerebrovascular disease, brain tumors, and intracranial injury, though it would be very rare for hiccups to be the only presenting symptom of serious neurologic disease. If concern is expressed for one of these issues (e.g. stroke, etc.), please see the appropriate guideline in HD imaging (e.g., **Stroke/TIA(HD 21.1)**)
- Hiccups <48 hours without any localizing or specific symptoms:
  - No advanced imaging
- Hiccups ≥48 hours:
  - History and physical examination, laboratory and CMP and baseline chest x-ray
  - Abnormal or negative chest x-ray with symptoms referable to the chest:
    - CT Chest with contrast (CPT® 71260)
  - Lab or history/physical findings suggest a gastrointestinal etiology:
    - CT Abdomen with contrast (CPT® 74160)

References (AB-46)

v1.0.2023

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Retroperitoneal Fibrosis(AB-47)

Retroperitoneal Fibrosis (AB-47.0)

AB.RP.0047.0.A
v1.0.2023

- Individuals diagnosed with retroperitoneal fibrosis:
  - ONE of the following every 3 months until stability demonstrated:
    - CT Abdomen and Pelvis with contrast (CPT® 74177)
    - MRI Abdomen and Pelvis without contrast (CPT® 74181 and CPT® 72195)
    - MRI Abdomen and Pelvis with and without contrast (CPT® 74183 and CPT® 72197)
    - Retroperitoneal or Abdominal ultrasound (CPT® 76770 or CPT® 76700) can be approved if requested.
  - After stability established repeat imaging can be approved every 6 months.
  - Requests for non-contrasted studies in individuals with renal insufficiency is appropriate. Gadolinium may induce nephrogenic systemic fibrosis in individuals with moderate or severe renal insufficiency, especially if the GFR is <30 ml/min.
  - Additional imaging:
    - CT Chest (CPT® 71260) can also be performed upon initial diagnosis if requested, to further evaluate for the possibility of malignancy as an underlying etiology.
- PET/CT (CPT® 78815)
  - Can be considered initially, after diagnosis, to establish avidity patterns to assess for the likelihood of malignancy and for stratification for the likelihood of response to steroids.
  - Follow-up can be considered if there is documentation of an anticipated therapeutic change based on the results (such as a change in immunosuppression therapy or stent removal).
- Methysergide-induced retroperitoneal fibrosis:
  - Methysergide for migraine treatment is generally no longer available but is rarely being used at some centers. It has a known complication of retroperitoneal fibrosis.
  - Individuals can be screened at baseline and then every 6 months with ONE of the following:
    - CT Abdomen and Pelvis with contrast (CPT® 74177)
    - CT Abdomen and Pelvis without contrast (CPT® 74176)
    - MRI Abdomen and Pelvis without and with contrast (CPT® 74183 and CPT® 72197)
    - MRI Abdomen and Pelvis without contrast (CPT® 74181 and CPT® 72195)
    - Retroperitoneal ultrasound (CPT® 76770 or CPT® 76775)

Background and Supporting Information

Retroperitoneal fibrosis is a rare disease, and may be idiopathic (IgG4 or non-IgG-4 related) or secondary. Secondary causes include malignancy, infections, previous radiation therapy, previous abdominal surgery, drugs such as methysergide, and biologic agnts.

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v1.0.2023

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Fistulae (AB-48)

Fistulae (AB-48)

- Suspected enteric fistulae
    - CT Abdomen and Pelvis with contrast (CPT® 74177)
- Suspected colovesical fistulae
    - CT Abdomen and Pelvis without contrast (CPT® 74176)
- Enterocutaneous fistulae
    - Suspected enterocutaneous fistulae:
        - CT Abdomen and Pelvis with contrast (CPT® 74177
            - MRI Abdomen and Pelvis without and with contrast (CPT® 74183) is appropriate to substitute if there is a contraindication to CT
    - Surgical planning of known complex fistulae:
        - MRI Abdomen and Pelvis without and with contrast (CPT® 74183) if not already performed
- Complicated diverticulitis with fistula, see: **Acute/Persistent (Non-Chronic) Lower Abdominal Pain (AB-2.2)**
- Perianal/perirectal fistulae and abscess related to Crohn's disease, see: **Perirectal/ Perianal Disease (AB-23.3)**
- Other fistulae related to Crohn's disease, see: **Known IBD (AB-23.2)**
- Perianal/perirectal fistulae NOT related to Crohn's disease, see: **Fistula in Ano and Perirectal Abscess (PV-21)**
- For colovaginal, rectovesicular, rectovaginal, or urinary-vaginal communicating fistulae, see: **Pelvic Fistula (PV-21.3)**

Background and Supporting Information

- Examples of gastrointestinal fistulae include tracheo- and broncho-esophageal, entero-cutaneous, entero-enteric, entero-colic, entero-vesical, colo-vesical, recto-vaginal, perianal, and aorto-enteric.
- Etiologies of fistulae include: complication of inflammatory disease (e.g., Diverticulitis, Crohn's disease), complication of surgical procedures (which are the most common cause of intestinal fistula, comprising more than half of all fistulae), obstetric injury (e.g., recto-vaginal, ano-vaginal), malignancy, radiation, non-surgical injuries, and foreign bodies.

References (AB-48)

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Policy History and Instructions for Use

Guideline

Policy History and Instructions for Use

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Instructions for Use

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

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

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

Policy History/Revision Information

Date	Summary of Changes
XX/XX/202X	
XX/XX/202X	