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

Adult Chest Imaging Guidelines (For Ohio Only)

V1.0.2024

Guideline Number: CSRAD005OH.B

Effective Date: February 1, 2024

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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Guideline Development (Preface-1)

Guideline

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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 on current evidence supported by 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.
- These guidelines provide evidence-based, clinical benefits with a focus on health care quality and patient safety.
- 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)

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Investigational and Experimental Studies

- Certain studies, treatments, procedures, or devices may be considered experimental, investigational, or unproven for any condition, illness, disease, injury being treated if one of the following is present:
  - if there is a paucity of supporting evidence;
  - if the evidence has not matured to exhibit improved health parameters;
  - if clinical utility has not been demonstrated in any condition; OR
  - if the study, treatment, procedure, or device lacks a collective opinion of support
- Supporting evidence includes standards that are based on credible scientific evidence published in peer-reviewed medical literature (such as well conducted randomized clinical trials or cohort studies with a sample size of sufficient statistical power) generally recognized by the relevant medical community. Collective opinion of support includes physician specialty society recommendations and the views of physicians practicing in relevant clinical areas when physician specialty society recommendations are not available.

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.

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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)

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Clinical Information (Preface-3.1)

References (Preface-3)

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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 the individual's 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 grey scale 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 in evaluating 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, the following:
  - 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's clinical situation 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, 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, the following:
    - 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's clinical situation 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 the following:
    - 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 utilizing Xenon Xe 129 for contrast is considered investigational and experimental at this time. MRI with or with and without contrast in these guidelines refers to MRI utilizing gadolinium for contrast.

- 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, 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.
- Indications for PET/CT may include the following:
  - 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 the following:
  - 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.
- Pre-operative 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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Guideline

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3D Rendering (Preface-4.1)

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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 pre-operative planning)
  - Complex fractures (comminuted or displaced)/dislocations of any joint (for pre-operative planning when conventional imaging is insufficient)
  - Spine fractures, pelvic/acetabulum fractures, intra-articular fractures (for pre-operative planning when conventional imaging is insufficient)
  - Pre-operative planning for other complex surgical cases
  - Complex facial fractures
- Pre-operative 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)

PRF.CD.0004.2. A
v1.0.2024

- CT-, MR-, and Ultrasound-guidance procedure codes contain all of 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
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
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
75989	Imaging guidance for percutaneous drainage with placement of catheter (all modalities)
76942	Ultrasonic guidance for needle placement
77011	CT guidance for stereotactic localization
77012	CT guidance for needle placement
77013	CT guidance for, and monitoring of parenchymal tissue ablation
77021	MR guidance for needle placement
77022	MR guidance for, and monitoring of parenchymal tissue ablation

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 pre-operative 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)

PRF.CD.0004.3.UOH
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CPT®	Description
76497	Unlisted CT procedure (e.g., diagnostic or interventional)
76498	Unlisted MR procedure (e.g., diagnostic or interventional)
78999	Unlisted procedure, diagnostic nuclear medicine

- 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 an 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)

PRF.CD.0004.5.UOH
v1.0.2024

- 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, the following:
  - 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. 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's clinical situation. 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 reported as 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).
- CPT® 78072 became effective January 1, 2013 for SPECT/CT parathyroid nuclear imaging.

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

PRF.CD.0004.7.UOH
v1.0.2024

- 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. A
v1.0.2024

- 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)

PRF.CD.0004.9.UOH
v1.0.2024

- Healthcare Common Procedure Coding System (HCPCS) codes are utilized by some hospitals in favor of the typical Level-III 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-III CPT® codes (i.e., C8931 – MRA with dye, Spinal Canal; and, CPT® 72159 – MRA Spinal Canal).
  - If cases are submitted with HCPCS codes with similar code descriptions to the typical Level-III 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 non-specific 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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Whole-Body Imaging (Preface-5)

Guideline

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)

PRF.WB.0005.1.UOH
v1.0.2024

- 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.A
v1.0.2024

- 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 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 the following:
    - 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.
    - For additional information, see **Li-Fraumeni Syndrome (LFS) (PEDONC-2.2)**, **Hereditary Paraganglioma- Pheochromocytoma (HPP) Syndromes (PEDONC-2.13)**, or **Constitutional Mismatch Repair Deficiency (CMMRD or Turcot Syndrome) (PEDONC-2.15)** in the Pediatric Oncology Imaging Guidelines.
  - 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.
      - For additional information, see **Chronic Recurrent Multifocal Osteomyelitis (PEDMS-10.2)** in the Pediatric Musculoskeletal Imaging Guidelines.

PET-MRI (Preface-5.3)

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v1.0.2024

- 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.
- For more information, see **PET Imaging in Pediatric Oncology (PEDONC-1.4)** in the Pediatric Oncology Imaging Guidelines, and **PET Brain Imaging (PEDHD-2.3)** and **Special Imaging Studies in Evaluation for Epilepsy Surgery (PEDHD-6.3)** in the Pediatric Head Imaging Guidelines.

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References (Preface-6)

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References (Preface-6.1)

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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Copyright Information (Preface-7.1)

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Trademarks (Preface-8)

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Table of Contents

Chest Imaging Guidelines

Abbreviations for Chest Guidelines

AAA	abdominal aortic aneurysm
ACE	angiotensin-converting enzyme
AVM	arteriovenous malformation
BP	blood pressure
CAD	Computer-aided detection
CBC	Complete blood count
COPD	chronic obstructive pulmonary disease
CT	computed tomography
CTA	computed tomography angiography
CTV	computed tomography venography
DVT	deep venous thrombosis
ECG	electrocardiogram
EM	electromagnetic
EMG	electromyogram
FDA	Food and Drug Administration
FDG	fluorodeoxyglucose
FNA	fine needle aspiration
GERD	gastroesophageal reflux disease
GI	gastrointestinal
HRCT	high resolution computed tomography
IPF	idiopathic pulmonary fibrosis
LFTP	localized fibrous tumor of the pleura
MRA	magnetic resonance angiography
MRI	magnetic resonance imaging
MRV	magnetic resonance venography
NCV	nerve conduction velocity
PE	pulmonary embolus
PET	positron emission tomography
PFT	pulmonary function tests
PPD	purified protein derivative of tuberculin
RODEO	Rotating Delivery of Excitation Off-resonance MRI
SPN	solitary pulmonary nodule
SVC	superior vena cava

General Guidelines (CH-1)

General Guidelines (CH-1.0)
General Guidelines – Chest X-Ray (CH-1.1)
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General Guidelines (CH-1)

General Guidelines (CH-1.0)

- A pertinent clinical evaluation since the onset or change in symptoms is required prior to considering advanced imaging.
  - A pertinent clinical evaluation should include the following:
    - A detailed history and physical examination
    - Appropriate laboratory studies and basic imaging, such as plain radiography or ultrasound
      - A recent chest x-ray since the onset or change in symptoms that has been over read by a radiologist would be performed in many of these cases prior to considering advanced imaging.[1,2]
        - Identify and compare with previous chest films to determine presence and stability.
  - For an established individual a meaningful technological contact (telehealth visit, telephone call, electronic mail or messaging) since the onset or change in symptoms can serve as a pertinent clinical evaluation.

General Guidelines – Chest X-Ray (CH-1.1)

- Chest x-ray can help identify previously unidentified disease and direct proper advanced imaging for such conditions as:
  - Pneumothorax (See **Pneumothorax/Hemothorax (CH-19.1)**)
  - Pneumomediastinum (See **Pneumothorax/Hemothorax (CH-19.1)**)
  - Fractured ribs (See **Chest Trauma (CH-21.1)**)
  - Chest wall mass (See **Chest Wall Mass (CH-22.1)**)
  - Acute and chronic infections (See **Pneumonia and Coronavirus Disease 2019 (COVID-19) (CH-13)** and **Other Chest Infections (CH-14)**)
  - Malignancies
- Exceptions to preliminary chest x-ray include such conditions as:
  - Supraclavicular lymphadenopathy (See **Supraclavicular Region (CH-2.1)**)
  - Known Bronchiectasis (See **Bronchiectasis (CH-7.1)**)
  - Suspected Interstitial lung disease (See **Interstitial Disease (ILD)/Diffuse Lung Disease (DLD) (CH-11.1)**)
  - Positive PPD or tuberculosis (See **Other Chest Infections (CH-14)**)
  - Suspected Pulmonary AVM (See **Pulmonary Hypertension (CH-26.1)**)

General Guidelines – Chest Ultrasound (CH-1.2)

- Chest ultrasound (CPT® 76604) includes transverse, longitudinal, and oblique images of the chest wall with measurements of chest wall thickness, and also includes imaging of the mediastinum.
  - Chest ultrasound:
    - CPT® 76604

- Breast ultrasound:
  - CPT® 76641: unilateral, complete
  - CPT® 76642: unilateral, limited
  - CPT® 76641 and CPT® 76642 should be reported only once per breast, per imaging session
- Axillary ultrasound:
  - CPT® 76882 (unilateral); if bilateral, can be reported as CPT® 76882 x 2

General Guidelines – CT Chest (CH-1.3)

- Intrathoracic abnormalities found on chest x-ray, fluoroscopy, CT Abdomen, or other imaging modalities can be further evaluated with CT Chest with contrast (CPT® 71260).
- CT Chest without contrast (CPT® 71250) can be used for the following:
  - Individual has contraindication to contrast
  - Follow-up of pulmonary nodule(s)
  - High Resolution CT (HRCT)
- Low-dose CT Chest (CPT® 71271) See **Lung Cancer Screening (CH-33)**
- CT Chest without and with contrast (CPT® 71270) does not add significant diagnostic information above and beyond that provided by CT Chest with contrast, unless a question regarding calcification, most often within a lung nodule, needs to be resolved.[1]

CT Chest Coding Notes:

- High resolution CT Chest should be reported only with an appropriate code from the set CPT® 71250-CPT® 71270.
  - No additional CPT® codes should be reported for the "high resolution" portion of the scan. The "high resolution" involves additional slices which are not separately billable.

General Guidelines – CTA Chest (CPT® 71275) (CH-1.4)

- CTA Chest (CPT® 71275) can be considered for suspected Pulmonary Embolism and Thoracic Aortic disease.
  - CTA prior to minimally invasive or robotic surgery (See **Transcatheter Aortic Valve Replacement (TAVR) (CD-4.8)** in the Cardiac Imaging Guidelines).

General Guidelines – MRI Chest without and with Contrast (CPT® 71552) (CH-1.5)

- Indications for MRI Chest are infrequent and may relate to concerns about CT contrast such as renal insufficiency or contrast allergy. MRI may be indicated:
  - Clarification of some equivocal findings on previous imaging studies, which are often in the thymic mediastinal region or determining margin (vascular/soft tissue) involvement with tumor and determined on a case-by-case basis.
    - Certain conditions include:
      - Chest wall mass (See **Chest Wall Mass (CH-22.1)**)

- Chest muscle tendon injuries (See **Muscle/Tendon Unit Injuries/Diseases (MS-11.1)** in the Musculoskeletal Imaging Guidelines)
- Pectoralis tendon rupture (See **Shoulder (MS-19)**)
- Brachial plexopathy (See **Brachial Plexus (PN-4.1)** in the Peripheral Nerve Disorders Imaging Guidelines)
- Thymoma (See **Thymoma and Thymic Carcinoma - Suspected/Diagnosis (ONC-10.5)** in the Oncology Imaging Guidelines)

General Guidelines – Nuclear Medicine (CH-1.6)

78580	Pulmonary perfusion imaging (eg, particulate)
78582	Pulmonary ventilation (eg, aerosol or gas) and perfusion imaging
78597	Quantitative differential pulmonary perfusion, including imaging when performed
78598	Quantitative differential pulmonary perfusion and ventilation (e.g., aerosol or gas), including imaging when performed

- Pulmonary perfusion imaging (eg, particulate) (CPT® 78580) and Pulmonary ventilation (eg, aerosol or gas) and perfusion imaging (CPT® 78582) See **Pulmonary Embolism (CH-25.1)**
- Quantitative differential pulmonary perfusion, including imaging when performed (CPT® 78597) and Quantitative differential pulmonary perfusion and ventilation (e.g., aerosol or gas), including imaging when performed (CPT® 78598) See **Pre-Operative Assessment (CH-5.2)**

Navigational Bronchoscopy (CH-1.7)

- CPT® 76497 (Unlisted CT procedure) can be considered if:
  - A CT Chest has been performed within the last 6 weeks and study is needed for navigational bronchoscopy.
- CT Chest without contrast (CPT® 71250) can be considered for:
  - Previous diagnostic scan was ≥6 weeks ago and study is needed for navigational bronchoscopy

Background and Supporting Information

- Navigational Bronchoscopy: This is a form of guided bronchoscopy. A special sensor inside a bronchoscopy is used to navigate to the desired location within the lung. Computer software generates a virtual bronchial tree which provides a road map to the target lesion. A thin-cut CT Chest with optimized reconstruction parameters is required to generate the virtual map of the lungs. A previous CT Chest may not be usable for navigation if it was not formatted correctly, even if done just a few days prior.

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Lymphadenopathy (CH-2)

Supraclavicular Region (CH-2.1)
Axillary Lymphadenopathy (and Mass) (CH-2.2)
Mediastinal Lymphadenopathy (CH-2.3)

Lymphadenopathy (CH-2)

Supraclavicular Region (CH-2.1)

- Ultrasound (CPT® 76536) is the initial study for palpable or suspected lymphadenopathy.
  - Allows simultaneous ultrasound-guided core needle biopsy (CPT® 76942).
  - CT Neck with contrast (CPT® 70491) or CT Chest with contrast (CPT® 71260) if ultrasound is indeterminate
    - See **General Guidelines (Neck-1.0)** in the Neck Imaging Guidelines

Axillary Lymphadenopathy (and Mass) (CH-2.2)

- There is no evidence-based support for advanced imaging of clinically evidenced axillary lymphadenopathy prior to a biopsy.[2,3] If axillary node biopsy reveals benign findings, advanced imaging is not indicated. If axillary node biopsy reveals findings concerning for malignancy, pathology results will determine the need for further advanced imaging. See **Carcinoma of Unknown Primary Site (ONC-31.7)** in the Oncology imaging Guidelines for imaging recommendations for carcinoma found in an axillary lymph node.
- Localized axillary lymphadenopathy:
  - Axillary US (CPT® 76882)
    - Initial evaluation of any axillary mass or enlarged node
  - Search for adjacent hand or arm injury or infection, and
  - 3-4 week observation if benign clinical picture (for ipsilateral COVID vaccination-related adenopathy, observation for 12 or more weeks is recommended)[4]. Follow-up imaging with ultrasound can be obtained if there is a significant risk of metastatic adenopathy (e.g., breast, head and neck, upper extremity/trunk melanoma or lymphoma[5])
    - If axillary adenopathy is unchanged, then consider additional follow up 6 months after initial presentation [4]
  - Ultrasound directed core needle biopsy or surgical excisional biopsy of the most abnormal lymph node if condition persists, or malignancy is suspected, or surgical excisional biopsy if core needle biopsy results are non-diagnostic.
  - No advanced imaging indicated.
- Generalized axillary lymphadenopathy:
  - Axillary US (CPT® 76882)
    - Initial evaluation of any axillary mass or enlarged node
  - Ultrasound directed core needle biopsy or surgical excisional biopsy of the most abnormal lymph node if condition persists, if malignancy is suspected, or surgical excisional biopsy if core needle biopsy results are non-diagnostic.

- Diagnostic work-up, including serological tests, for systemic diseases
- See **Non-Hodgkin Lymphomas (ONC-27)** in the Oncology Imaging Guidelines.

- Occult Primary Cancer in axillary lymph node(s):
  - See **Metastatic Cancer, Carcinoma of Unknown Primary Site, and Other Types of Cancer (ONC-31)** in the Oncology Imaging Guidelines.

Background and Supporting Information

- Adenocarcinoma is the most common histology, with breast cancer seen most often; non-palpable breast cancer and axillary metastases accounts for less than 0.5% of all breast cancers. Carcinomas of the lung, thyroid, stomach, colon, rectum, and pancreas have the potential to spread to axillary lymph nodes, but these metastases are rarely the first manifestations of disease.
- COVID-19 vaccine-related unilateral axillary adenopathy has been well documented to occur in 12% of recipients after the first dose and up to 16% after the second dose.1 In some series the incidence has been as high as 53%.2 Adenopathy usually develops within the first few days after vaccination and lasts a mean of 10 days. However 29% had lymphadenopathy which persisted >6 weeks.3 PET-CT can provide false positive results of unilateral axillary adenopathy up to 7-10 weeks post vaccination. Due to these concerns, in individuals with cancer history it is recommended that the vaccination be provided in the contralateral arm, especially in case of unilateral breast cancer.
- The Society for Breast Imaging (SBI) recommends that for unilateral axillary adenopathy on screening exams who received a recent COVID-19 vaccination in the ipsilateral upper extremity, a follow up interval of 12 or more weeks is recommended. If axillary adenopathy persists after short term follow up, then consider lymph node sampling to exclude breast and non-breast malignancy.[4] Imaging for urgent cancer related clinical indication should not be delayed in relationship to COVID vaccine timing. For routine surveillance, screening and similar non-urgent indications, postponement of imaging for at least 6 weeks after vaccinations should be considered.[5] However, the SBI no longer recommends delaying screening mammograms around COVID-19 vaccinations.[4, 5]

Mediastinal Lymphadenopathy (CH-2.3)

- CT Chest with contrast (CPT® 71260) if mediastinal abnormalities are detected on a chest x-ray (over read by a radiologist), other non-dedicated advanced chest imaging, or clarification of mediastinal abnormalities on a non-contrast CT Chest.
  - Follow-up CT Chest (CPT® 71260) after 3-6 months if:
    - Enlarged lymph nodes, ≥15 mm, are in the mediastinum with no other thoracic abnormalities; and
    - Low risk or no clinical suspicion for malignancy.
    - Thereafter, stability or decreasing size, does not require further advanced imaging.
  - Further evaluations:

  - Lymph node biopsy (see methods below) should be considered for:
    - Persistent or increasing lymphadenopathy on follow-up CT Chest; or
    - Suspected malignancy.
    - See **Non-Hodgkin Lymphomas (ONC-27)** and/or **Hodgkin Lymphoma (ONC-28)** in the Oncology Imaging Guidelines for suspicion of Lymphoma
- PET/CT (CPT® 78815) can be considered for enlarged lymph nodes, ≥15 mm with no explainable disease or increasing lymph node size on follow-up CT Chest

Background and Supporting Information

- Incidentally detected lymph nodes <15 mm (in short axis) in individuals with no other findings do not require further evaluation.
- Most benign nodes have smooth and well-defined borders, show uniform and homogeneous attenuation, and demonstrate a central fatty hilum
- Explainable disease such as emphysema, interstitial lung disease, sarcoidosis, cardiac disease.
- Unexplained causes, consider lymphoma, undiagnosed metastatic disease, including testicular carcinoma in young male, and infection.
- Lymphadenopathy from neoplasms as well as from benign sources of inflammation can result in a positive PET scan. Therefore, the use of PET may not be helpful prior to histologic diagnosis.
- Less invasive methods of mediastinal biopsies are CT or ultrasound directed percutaneous biopsy, transbronchial biopsy, transbronchial biopsy using endobronchial ultrasound, and endoscopic ultrasound-guided FNA.
- More invasive and traditional methods are mediastinoscopy or thoracoscopy/thoracotomy.

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Cough (CH-3)

Cough (CH-3.1)

- Initial evaluation should include a recent chest x-ray after the current episode of cough started or changed.[1,2]
  - In addition all medications known to cause coughing (e.g. ACE inhibitors, Sitagliptin) should be discontinued.[1,2,3]
- CT Chest (either with contrast [CPT® 71260] or without contrast [CPT® 71250]), if the initial chest x-ray is without abnormalities and all medications known to cause coughing have been discontinued, for the following:
  - Non-Smoker cough after the following sequence for a total 3-week trial and investigation after ALL of the following:[4]
    - Antihistamine and decongestant or intranasal glucocorticoid treatment.[1,2,7]
    - Spirometry and/or pulmonary function tests (PFT's).[1,4,8]
    - Empiric trial of corticosteroids (oral or inhaled) and/or leukotriene receptor antagonist (e.g. Montelukast).[1,2,4,8,9]
    - Treatment of gastroesophageal reflux disease (GERD).[1,2,4,8,9]
      - See **Sinus and Facial Imaging (HD-29.1)** in the Head Imaging Guidelines.
  - Current or past cigarette smokers with either[4]:
    - New cough lasting greater than 2 weeks.
    - Changed chronic cough in worsening frequency or character
      - See **Hemoptysis (CH-6.1)**
  - For any abnormalities present on the initial chest x-ray, advanced chest imaging can be performed according to the relevant Chest Imaging Guidelines section.[1]
- CT Maxillofacial without contrast (CPT® 70486) or CT Sinus, limited without contrast (CPT® 76380) is indicated in those with suspicion of Upper Airway Cough Syndrome (UACS) in the following:[4,5,6]
  - Clinical criteria for chronic rhinosinusitis (CRS) or acute/recurrent rhinosinusitis are met, as per **Sinus and Facial Imaging (HD 29.1)** ; **OR** ALL of the following:
    - At least a one week trial of daily antihistamine/decongestant
    - Initial evaluation with a chest x-ray and/or CT Chest after the current episode of cough started or changed
    - All medications known to cause cough have been discontinued

Background and Supporting Information

- The resolution of cough usually will occur at a median time of 26 days of stopping use of the angiotensin-converting enzyme (ACE) inhibitor drug.[2] Smoking cessation is “almost always effective” in resolving cough in smoker.[2]
- Cough after URI (Upper Respiratory Infection) can typically last beyond 2-3 weeks.[3]

- Objective evidence of classic asthmatic cough conventionally requires some evidence of variable airflow obstruction such as peak flow variability, or reversibility to bronchodilator of >12-15%.[8]
- In adult patients with chronic cough suspected to be due to reflux-cough syndrome, it is recommended that treatment include (1) diet modification to promote weight loss in overweight or obese patients; (2) head of bed elevation and avoiding meals within 3 hours of bedtime; and (3) in patients who report heartburn or regurgitation, PPI's, H-2 receptor antagonists, alginate or antacid therapy sufficient to control these symptoms.[9]

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Non-Cardiac Chest Pain (CH-4)

Non-Cardiac Chest Pain (CH-4.0)
Non-Cardiac Chest Pain – Imaging (CH-4.1)
Costochondritis/Other Musculoskeletal Chest Wall Syndrome (CH-4.2)

Non-Cardiac Chest Pain (CH-4)

Non-Cardiac Chest Pain (CH-4.0)

- See the following guidelines:
  - **Pulmonary Embolism (PE) (CH-25.1)**
  - **General Guidelines (CD-1) in the Cardiac Imaging Guidelines**
- "Evidence is not conclusive whether Triple-rule-out CT (CAD, PE, and AD) will improve efficiency of patient management" with acute chest pain.[1]
- MRI is not supported in the evaluation of chest pain.

Non-Cardiac Chest Pain – Imaging (CH-4.1)

- Initial evaluation should include a chest x-ray.
  - CT Chest with contrast (CPT® 71260) or CTA Chest (CPT® 71275) if x-ray is abnormal. See **Pneumonia (CH-13.1)**
- Sub-Sternal Non-Cardiac Chest Pain:
  - If x-ray is normal and the chest pain is substernal, the individual should undergo evaluation of other possible causes of pain prior to advanced imaging (CT Chest with contrast or CTA Chest) including:[1,2,3]
    - Cardiac evaluation[1,2] (See **General Guidelines (CD-1)** in the Cardiac Imaging Guidelines)
    - GI any ONE of the following since GERD is the cause in almost 60%:
      - Trial of anti-reflux medication, or pH probe, or esophageal manometry[1] or
      - Barium swallow or endoscopy
    - Pulmonary Function Test (PFT's)[1,2]
  - CT Chest with contrast (CPT® 71260) if persistent:
    - The initial chest x-ray reveals no abnormalities with known Sickle cell disease[2]
- Non-Cardiac Chest Pain, other than Sub-Sternal:
  - If x-ray is normal and the chest pain is in a location other than substernal:
    - CT Chest with (CPT® 71260) or without (CPT® 71250) contrast and/or bone scan for:
      - Known or suspected malignancy, including individuals with chest pain associated with cough and weight loss
    - CT Chest with (CPT® 71260) or without (CPT® 71250) contrast for:
      - Suspected infectious or inflammatory condition
      - History of prior chest intervention (surgery, Radiation Therapy)
    - MRI Chest without and with contrast (CPT® 71552) for:
      - Necrotizing fasciitis
      - Surgical planning prior to debridement procedures

Costochondritis/Other Musculoskeletal Chest Wall Syndrome (CH-4.2)

- Costochondritis or other suggested musculoskeletal chest wall syndrome does not require advanced imaging (CT or MRI) unless it meets other criteria in these guidelines.

Background and Supporting Information

- Chest x-ray could identify pneumothorax, pneumomediastinum, fractured ribs, acute and chronic infections, and malignancies.[1]
- Costochondritis can be readily diagnosed with palpation tenderness and/or hooking maneuver and imaging is non-specific.[3]

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Dyspnea/Shortness of Breath (CH-5)

Dyspnea/Shortness of Breath (CH-5.1)
Pre-Operative Assessment (CH-5.2)
Post Endobronchial Valve (EBV) Placement (CH-5.3)

Dyspnea/Shortness of Breath (CH-5)

Dyspnea/Shortness of Breath (CH-5.1)

- Initial evaluation should include a recent chest x-ray.[1,2]
  - CT Chest without contrast (CPT® 71250) if x-ray is abnormal.[1,2]
  - CT Chest without contrast (CPT® 71250, including HRCT), or CT Chest with contrast (CPT® 71260) if the initial chest x-ray is indeterminate and the following evaluations have been conducted and are indeterminate:[2]
    - ECG, echocardiogram or stress testing,[2] and
    - Pulse oximetry and pulmonary function studies (PFT's)[2]
- If pulmonary embolus (PE) is suspected, See **Pulmonary Embolism (PE) (CH-25)**

Background and Supporting Information

Dyspnea is the subjective experience of breathing discomfort.

Pre-Operative Assessment (CH-5.2)

- For pre-operative assessment prior to a planned segmental, lobar or lung removal,[3,4] as well as for pre-interventional assessment prior to a planned endobronchial valve (e.g. Zephyr valve) placement, the following can be considered:
  - "Split Function Studies" (CPT® 78597-Quantitative Differential Pulmonary Perfusion, Including Imaging When Performed or CPT® 78598-Quantitative Differential Pulmonary Perfusion and Ventilation (e.g., Aerosol or Gas), Including Imaging When Performed) or SPECT/CT (CPT® 78830)
    AND/OR
  - CT Chest (CPT® 71250, CPT® 71260 or CPT® 71270) for pre-interventional procedure assessment prior to a planned endobronchial valve (e.g. Zephyr Valve) placement.

Post Endobronchial Valve (EBV) Placement (CH-5.3)

- Suspected Post EBV Complication:
  - Initial evaluation should include a recent chest x-ray
    - CT Chest without contrast (CPT® 71250) or CT Chest with contrast (CPT® 71260) is appropriate for:
      - Acute loss of benefit, lack of initial benefit, increased dyspnea, sudden chest pain, increased cough, suspected valve malposition/migration, or to evaluate target lobe volume reduction

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Hemoptysis (CH-6)

Hemoptysis (CH-6.1)

- Following a chest x-ray performed after hemoptysis started or worsened the following is indicated:
  - CT Chest with contrast (CPT® 71260) or CTA Chest (CPT® 71275)
- For recurrent hemoptysis, (hemoptysis occurring after medical therapy or embolization), the following is indicated:
  - CTA Chest (CPT® 71275)

NOTE:

- CT Chest without contrast, (CPT® 71250), is only warranted in individuals with poor renal function or life-threatening contrast allergy.
- There is no data to support the use of CT Chest without and with contrast, (CPT® 71270), in the diagnosis of hemoptysis.

Background and Supporting Information

- Chest x-ray has been shown to predict the site and cause of bleeding in up to 82% of individuals and can be abnormal in up to 90% of cases. The most common cause of hemoptysis was acute bronchitis with the second most common cause as respiratory tract neoplasm. Bronchiectasis and tuberculosis were additional common causes

Reference

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Bronchiectasis (CH-7)

Bronchiectasis (CH-7.1)
Adult Cystic Fibrosis (CH-7.2)

Bronchiectasis (CH-7)

Bronchiectasis (CH-7.1)

- High resolution CT Chest (HRCT) without contrast (CPT® 71250) for ANY of the following:[4,5]
  - To confirm suspected diagnosis of bronchiectasis after an initial x-ray.[1,2]
  - For known bronchiectasis with worsening symptoms or worsening PFT's.[2]
  - For hemoptysis with known or suspected bronchiectasis.[3]

Adult Cystic Fibrosis (CH-7.2)

- CT Chest without contrast (CPT® 71250) or with contrast (CPT® 71260) is indicated for the following (without initial Chest x-ray):
  - Suspected or initial diagnosis of Cystic Fibrosis
  - Biennially, (every 2 years), for routine surveillance
  - Persistence respiratory symptoms with reduced lung function despite therapy
  - Exacerbations when Chest x-ray is indeterminate
  - Hemoptysis
  - Suspected fungal pneumonia
  - Pre and post-lung transplant evaluation
- See **Bronchiectasis (CH-7.1)**

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Bronchitis (CH-8)

Bronchitis (CH-8.1)

- Advanced imaging is not needed for bronchitis.[1,2]
- Chest x-ray to determine if any abnormality is present.

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Asbestos Exposure (CH-9)

Asbestos Exposure (CH-9.1)

- Chest x-ray as radiographic screening for asbestos exposure.[1,2]
  - Stable calcified pleural plaques on chest x-ray do not require advanced imaging of the chest.[2]
- CT Chest should not be used to screen populations at risk for asbestos-related diseases.[2]
- High resolution CT Chest (HRCT) (CPT® 71250) for ANY of the following:[2]
  - Any change seen on chest x-ray.
  - Progressive respiratory symptoms that may indicate the development or progression of asbestos related interstitial fibrosis.

Background and Supporting Information

- Asbestosis and asbestos-related diseases include: pleural effusion, pleural plaques, lung cancer, and malignant mesothelioma. The risk of developing mesothelioma increases with increasing intensity and duration of exposure.

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Chronic Obstructive Pulmonary Disease (CH-10)

COPD (CH-10.1)

- Chest x-ray should be performed initially.
  - CT Chest without contrast (CPT® 71250) or CT Chest with contrast (CPT® 71260)[1,2] can be performed if:
    - Emphysema is known or suspected and a pre-operative study for Lung Volume Reduction Surgery (LVRS) is being requested.[1] OR
    - Definitive diagnosis is not yet determined by PFT's, appropriate laboratory studies and chest x-ray and ONE of the following is suspected:
      - Bronchiectasis
      - Sarcoidosis
      - Emphysema
      - Pneumoconiosis
      - Idiopathic pulmonary fibrosis
      - Langerhans cell histiocytosis
      - Hypersensitivity pneumonitis
      - Bronchiolitis obliterans
      - Lipoid pneumonia
      - Drug toxicity
      - Lymphangitic cancer[2]
      - Alpha-1-Antitrypsin Deficiency
- Lung cancer screening is discussed in the following guideline:
  - See "Screening Indications" in **Lung Cancer Screening (CH-33)**
- Pre-interventional lung procedure assessment prior to a planned endobronchial valve (e.g. Zephyr valve) placement
  - See **Pre-Operative Assessment (CH-5.2)**

Background and Supporting Information

- COPD includes asthmatic bronchitis, chronic bronchitis, and emphysema. COPD is airflow reduction (FEV1/FVC ratio <0.7 or FEV1 <80% predicted) in the presence of respiratory symptoms, such as dyspnea. Advanced chest imaging is not typically indicated in COPD exacerbation, which is an acute change in baseline dyspnea, cough, and/or sputum beyond normal day-to-day variations.[2]

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Interstitial Disease (CH-11)

Interstitial Lung Disease (ILD)/Diffuse Lung Disease (DLD) (CH-11.1)
E-cigarette, or Vaping, Product Use–Associated Lung Injury (EVALI) (CH-11.2)

Interstitial Disease (CH-11)

Interstitial Lung Disease (ILD)/Diffuse Lung Disease (DLD) (CH-11.1)

- High resolution CT Chest (HRCT) without contrast (CPT® 71250) is the diagnostic modality of choice to evaluate or CT Chest with contrast (CPT® 71260)[10] (See Background and Supporting Information) for:
  - Interstitial changes or diffuse parenchymal changes identified on other imaging (including chest x-ray) in individuals with pulmonary symptoms and abnormal pulmonary function studies (PFT's) (See **Dyspnea/Shortness of Breath (CH-5.1)**)[1-6]
  - In individuals with pulmonary symptoms and abnormal pulmonary function studies (PFT's) and normal chest x-ray with high clinical suspicion for ILD or DLD, including but not limited to entities such as Hypersensitivity Pneumonitis, Cryptogenic Organizing Pneumonia (COP, formally known as BOOP), and Eosinophilic Pneumonia, as chest x-ray can be normal in up to 10% of ILD[8,9]
  - Initial imaging to identify interstitial disease with a connective tissue disease diagnosis, or significant exposures including (chest x-ray not required):
    - Rheumatoid arthritis
    - Scleroderma
    - Idiopathic inflammatory myopathies (polymyositis, dermatomyositis, inclusion body myositis)
    - Systemic lupus erythematosus
    - Sjögren's syndrome
    - Mixed connective tissue disease
    - Significant exposure and concern for:
      - Asbestosis
      - Silicosis
      - Coal miner's lung disease[1-6,11]
  - At any time for detection of Progressive Pulmonary Fibrosis (PPF), in individuals with ILD of known or unknown etiology, defined by at least one of the following:[12]
    - New or worsening respiratory symptoms
    - Worsening PFT's, defined as decline of either:
      - FVC of 5% or greater within the past year
      - DLCO of 10% or greater within the past year
  - Once a year in individuals with known pulmonary fibrosis if needed for:[10]
    - Serial examination for improvements in diagnostic accuracy, or
    - Evaluation of disease reversibility, stability, or progression
- Concern for interstitial lung disease post-COVID See **Coronavirus Disease 2019 (COVID-19) (CH-13.2)**

Background and Supporting Information

- DLD refers to diffuse parenchymal lung diseases or interstitial lung diseases. There are a multitude of pathologies that demonstrate involvement of the alveola, airways, or both, in addition to the pulmonary interstitium. A single term of ILD would not fully address the entities that are mostly parenchymal in nature, hence the term Diffuse Lung Disease is more technically correct. Both terms are included here for convenience and recognition.

- There is no relevant literature to support the use of CT with IV contrast for initial or follow-up imaging of ILD; however, IV contrast may be of use in evaluation of alternative diagnoses with overlapping clinical features or conditions that also involve the pleura, mediastinum, and pulmonary vessels.
- Progression of fibrosis is typically assessed visually, relying on the percentage of lung volume containing fibrotic features in the upper, mid, and lower lung zones. An increased extent of fibrotic features denotes progression. These may include increased traction bronchiectasis and bronchiolectasis, new ground-glass opacity with traction bronchiectasis, new fine reticulation, increased coarseness of reticular abnormality, new or increased honeycombing, and increased lobar volume loss.[12]

E-cigarette, or Vaping, Product Use–Associated Lung Injury (EVALI) (CH-11.2)

- CT Chest with or without contrast (CPT® 71250 or CPT® 71260) if EVALI is suspected.[7]

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Pneumonia and Coronavirus Disease 2019 (COVID-19) (CH-13)

Pneumonia (CH-13.1)
Coronavirus Disease 2019 (COVID-19) (CH-13.2)

Pneumonia and Coronavirus Disease 2019 (COVID-19) (CH-13)

Pneumonia (CH-13.1)

- Chest x-ray should be performed initially in all individuals with suspected pneumonia, prior to considering advanced imaging.[1, 2]
  - CT Chest without or with contrast (CPT® 71250 or CPT® 71260) if initial or repeat chest x-ray findings reveal:
    - Complication of pneumonia (e.g. abscess, effusion, hypoxemia, respiratory distress, necrotizing pneumonia, pneumothorax).[1,2]
    - Possible lung mass associated with the infiltrate.[2]
- CT Chest without or with contrast (CPT® 71250 or CPT® 71260) for immunocompromised individuals with any of the following:[15]
  - High suspicion for pneumonia despite equivocal or negative CXR
  - Persistent radiographic abnormalities
  - Multiple or diffuse opacities or nodules

Coronavirus Disease 2019 (COVID-19) (CH-13.2)

- CT Chest without contrast (CPT® 71250), or with contrast (CPT® 71260) in the following clinical situations:
  - Imaging for initial diagnosis:
    - Symptomatic COVID-19 positive individuals with underlying comorbidities (including but not limited to age >65 years, chronic lung disease, current or former smoker, chronic kidney disease, chronic liver disease, dementia, diabetes, Down's syndrome, HIV or other primary, secondary or acquired immunodeficiency, mood disorders, BMI ≥30, pregnancy, solid organ or blood stem cell transplant, cerebrovascular disease, substance use disorder, tuberculosis, cardiovascular disease, malignancy, bronchopulmonary dysplasia, chronic infections, or immunocompromised state). See CDC's list of higher risk for severe COVID for additional information: https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html
    - Moderate to severe symptomatic individuals with evidence of significant pulmonary dysfunction or damage (e.g., hypoxemia, moderate-to-severe dyspnea), suspected of having COVID-19, regardless of COVID-19 test results or when viral testing is not available.
    - Thromboembolic complications including pulmonary embolism, stroke and mesenteric ischemia are recognized complications of COVID-19. See **Pulmonary Embolism (CH-25.1)**, **Mesenteric Ischemia (AB-6.1)** in the Abdomen Imaging Guidelines, and **Stroke/TIA (HD-21.1)** in the Head Imaging Guidelines for appropriate imaging guidance.

- Other systemic complications are being recognized as medical knowledge about this condition evolves. Imaging for possible COVID-19 complications should be managed by the appropriate condition based guidelines.

- Imaging after initial diagnosis:
  - Imaging in the following clinical circumstances:
    - If there is significant worsening of symptoms in a COVID-19 positive individual and imaging will be used to modify individual management.
    - A recovered COVID-19 positive individual with significant residual functional impairment and/or persistence hypoxemia.
      - Symptomatic post-COVID individuals with concern for interstitial lung disease including organizing pneumonia imaging can be considered pre and post treatment.[11]

Background and Supporting Information

- The role of advanced imaging in the diagnosis and management of COVID-19 is very dynamic in this rapidly evolving condition.
- Findings on both Chest X-ray and CT Chest are non-specific. Chest X-rays may show patchy opacities with lower lung predominance. CT may show peripheral multifocal ground glass opacities with lower lung predominance. However, a significant portion of cases have opacities without a clear or specific distribution.[3,4,6] A reverse halo sign or other findings of organizing pneumonia may be seen later during the course of illness. Atypical findings include isolated lobar or segmental consolidation without ground glass opacities, discrete small centrilobular ("tree-in-bud") nodules, pleural effusion.[8]
  - Pediatric individuals may have less pronounced imaging findings than adults.
- CT Chest abnormalities are common 3 months after discharge in adults who have been hospitalized for COVID-19 and are associated with more severe acute disease. Fibrosis was seen in a minority of people.[13,14] Most people re-imaged at one year showed radiologic improvement.[13]
- Major professional society guidelines to date:
  - The American College of Radiology (ACR) recommends that CT Chest should not be used for screening or as a first-line test to diagnose COVID-19.[3]
  - The Centers for Disease Control and Prevention (CDC) recommends viral testing as the only specific method of diagnosis.[4]
  - The CDC has stated that symptoms may appear 2-14 days after exposure to the virus. These symptoms may include:[5]
    - Fever or chills
    - Cough
    - Shortness of breath or difficulty breathing
    - Fatigue
    - Muscle or body aches

- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

- The Fleischner Society consensus statement published on April 7, 2020, recommends against the use of imaging in individuals with suspected COVID-19 who are either asymptomatic or have only mild symptoms without evidence of significant pulmonary dysfunction or damage (e.g., absence of hypoxemia, no or mild dyspnea).[6]
- According to The American Society of Transplantation, screening donors is based on methods below. Screening donors encompasses three different methods.[7]
  - Epidemiologic screening for travel and potential exposures
  - Screening for symptoms suggestive of COVID-19
  - Viral testing (Nucleic acid testing of specimens)
  - There is no current indication for screening asymptomatic donors with advanced imaging

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Other Chest Infections (CH-14)

PPD or TB (Mycobacterium tuberculosis and Nontuberculous Mycobacterial Pulmonary Disease (NTM-PD)) (CH-14.1)
Fungal Infections (Suspected or Known) (CH-14.2)
Wegener's Granulomatosis/Granulomatosis with Polyangiitis (CH-14.3)
Suspected Sternal Dehiscence (CH-14.4)

Other Chest Infections (CH-14)

PPD or TB (Mycobacterium tuberculosis and Nontuberculous Mycobacterial Pulmonary Disease (NTM-PD)) (CH-14.1)

- CT Chest with contrast (CPT® 71260) or CT Chest without contrast (CPT® 71250) with ANY of the following:
  - Normal or equivocal chest x-ray with ONE of the following:[1]
    - Positive PPD skin test or other positive tuberculin skin tests OR
    - Positive QuantiFERON-TB Gold OR
    - Suspected active (or reactivated) tuberculosis
  - Suspected complications or progression of tuberculosis (e.g. pleural tuberculosis, empyema, and mediastinitis)[2]
  - Suspected NTM-PD
  - If CT Chest is unremarkable, there is insufficient data to support performing subsequent CT Chest unless symptoms develop or chest x-ray shows a new abnormality.
  - Follow-up CT Chest with contrast (CPT® 71260) or without contrast (CPT® 71250) with frequency at the discretion of or in consultation with the pulmonary or infectious disease specialist (not to exceed 3 studies in 3 months).
  - Re-evaluate individuals undergoing active treatment who had abnormalities seen only on CT Chest.

Fungal Infections (Suspected or Known) (CH-14.2)

- CT Chest with contrast (CPT® 71260) or High resolution CT Chest (HRCT) without contrast (CPT® 71250):[3,4]
  - Initial diagnosis of any fungal pneumonia or chest infection[3,4]
  - Suspected complications or progression of the fungal chest infection (e.g. worsening pneumonitis; pleural effusion, empyema, mediastinitis)
  - Suspected Allergic Bronchopulmonary Aspergillosis (ABPA) in asthmatics with atypical presentation or poor response to conventional therapy.[7,8,9]
- Follow-up CT Chest with contrast (CPT® 71260) or High resolution CT Chest (HRCT) without contrast (CPT® 71250) with frequency at the discretion of or in consultation with the pulmonary or infectious disease specialist.

Wegener's Granulomatosis/Granulomatosis with Polyangiitis (CH-14.3)

- CT Chest without contrast (CPT® 71250)* should be done in all individuals who have pulmonary symptoms and are newly diagnosed or suspected of having Antineutrophil cytoplasmic autoantibody (ANCA)-associated vasculitides (AAV) for a baseline prior to initiating immunosuppressive therapy.[5,6]

- Selective use of additional imaging is useful in evaluating individuals who are suspected or known to have AAV, including CT Head (sinuses, orbits, mastoids) in individuals with visual or upper respiratory track symptoms or signs, and CT Neck (subglottic region) in individuals with symptoms or signs of subglottic stenosis.[6]

*In most situations, CT scans in individuals with AAV should be performed without an iodinated contrast agent administered.[6]

Suspected Sternal Dehiscence (CH-14.4)

- Sternal wound dehiscence is primarily a clinical determination.
- Chest x-ray is performed prior to advanced imaging to identify abnormalities in the sternal wire integrity and/or a midsternal stripe. Other findings include rotated, shifted or ruptured wires.
- CT Chest without contrast (CPT® 71250) or CT Chest with contrast (CPT® 71260) for:
  - Differentiating sternal wire migration from sternal dehiscence[10]
  - Planned debridement and/or repair.

See **Infection – General (MS-9.1)** for concerns for osteomyelitis or soft tissue infection

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Sarcoid (CH-15)

Sarcoid (CH-15.1)

- CT Chest with contrast (CPT® 71260) or without contrast (CPT® 71250) for:
  - Establish or rule out the diagnosis when suspected
- Subsequent CT Chest with contrast (CPT® 71260) or without contrast (CPT® 71250), in known sarcoid, for ANY of the following:[1]
  - Development of worsening symptoms
  - New symptoms appear after a period of being asymptomatic
  - Treatment change is being considered
- If CT is equivocal, definitive diagnosis can only be made by biopsy.[2,3,4]
- PET/CT should not be used in the standard work-up of all sarcoid individuals. There is currently no evidence to support the use of PET/CT for screening.
- PET/CT (CPT® 78815) can be considered under the following conditions:[5,6,7]
  - Help guide biopsy location if:
    - Known lesion on CT Chest is difficult to access, to help identify alternative biopsy location
    - No apparent lung involvement and to identify an extrapulmonary biopsy site
  - Differentiation of reversible granulomatous disease from irreversible pulmonary fibrosis and will affect treatment options
  - Help identify treatment failure where either current treatment will be modified or new treatment will be introduced

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Solitary Pulmonary Nodule (SPN) (CH-16)

Solitary Pulmonary Nodule (CH-16.0)
Solitary Pulmonary Nodule – Imaging (CH-16.1)
Incidental Pulmonary Nodules Detected on CT Images (CH-16.2)
Interval Imaging Outcomes (CH-16.3)
PET (CH-16.4)

Solitary Pulmonary Nodule (SPN) (CH-16)

Solitary Pulmonary Nodule (CH-16.0)

- For Lung Cancer Screening (LDCT) including incidental findings from LDCT, See **Lung Cancer Screening (CH-33)**.

Solitary Pulmonary Nodule – Imaging (CH-16.1)

- For these guidelines, manual nodule measurements should be based on the average of long- and short-axis diameters. The size threshold (<6 mm) corresponds to a rounded measurement of 5 mm or less in these guidelines. Measurements should be rounded to the nearest millimeter. Prediction models used to estimate malignancy yield better results with the average diameter than with the maximum transverse diameter. The dimension of small pulmonary nodules (<10mm) should be expressed as the average of the maximal long-axis and perpendicular maximal short-axis measurements in the same plane. For larger nodules and for masses larger than 10 mm, it is generally appropriate to record both long- and short-axis dimensions, with the long-axis dimension being used to determine the T factor in lung cancer staging and being a criterion for tumor response to treatment.[1,13]
- A pulmonary nodule can be determined to have changed in size when its average diameter has increased or decreased by at least 2mm (rounded to the nearest millimeter). Smaller changes do not reliably indicate change.[13]
- Maximum intensity projection (MIP), and Minimum intensity projection (MinIP) are 2D projections of the volumetric (3D) acquisition data.[11,12] These projections may be of use in evaluation pulmonary nodules, but these projections are included in the cross sectional imaging base codes, and is not separately reimbursable.
- CT Chest with contrast (CPT® 71260) or CT Chest without contrast (CPT® 71250) initially for discrete nodule(s) in the following scenarios:[1,2,3]
  - Lung nodule(s) seen on an imaging study other than a “dedicated” CT or MRI Chest. Examples of other studies:
    - Chest x-ray
    - CT Abdomen
    - MRI Spine
    - Coronary CTA[1]
  - But NOT in the following which are considered initial dedicated advanced chest imaging:
    - CT Chest without and with contrast (CPT® 71270)
    - CTA Chest (CPT® 71275)
    - MRI Chest without contrast (CPT® 71550)

- MRI Chest without and with contrast (CPT® 71552)
- MRA Chest without and with contrast (CPT® 71555)

- Comparisons should include the earliest available study and the more recent previous CT Chest scans to determine if nodule was present and stable.[1]
  - Similar-sized pleural nodule(s) is treated as a pulmonary nodule(s)
- The size of the lung or pleural nodule(s) is crucial information for decisions making regarding follow-up. The largest of multiple lung and/or pleural nodules will guide the surveillance interval. (See **Incidental Pulmonary Nodules Detected on CT Images (CH-16.2)**, and **Pleural-Based Nodules and Other Abnormalities (CH-17.1)**)

Background and Supporting Information

Abnormality examples include: mass, opacity, lesion, density, nodule, and calcification.

Incidental Pulmonary Nodules Detected on CT Images (CH-16.2)

Incidentally Detected Solid Pulmonary Nodules Follow-up Recommendations*				
Nodule Type	**<6 mm (<100 mm³)**	**6–8 mm**	**>8 mm**	**Comments**
Single Nodule	Follow-up (optional) CT at 12 months. No routine follow-up if stable at 12 months	CT at 6–12 months, then CT at 18–24 months if stable	CT at 3 months, then CT at 6-12 and then at 18-24 months if stable. Consider PET/CT** or biopsy	Certain individuals at high-risk with suspicious nodule morphology, upper lobe location, or both may warrant 12-month follow-up
Multiple Nodules	Follow-up (optional) CT at 12 months. *No routine follow-up if stable at 12 months	CT at 3–6 months, then at 18–24 months if stable	CT at 3–6 months, then at 18–24 months if stable. Consider PET/CT** or biopsy	Use most suspicious nodule as a guide to management. Follow-up intervals may vary according to size and risk.

Incidentally Detected Sub-Solid Pulmonary Nodules Follow-up Recommendations			
Nodule Type	**<6 mm (<100 mm^3)**	**≥6 mm (≥100 mm^3)**	**Comments**
Single Ground glass opacity (GGO)	Consider follow-up at 2 and 4 years. If solid component(s) or growth develops, consider resection.	CT at 6–12 months to confirm persistence, then follow-up with CT every 2 years until 5 years	In certain suspicious nodules, <6 mm, consider follow-up at 2 and 4 years. If solid component(s) or growth develops, consider resection.
Single Part-solid	Consider follow-up at 2 and 4 years. If growth develops, consider resection.	CT at 3–6 months to confirm persistence. If unchanged and solid component remains <6 mm, then annual CT should be performed for 5 years. If the solid component has suspicious morphology (i.e., lobulated margins or cystic components), is >8 mm or is growing: Consider PET/CT** or biopsy	In practice, part-solid nodules cannot be defined as such until ≥6 mm. Persistent part-solid nodules with solid components ≥6 mm should be considered highly suspicious.
Multiple Part-Solid	CT at 3–6 months. If stable, consider CT at 2 and 4 years.	CT at 3–6 months. Subsequent management based on the most suspicious nodule(s).	Multiple <6 mm pure ground-glass nodules are usually benign.

(*Following the Fleischner Society Guidelines for high-risk which include American College of Chest Physicians intermediate and high-risk categories.[1,2])

Pulmonary Cyst(s)[10]

- May represent a rare form of adenocarcinoma, squamous cell carcinoma, or small cell carcinoma.
- Short-term initial imaging to exclude rapid growth can be considered at 3-6 months.
- Further imaging can be managed according to the part-solid pathway above.

**PET/CT consider for ≥8 mm solid lung nodule or solid component of a sub-solid nodule, not for groundglass opacity.

If a PET/CT was found to be negative, follow-up with CT at 3 months, 9 months, and 21–24 months if stable.

If a PET/CT was found to be positive, a biopsy was negative or non-diagnostic, follow- up with CT at 3 months, 12 months, and 24 months, if stable.

Interval Imaging Outcomes (CH-16.3)

- No further advanced imaging is necessary if a nodule has been:
  - Stable for 2 years
    - Nodules(s) stable on chest x-ray.
    - Nodule(s) ≥6mm stable on CT Chest.[1]
  - Stable for 1 year
    - Nodule(s) <6mm.[1]
  - At any time, if:
    - Classically benign characteristics by chest x-ray or previous CT (e.g. benign calcification pattern typical for a granuloma or hamartoma).
    - Decreasing or disappearing nodule(s).[3]
- Lung nodule(s) which increases in size or number should no longer be considered for CT screening or surveillance.[1,2,3,7]
  - With an increase in nodule(s) size or number, tissue sampling or other further diagnostic investigations should be considered.
  - PET, for solid nodules ≥8mm, should be considered (See **PET (CH-16.4)**)

PET (CH-16.4)

- PET/CT (CPT® 78815) for a solid lung nodule ≥8 mm on dedicated advanced chest imaging, as described in **Solitary Pulmonary Nodule – Imaging (CH-16.1)**. See **Non-Small Cell Lung Cancer – Suspected/Diagnosis (ONC-8.2)** in the Oncology Imaging Guidelines for lung mass ≥3.1 cm
  - If there is a history of malignancy, refer to the appropriate Oncology restaging/recurrence guideline for indications for PET imaging
  - Pleural nodule, See **Pleural-Based Nodules and Other Abnormalities (CH-17.1)**
  - Serial PET studies are not considered indicated
  - Not appropriate for infiltrate, ground glass opacity, or hilar enlargement
  - Mediastinal lymphadenopathy - See **Mediastinal Lymphadenopathy (CH-2.3)** or Sarcoid concerns – See **Sarcoid (CH-15.1)**

Background and Supporting Information

- A **nodule** is any pulmonary or pleural lesion that is a discrete, spherical opacity 2-30 mm in diameter surrounded by normal lung tissue. A larger nodule is called a mass. Entities that are not nodules, and are considered benign, include non-spherical linear, sheet-like, two-dimensional or scarring opacities.[3]
- **Malignant** nodule features can include spiculation, abnormal calcification, size greater than 7-10 mm, interval growth, history of a cancer that tends to metastasize to the lung or mediastinum, and/or smoking history.[1,3]
  - A nodule that grows at a rate consistent with cancer (doubling time 100 to 400 days) may be sampled for biopsy or resected.[1]
  - Less than 1% of <6 mm lung nodules are malignant.[1]
  - Three per cent of all 8 mm lung nodules are malignant.[1]
  - Only one follow-up at 6-12 months is sufficient for 6-8 mm nodules and not all require traditional 2 year follow-up.[1]
  - The larger the solid component of a subsolid nodule, the greater the risk of invasiveness and metastases.[1]
  - Increased risk of primary cancer as the total nodule count increased from 1 to 4 but decreased risk in individuals with 5 or more nodules, most of which likely resulted from prior granulomatous infection.[1]
  - A nodule that does not grow in 6 months has a risk of malignancy at <10%.
- **Benign** features in solid nodules can include benign calcification (80% granuloma, 10% hamartoma), multiple areas of calcification, small size, multiple nodules, negative PET, and stability of size over 2 years.[3]
- **Ground glass** or subsolid opacities, which can harbor indolent adenocarcinoma with average doubling times of 3–5 years.[1]
- **Repeat PET** is discouraged. If the original PET is positive, biopsy may be performed. If the original PET is negative but subsequent CT Chest shows an increase in nodule size, biopsy may be performed.
- **Positive PET** is defined as a standardized uptake value (SUV) in the lung nodule greater than the baseline mediastinal blood pool. A positive PET can occur with infection or inflammation, including absence of lung cancer with localized infection, presence of lung cancer with associated (post-obstructive) infection and/or related inflammation.
- **False negative PET** can be seen in individuals with adenocarcinoma in situ (formally known as bronchoalveolar carcinoma), carcinoid tumors, a small size nodule, non-solid or ground glass opacity.9 High pre-test likelihood of malignancy with negative findings on PET only reduces the likelihood of malignancy to 14%; while in an individual with a low pre-test likelihood (20%) of malignancy, a negative PET reduces the likelihood of malignancy to 1%.[6]

- Individuals aged 35 years or younger[1]
  - Considered to have an overall low risk for pulmonary malignancy
  - In this age group, nodules are most likely to be infectious rather than cancer
  - Management of incidentally-found pulmonary nodules in this group should be individualized

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Pleural-based Nodules and Other Abnormalities (CH-17)

Pleural-Based Nodules and Other Abnormalities (CH-17.1)

- CT Chest with contrast (CPT® 71260) or CT Chest without contrast (CPT® 71250) (with contrast is preferred for initial evaluation) for pleural nodule(s).[1]
  - Pleural nodule(s) seen on an imaging study other than a "dedicated" CT or MRI Chest.[1]
  - Pleural nodule(s) identified incidentally on any of the following dedicated chest studies can replace CT Chest as the initial dedicated study.[1]
    - CT Chest (CPT® 71270).
    - CTA Chest without and with contrast (CPT® 71275).
    - MRI Chest without contrast (CPT® 71550).
    - MRI Chest without and with contrast (CPT® 71552).
    - MRA Chest without and with contrast (CPT® 71555).
  - After preliminary comparison with any available previous chest films to determine presence and stability.
  - Using largest measurement of multiple nodule(s). (See **Solitary Pulmonary Nodule – Imaging (CH-16.1)**).
  - Following the Fleischner Society Guidelines for high-risk. (See **Incidental Pulmonary Nodules Detected on CT Images (CH-16.2)**)[1]
- PET/CT (CPT® 78815) can be considered if dedicated CT or MRI Chest identifies a pleural nodule/mass or defined area of pleural thickening that is ≥8 mm when there is a likelihood of malignancy including current or previous malignancy, pleural effusion, bone erosion, chest pain.[1]

Background and Supporting Information

- Pleural nodule/mass or thickening without suggestion of malignancy would undergo surveillance or biopsy.
- A study looking at over 8,700 LDCT chest scans identified 943 noncalcified nodules attached to the costal pleura, of these 897 were < 10 mm in size. There were 603 that were either lentiform, oval, semicircular or triangular in shape and had smooth margins. All of these nodules, that met these qualifications of shape, size and smooth margins, were benign. Follow-up with annual screening, rather than more immediate work-up, was recommended.[2]

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Pleural Effusion (CH-18)

Pleural Effusion (CH-18.1)

- CT Chest with contrast (CPT® 71260) after:[1,2]
  - Chest x-ray including lateral decubitus films; **and**
  - Thoracentesis to determine if fluid is exudative or transudative and remove as much as possible (this fluid can obscure the underlying lung parenchyma and possibly a mass) **or**
  - Concern for loculated effusion, empyema, paramediastinal location, subpleural lung abscess or cavitation[3]
- Chest ultrasound (CPT® 76604) can be used as an alternative to chest x-ray to evaluate for the presence of fluid within the pleural spaces and guide thoracentesis.

Background and Supporting Information

- Bilateral effusions are more often systemic related transudates (congestive heart failure, renal failure, liver insufficiency, etc.), and advanced imaging is rarely needed. Large unilateral effusions can be malignant. Analysis of fluid may include: cytology, culture, cell count, and biochemical studies.

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Pneumothorax/Hemothorax (CH-19)

Pneumothorax/Hemothorax (CH-19.1)
Pneumomediastinum; Subcutaneous Emphysema (CH-19.2)

Pneumothorax/Hemothorax (CH-19)

Pneumothorax/Hemothorax (CH-19.1)

Chest x-ray and CT Chest are the first line tests for detecting pneumothorax/hemothorax and ruling out other lung diseases.[8]

- Chest x-ray initially.
  - CT Chest with contrast (CPT® 71260) or without contrast (CPT® 71250) if:
    - Diagnosis of a small pneumothorax is in doubt, and the presence of a pneumothorax will affect individual treatment decisions.[1]
    - Preoperative study for treatment of pneumothorax.[1]
    - Pneumothorax associated with hemothorax.[2]
    - Suspected complications from hemothorax (e.g. empyema).[2]
    - Suspected Alpha-1-Antitrypsin Deficiency (even without pneumothorax).[3]
    - Suspected Cystic Lung Disease, including Lymphangioleiomyomatosis (LAM), tuberous sclerosis (TS), or Birt-Hogg-Dube (BHD) syndrome.[6,7]
    - To determine the etiology of persistent pneumothorax/air leak, such as chest tube malposition, bronchopleural fistula, loculated pneumothorax, lung parenchymal disease.[11]
    - Suspected catamenial pneumothorax/thoracic endometriosis[8]
- MRI Chest without and with contrast (CPT® 71552) or MRI Chest without contrast (CPT® 71550) for:
  - Detecting diaphragmatic endometriosis
  - Pre-surgical planning for thoracic endometriosis[8,9,10]

Pneumomediastinum; Subcutaneous Emphysema (CH-19.2)

- Chest x-ray initially.
  - CT Chest with contrast (CPT® 71260) or without contrast (CPT® 71250) if:
    - Recent vomiting and/or suspected esophageal perforation.[4,5]
    - Associated pneumopericardium.[4,5]
    - Associated pneumothorax.[4,5]
    - Preoperative study for treatment.[4,5]

Background and Supporting Information

- An expiration chest x-ray can enhance the evaluation of equivocal plain x-ray. There is no data supporting the use of serial CT Chest to follow individuals with a known pneumothorax, pneumomediastinum, or hemothorax who are asymptomatic or have stable symptoms. With the exception of the indications above, advanced imaging of the chest is rarely indicated in the diagnosis or management of pneumothorax, or pneumomediastinum. Inspiratory/expiratory chest x-rays are helpful in defining whether a pneumothorax is present.

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Mediastinal Mass (CH-20)

Mediastinal Mass (CH-20.1)

- CT Chest with contrast (CPT® 71260) or CT Chest without contrast (CPT® 71250) or MRI Chest without and with contrast (CPT® 71552) or MRI Chest without contrast (CPT® 71550), to evaluate mediastinal abnormalities, may include, but not limited to mediastinal cyst including bronchogenic, thymic, pericardial or esophageal, seen on chest x-ray or other non-dedicated chest imaging.
- MRI Chest without and with contrast (CPT® 71552) or MRI Chest without contrast (CPT® 71550) can be considered for indeterminate mediastinal mass on CT Chest.
  - Lesions that remain indeterminate on MRI, if biopsy is not performed, surveillance imaging could be performed at 3-12 month intervals over 2 years or more with MRI Chest, depending upon level of clinical concern.
- FDG PET/CT offers limited additional value beyond that of conventional CT in the initial assessment of mediastinal mass(es), with the exception of primary mediastinal lymphoma. See **Non-Hodgkin Lymphomas (ONC-27)** or **Hodgkin Lymphoma (ONC-28)** in the Oncology Imaging Guidelines. A positive FDG PET/CT has little value for discrimination between benign and malignant lesions.
  - MRI Chest without and with contrast (CPT® 71552) or MRI Chest without contrast (CPT® 71550) can be considered for indeterminate mediastinal mass on FDG PET/CT
- CT Chest with contrast (CPT® 71260), or CT Chest without contrast (CPT® 71250) or MRI Chest without and with contrast (CPT® 71552), or MRI Chest without contrast (CPT® 71550) for subsequent evaluations if:
  - New signs or symptoms, or
  - Preoperative assessment.
- For Adenopathy; See **Lymphadenopathy (CH-2)**.
- For Goiter; See **Thyroid Nodule (NECK-8.1)** in the Neck Imaging Guidelines.
- For Myasthenia Gravis; See **Neuromuscular Junction Disorders (PN-6.1)** in the Peripheral Nerve Disorders Imaging Guidelines.

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Chest Trauma (CH-21)

Chest Trauma (CH-21.1)

- Chest X-ray initially.
  - CT Chest without contrast (CPT® 71250) or with contrast (CPT® 71260) for the following situations:[1]
    - Rib[1] or Sternal[2] Fracture:
      - With associated complications identified clinically or by other imaging, including pneumothorax, hemothorax, pulmonary contusion, atelectasis, flail chest, cardiovascular injury and/or injuries to solid or hollow abdominal organs.[1]
      - Uncomplicated, single fractures, multiple fractures, non-acute fractures, or occult rib fractures are NOT an indication for CT Chest unless malignancy is suspected as the etiology.[1]
    - Routine follow-up advanced imaging of rib or sternal fractures is not indicated.[1]
- CT Chest without contrast (CPT® 71250) or Tc-99m bone scan whole body (CPT® 78306) for suspected pathological rib fractures, with or without a history of trauma.[1]
- Clavicle Fractures:
  - CT Chest with contrast (CPT® 71260) or CT Chest without contrast (CPT® 71250) or MRI Chest without and with contrast (CPT® 71552) or MRI Chest without contrast (CPT® 71550) for proximal (medial) 1/3 fractures or sternoclavicular dislocations.[3]
  - X-ray is adequate for evaluation of middle and distal 1/3 fractures.[3]
- No advanced imaging of the abdomen or pelvis is indicated when there is chest trauma and no physical examination or laboratory evidence of abdominal and/or pelvic injury.

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Chest Wall Mass (CH-22)

Chest Wall Mass (CH-22.1)

- Chest x-ray is useful in the workup of a soft-tissue mass and is almost always indicated as the initial imaging study.[1]
  - Chest ultrasound (CPT® 76604) may be useful as an initial imaging study in the setting of a suspected superficial or subcutaneous lipoma. This modality may also be valuable in differentiating cystic from solid lesions and has also been used to assess the vascularity of lesions.[1]
  - Following a non-diagnostic Chest x-ray that does not show an obvious lipoma(s) or clearly benign entity (see Soft **Tissue Mass or Lesion of Bone (MS-10)** in the Musculoskeletal Imaging Guidelines), the following may be appropriate:[1,2]
    - MRI Chest without and with contrast (CPT® 71552) or
    - MRI Chest without contrast (CPT® 71550) or when MRI is contraindicated,
    - CT Chest with contrast (CPT®® 71260)

Background and Supporting Information

- Chest x-rays of chest wall masses can detect calcification, ossification, or bone destruction as well as location and size.[1,2]
- CT Chest without contrast is usually not beneficial in the evaluation of a soft tissue mass. With modern CT technology, calcification can usually be distinguished from vascular enhancement on contrast enhanced scan. In the evaluation of suspected tumors, contrast imaging is especially useful in distinguishing vascularized from potentially necrotic regions of the tumor.[1]

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Pectus Excavatum and Carinatum (CH-23)

Pectus Excavatum and Carinatum (CH-23.1)

- CT Chest without contrast (CPT® 71250) or MRI Chest without and with contrast (CPT® 71552) and 3-D reconstruction (CPT® 76377 or CPT® 76376) if:
  - Candidates for surgical correction.[1,2]
  - Cardiac or pulmonary dysfunction has been identified[1,2]
    - ECG and echocardiography if cardiac symptoms or evidence of cardiac function abnormalities.
    - Chest x-ray and PFT's if increasing shortness of breath.[1]

Background and Supporting Information

- Chest measurements derived from CT Chest, such as the Haller Index or the correction index, are helpful to the thoracic surgeon in pre-operative assessment of chest wall deformities to assess for the appropriateness of operative repair prior to the development of symptomatic pectus deformities.
- The Haller index is calculated using the width of the chest divided by the distance between the posterior surface of the sternum and the anterior surface of the spine. A Haller index score is normal at 2.5 to 2.7 and severe at 3.25 or greater. The correction index uses an equation of (b−a)/b×100, in which a is the minimum distance between the anterior spine and the posterior surface of the sternum, and b is the maximum distance between the anterior spine and most anterior internal rib. It yields a percentage that the chest would need to be corrected to achieve normal dimensions, with a normal level being 10% or less.[3]
- Some have suggested that a CXR can replace the CT Chest for Haller Index calculation with a strong correlation and high diagnostic accuracy.[4]
- Expert consensus from The Society of Thoracic Surgeons 2023, recommended that a comprehensive evaluation with spirometry, ECG, and echocardiography be done with any cardio-pulmonary complaint. The Haller index, correction index, pulmonary compression or failed previous repair, in and of itself, was not an indication for surgery. Corrective surgery indications for those with severe pectus excavatum included; progression of deformity, presence of cardio-pulmonary symptoms, mitral valve prolapse, arrhythmia, significant body image disturbances, abnormal PFTs, abnormal cardiac function test or the presence of cardiac compression on imaging, (echo or CT).[5]

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Pulmonary Arteriovenous Fistula (AVM) (CH-24)

Pulmonary AVM (CH-24.1)

- CT Chest with contrast (CPT® 71260), CT Chest without contrast (CPT® 71250), CTA Chest (preferred modality for pre-intervention planning) (CPT® 71275), or MRA Chest (CPT® 71555) for evaluation of:[1,2,3,5,6,7]
  - Suspected pulmonary AVM, including individuals with HHT (Hereditary Hemorrhagic Telangiectasia) or who have a first degree relative with HHT[4,5]
  - First degree relatives of an individual with a primary pulmonary AVM
  - Evaluation of individuals with paradoxical embolus/stroke and no evidence of patent foramen ovale on echocardiogram
  - Follow-up of treated AVM's at 6 months post embolization and then every 3-5 years[4]
  - Follow-up of untreated AVM's to be determined by treating physician but no more than annually. Usually the interval is 3-5 years due to the slow-growth nature of PAVM's[4]
  - Treated or untreated PAVM's with recurrent symptoms[4]

Background and Supporting Information

- Pulmonary AVMs are abnormal connections between pulmonary arteries and veins, usually found in the lower lobes, that can be either primary (such as in individuals with HHT) or acquired (such as trauma, bronchiectasis). They can be identified in up to 98% of chest x-rays by a peripheral, circumscribed, non-calcified lesion connected by blood vessels to the hilum of the lung. Treatment is often by surgery or embolization of the feeding artery using platinum coils or detachable balloons.

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Pulmonary Embolism (PE) (CH-25)

Pulmonary Embolism (CH-25.1)

- CT Chest with contrast with PE protocol (CPT® 71260) or CTA Chest (CPT® 71275) if at least one symptom, clinical/laboratory finding or risk factor from each of the lists below are present.
  - With any ONE of the 3:[6,7,8]
    - Dyspnea, new onset and otherwise unexplained;
    - Chest Pain, pleuritic;
    - Tachypnea
  - AND, with any ONE of the 3:[6,7,8]
    - Abnormal **D-dimer** test;
    - Wells Criteria score* higher than 4 points;
    - One Risk Factor** or Symptom** of new onset demonstrating high clinical probability of PE

RISK FACTORS**[6,7,8]	SYMPTOMS ATTRIBUTED TO PE**[6,7,8]
Immobilization at least 3 days or surgery in last 4 weeks or recent trauma	Signs or symptoms of DVT
Previous history of DVT or PE	Hemoptysis
Cancer actively treated in last 6 months or receiving palliative treatment	Right heart strain or failure
Recent history of a long airplane flight	Systolic BP <90
Use of estrogen-based contraceptives (birth control pills, the patch, and vaginal ring)/Oral estrogen[1]	Syncope
Advanced age (≥70)	Cough
Congestive heart failure	Heart Rate >100
Obesity (BMI ≥35)	Palpitations
Suspicion or diagnosis of COVID-19	

Well's Criteria for Clinical Probability of PE*[6]	
Clinical signs/symptoms of DVT (at minimum: leg swelling and pain with palpation of the deep veins)	3
PE is likely or equally likely diagnosis	3
Heart rate >100	1.5
Immobilization at least 3 days or surgery in last 4 weeks	1.5
Previous history of DVT or PE	1.5
Hemoptysis	1
Cancer actively treated in last 6 months or receiving palliative treatment	1
Calculate Probability: Low <2 Moderate 2 to 6 High >6	
Using the above criteria, only 3% of individuals with a low pretest probability had PE versus 63% of those with a high pretest probability.	

- Non-urgent cases which do not meet above 2-step criteria, should undergo prior to advanced imaging:[9]
  - Chest x-ray (to rule out other causes of acute chest pain).
  - Primary cardiac and pulmonary etiologies should be eliminated.
- Pregnancy is a risk factor for thrombo-embolic events in and of itself. Additional risk factors are not required. Pregnant individuals with suspected PE are suggested to proceed with:[11,12,13]
  - If signs/symptoms of DVT are present, Doppler studies of the lower extremities (CPT® 93925 bilateral study or CPT® 93926 unilateral study)
  - If no signs/symptoms of DVT, then chest x-ray should be done first
  - If chest x-ray is normal, then V/Q scan is preferred test
  - If chest x-ray is abnormal or after non-diagnostic V/Q scan or if V/Q scanning is not readily available, then CTA Chest (CPT® 71275) or CT Chest with contrast with PE protocol (CPT® 71260).
- Ventilation-perfusion scans, also called V/Q, scans (CPT® 78580-Pulmonary Perfusion Imaging; CPT® 78582-Pulmonary Ventilation (e.g., Aerosol or Gas) and Perfusion Imaging) or SPECT/CT (CPT® 78830):[15]
  - Is not a replacement for CTA Chest[9]
  - Can be considered in any of the following:
    - Suspected pulmonary embolism if there is a contraindication to CT or CTA Chest (ventilation-perfusion scans CPT® 78582)

  - Suspected pulmonary embolism when a chest x-ray is negative and CTA Chest is not diagnostic (CPT® 78580 or CPT® 78582)
  - Follow-up of an equivocal or positive recent ventilation-perfusion lung scan to evaluate for interval change (CPT® 78580)
  - Suspected Chronic thromboembolic disease or Chronic thromboembolic pulmonary hypertension*, usually after 3 months of effective anticoagulation[14]

- Follow-up Imaging in Stable or Asymptomatic Individuals with Known PE is not warranted[2,3,4,10]
- Follow-up imaging with CT Chest with contrast with PE protocol (CPT® 71260) or CTA Chest (CPT® 71275) for ANY of the following indications:
  - Recurrent or persistent signs or symptoms such as dyspnea, particularly if present after 3 months of anticoagulation, or
  - Elevated d-dimer which is persistent or recurrently elevated, or
  - Right heart strain or failure identified by EKG, ECHO or Heart catheterization.
- *Pulmonary Artery Hypertension (PAH) - See **Pulmonary Artery Hypertension (PAH) – Indications (CD-8.1)** in the Cardiac Imaging Guidelines

Background and Supporting Information

- Pulmonary embolism is found in approximately 10% of all those that present with suspicion of PE. Dyspnea, pleuritic chest pain and tachypnea occur with about 50% incidence with leg swelling or pain just over 50%.
- D-dimer level has a high sensitivity and low specificity for diagnosing PE.
  - A negative D-dimer in combination with low or moderate PE risk classification has a negative predictive value approaching 100%.
  - D-dimer can be falsely elevated with recent surgery, injury, malignancy, sepsis, diabetes, pregnancy, or other conditions where fibrin products are likely to be present.
- CT imaging has supplanted V/Q scanning since the latter is difficult to obtain quickly, does not provide a substantial cost savings, and does not diagnose other pulmonary pathology.
- The decision to terminate anticoagulation treatment after previous pulmonary embolism (PE) with absent or stable symptoms is based on clinical evaluation and risk factors.
- Repeat studies do not allow one the ability to distinguish new from residual clot, with luminal diameter and clot character poorly correlated to symptoms and ECHO findings.
- Two thirds of individuals with primary thromboembolism have residual pulmonary artery clot at 6 months and 50% remain at one year.

- Subsequent persistence or elevation of D-dimer is associated with increased risk of recurrent PE. ECHO and Right Heart Catheterization (RHC) can identify those with pulmonary hypertension. Yet, 1/2 of all have persistent or new pulmonary hypertension after primary thromboembolism and only half of this latter group has dyspnea at rest or exercise intolerance.
- Of note, pregnancy is accompanied by a progressive increase in D-dimer levels and as such, D-Dimer levels may not be helpful to rule-in or rule-out DVT/PE in pregnancy.[11,12]

Modality	Fetal radiation exposure in mGy
CXR	0.002-0.1
V/Q	0.32 – 0.74
CTPA	0.03 – 0.66

- Compared with V/Q scan, computed tomography pulmonary angiography (CTPA), is associated with a higher radiation dose to the mother: the calculated doses to breast and lung tissue have been estimated to range from 10 to 60 mGy and 39.5 mGy, respectively with CTPA as compared with 0.98 to 1.07 mGy and 5.7 to 13.5 mGy, respectively with V/Q scan.[12]

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Pulmonary Hypertension (CH-26)

Pulmonary Hypertension (CH-26.1)

- See the **Pulmonary Artery Hypertension (PAH) – Indications (CD-8.1)**

Subclavian Steal Syndrome (CH-27)

Subclavian Steal Syndrome – General (CH-27.0)
Subclavian Steal Syndrome (CH-27.1)

Subclavian Steal Syndrome (CH-27)

Subclavian Steal Syndrome – General (CH-27.0)

- Occurs from blood flowing up the contralateral vertebral artery to the basilar artery and retrograde down the ipsilateral vertebral artery (reversal of flow) to supply collateral circulation to the arm on the side and past the stenotic or occluded proximal subclavian or innominate artery to perfuse that arm.

Subclavian Steal Syndrome (CH-27.1)

- Initial evaluation should include clinical findings satisfying the symptom complex (See Background and Supporting Information) and initial imaging with Carotid duplex study (CPT® 93882).
  - Carotid duplex study (CPT® 93882) is the initial and definitive imaging study
    - Reversal of flow in the ipsilateral vertebral artery.
    - If the carotid duplex is not diagnostic for reversal of flow in the ipsilateral vertebral artery, then neurological symptoms should be evaluated according to the Head guidelines.
- MRA Neck and Chest (CPT® 70548 and CPT® 71555) or CTA Neck and Chest (CPT® 70498 and CPT® 71275) can be performed for diagnosis in individuals with symptoms of vertebrobasilar ischemia with either of the following:
  - Clinical exam and duplex study are positive or indeterminate
  - Preoperative studies if they will substitute for invasive angiography.
- MRA Upper extremity (CPT® 73225) or CTA Upper extremity (CPT® 73206) can be performed in symptomatic individuals if needed to exclude pathology distal to the subclavian artery and if they will substitute for invasive angiography.
- See **Stroke/TIA (HD-21.1) (for vertebrobasilar stroke)** in the Head Imaging Guidelines.
- Treatment options include ligation of the ipsilateral vertebral artery, aorta-subclavian artery bypass graft, or subclavian endarterectomy.

Background and Supporting Information

- While MRA does not expose the individual to radiation, CTA should be considered the test of choice for subclavian steal syndrome given its superior spatial and temporal resolution.
- Satisfying the symptom complex.
  - Physical examination findings suggestive of subclavian stenosis include a discrepancy of >15 mmHg in blood pressure readings taken in both upper extremities, delayed or decreased amplified pulses in the affected side, and a bruit in the supraclavicular area on the affected side.

- Symptoms include vertebral basilar artery insufficiency, vertigo, limb paresis, and paresthesias. Bilateral cortical visual disturbances, ataxia, syncope, and dysarthria occur less frequently.
- Symptoms of cerebral ischemia may be produced by exercise of the affected arm

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Superior Vena Cava (SVC) Syndrome (CH-28)

SVC Syndrome (CH-28.1)

- CT Chest with contrast (CPT® 71260) for the evaluation of suspected SVC syndrome based on the facial cyanosis and upper extremity swelling without anasarca.[1,2]
- MRV (CPT® 71555) or CTV (CPT® 71275) Chest when stenting of the SVC is being considered.[1,2]

Background and Supporting Information

- SVC syndrome is caused by acute or subacute, intrinsic or extrinsic obstruction of the SVC, most commonly from lung cancer (80-85%) and less often benign (fibrosis, mediastinitis, indwelling devices). Other symptoms include dyspnea, headache and dizziness.

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Elevated Hemidiaphragm (CH-30)

Elevated Hemidiaphragm (CH-30.1)

- CT Chest with contrast (CPT® 71260) and/or CT Neck with contrast (CPT® 70491) with new diaphragmatic paralysis after:[1,2]
  - Previous chest x-rays are available and reviewed to determine if the diaphragmatic elevation is a new finding, and/or
  - Fluoroscopic examination ("sniff test") to differentiate true paralysis from weakness.
- CT Abdomen with contrast (CPT® 74160) to rule out liver or abdominal process if CT Chest is negative.[1,2]
- Repeat advanced imaging studies in the absence of new signs or symptoms are not indicated.

Background and Supporting Information

- The right hemidiaphragm sits about 2 cm higher than the left.
- "Eventration" is thin membranous replacement of muscle, usually on the right, as the most common cause of elevation.
- Any injury to the phrenic nerve from neck to diaphragm can lead to paralysis.
- Common phrenic causes are traumatic or surgical injury or malignancy involving the mediastinum.
- Any loss of lung volume or increased abdominal pressure can lead to diaphragm elevation.

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Thoracic Outlet Syndrome (TOS) (CH-31)

Thoracic Outlet Syndrome (CH-31.1)

- Chest x-ray should be performed initially in all cases, after the onset of symptoms or if there has been a change in symptoms, since it can identify boney abnormalities or other causes of upper extremity pain.[1,2]
- Preferred imaging modality in individuals with suspected TOS varies depending upon suspected etiology. More than one type of imaging may be required for diagnosis in complex cases.[1,2]
- Neurogenic Thoracic Outlet Syndrome:
  - See **Brachial Plexus (PN-4.1)** in the Peripheral Nerve Disorders Imaging Guidelines
- Venous Thoracic Outlet Syndrome:
  - CT Chest with Contrast (CPT® 71260) (preferred study) or MRI Chest with contrast (CPT® 71551) or CTV Chest (CPT® 71275)
- Arterial Thoracic Outlet Syndrome:
  - CTA Chest (CPT® 71275) (preferred study) or MRA Chest (CPT® 71555) (preferred study) or CT Chest either without or with contrast (CPT® 71250 or CPT® 71260) or MRI Chest with contrast (CPT® 71551)
- CT Chest with contrast (CPT® 71260) or CT Neck with contrast (CPT® 70491) can be used in place of MRI for:
  - Suspected anomalous ribs or fractures, as bone anatomy is more easily definable with CT.
  - Postoperative individuals in whom there is a question regarding a remnant first rib.
  - Dialysis-dependent renal failure, claustrophobia, or implanted device incompatibility.
- See **Brachial Plexus (PN-4.1)** in the Peripheral Nerve Disorders Imaging Guidelines.

Background and Supporting Information

- TOS refers to compression of the subclavian vessels and/or brachial plexus at the thoracic outlet of the chest (the area bounded by the two scalene muscles and the first rib).
- There are 3 types, with neurogenic causes seen in 80%, venous causes (also called effort thrombosis) found in 15% and the remaining 5% being arterial in etiology.
- Since this is such a rare entity and diagnosis is difficult, specialist evaluation by a vascular surgeon or thoracic surgeon is helpful in determining the appropriate imaging pathway.

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Lung Transplantation (CH-32)

Pre-Transplant Imaging Studies (CH-32.1)
Post-Transplant Imaging Studies (CH-32.2)

Lung Transplantation (CH-32)

Pre-Transplant Imaging Studies (CH-32.1)

- Individuals on the waiting list or being considered for the lung transplant can undergo advanced imaging per that institution's protocol as long as the studies do not exceed the following:
  - CT Chest with and without contrast (CPT® 71270), CT Chest with contrast (CPT® 71260), or CT Chest without contrast (CPT® 71250)
  - ECHO
  - Imaging Stress Test (MPI, SE, MRI) or Heart Catheterization (Right and Left); Heart catheterization can also be done after a positive stress test.
  - CTA Chest and/or CTA Abdomen and Pelvis and/or CTA Aorta with bilateral lower extremity run-off is indicated without initial ABI's and/or arterial duplex for the following individuals:
    - Prior abdominal or lower extremity vascular intervention (any timeframe is acceptable)
    - Known peripheral artery disease (PAD) from prior imaging
    - Current symptoms of claudication, rest pain or gangrene
  - CTA Chest and/or CTA Abdomen and Pelvis and/or CTA Aorta with bilateral lower extremity run-off is indicated after initial ABI's and/or arterial duplex for the following individuals:
    - Initial ABI's and/or arterial duplex suggest the presence of PAD per one of the following:
      - ABI of <0.9
      - Presence of plaque
      - Presence of vascular calcification, stenosis or occlusion
      - Small vessel size on the duplex
  - CT Abdomen and Pelvis with or without contrast (CPT® 74177 or CPT® 74176) for determining extracorporeal membrane oxygenation (ECMO) candidacy
- Other studies that will be considered include V/Q scan, Six Minute Walk Test.
- See **Transplant (CD-1.6)** in the Cardiac Imaging Guidelines.

Post-Transplant Imaging Studies (CH-32.2)

- CT Chest with and without contrast (CPT® 71270), CT Chest with contrast (CPT® 71260), or CT Chest without contrast (CPT® 71250) is supported for:[2]
  - Initial post-transplant follow-up.
  - Suspected complication, either surgical, medical or infectious, (See Background and Supporting Information)
  - Worsening PFT's
  - New finding on other imaging, including chest x-ray
- See **Transplant (CD-1.6)** in the Cardiac Imaging Guidelines.

Background and Supporting Information

- Complications from lung transplantation are a major cause of morbidity and mortality.
- The three main categories of complications are surgical, medical and infectious.
  - Surgical complications include; anastomotic complications, bronchial dehiscence, bronchial stenosis, pneumothorax, hemothorax, hematoma, wound dehiscence and infection.
  - Medical complications include; primary graft dysfunction, pulmonary embolism and pulmonary infarction, Tracheobronchomalacia, posttransplant lymphoproliferative disease, primary disease recurrence, acute and chronic allograft rejection, including bronchiolitis obliterans and restrictive allograft syndrome.
  - Infectious complications include; hospital and community acquired nonmycobacterial pulmonary infections, mycobacterial infections, fungal infections, and viral infections, (CMV most common).

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Lung Cancer Screening (CH-33)

U.S. Preventive Services Task Force: Lung Cancer Screening (Commercial and Medicaid) (CH-33.1)
Incidental Pulmonary Nodules Detected on Low Dose CT Chest (LDCT) Images (CH-33.3)

Lung Cancer Screening (CH-33)

U.S. Preventive Services Task Force: Lung Cancer Screening (Commercial and Medicaid) (CH-33.1)

- Low-dose CT Chest (CPT® 71271) for lung cancer screening annually if all of the following criteria are met:

Screening Indications – Commercial and Medicaid	Imaging Study
• All criteria below must be met: o Individual has not received a low-dose CT lung screening in less than 12 months; and o Individual has NO health problems that substantially limit life expectancy or the ability or willingness to have curative lung surgery*; and o Individual is between 50 and 80 years of age; and o Individual has at least a 20 pack-year history of cigarette smoking; and o Currently smokes or quit within the past ≤15 years	Low-Dose CT Chest without contrast (CPT® 71271)

For incidental nodule(s) detected on previous imaging but do not qualify for LDCT, Lung Cancer Screening See **Solitary Pulmonary Nodule (SPN) (CH-16)**, for CPT® 71250 and CPT® 71260.

*This is based on a range of chest or other organ signs, symptoms or conditions which would question the member's ability to undergo surgical or non-surgical treatment if a lung cancer was discovered. For example, congestive heart failure, advanced cancer from another site or a member with COPD who uses oxygen when ambulating, would be examples of conditions that would "substantially limit life expectancy." Conversely, stable COPD and its symptoms, including cough, shortness of breath would not "substantially limit life expectancy."

Incidental Pulmonary Nodules Detected on Low Dose CT Chest (LDCT) Images (CH-33.3)

- Any Lung-RADS less than 1 year interval follow-up is coded as Low-Dose CT Chest (CPT® 71250) (Not CPT® 71271 which is ONLY the annual screen)
- For lung nodules, including incidental findings from studies other than screening LDCT, or if no longer quality for screening LDCT, See **Incidental Pulmonary Nodules Detected on CT Images (CH-16.2)**

Lung-RADS Primary Category/Category Descriptor*	Management
2: Benign appearance or behavior - very low likelihood of becoming a clinically active cancer due to size or lack of growth	Annual LDCT screening (CPT® 71271) in 12 months
3: Probably benign finding(s) - short term follow-up suggested; includes nodules with a low likelihood of becoming a clinically active cancer	6 month LDCT (CPT® 71250) and if unchanged on this CT it is coded as category 2 and returned to annual LDCT screening (CPT® 71271) in 12 months
4A: Suspicious - Findings for which additional diagnostic testing and/or tissue sampling is recommended	PET/CT (CPT® 78815) when there is a ≥8 mm solid component Follow-up with LDCT (CPT® 71250) in 3 months and if unchanged on this CT it is coded as category 2 and returned to annual LDCT screening (CPT® 71271) in 12 months
4B or 4X: Suspicious - Findings for which additional diagnostic testing and/or tissue sampling is recommended	CT Chest with or without contrast, PET/CT (CPT® 78815) and/or tissue sampling depending on the probability of malignancy and comorbidities. PET/CT (CPT® 78815) when there is a ≥8 mm solid component. If there is low suspicion of lung cancer, follow-up with LDCT (CPT® 71250) in 3 months with another LDCT (CPT® 71250) in 6 months and if unchanged on this CT return to annual LDCT screening (CPT® 71271) in 12 months

*The full description of the LUNG-RADS categories -https://www.acr.org/-/media/ACR/Files/RADS/Lung-RADS/LungRADSAssessmentCategoriesv1-1.pdf?la=en

References

1. US Preventive Services Task Force. Screening for Lung Cancer: US Preventive Services Task Force Recommendation Statement. JAMA. 2021;325(10):962–970. doi:10.1001/jama.2021.1117
2. CMS Decision Memo for Lung Cancer Screening with Low Dose Computed Tomography (LDCT) (210.14) Effective Date of this Version 2/5/2015.
3. Lung-RADS™ Version 1.1 Assessment Categories Release date: 2019. https://www.acr.org/-/media/ACR/Files/RADS/Lung-RADS/LungRADSAssessmentCategoriesv1-1.pdf

Policy History and Instructions for Use

Guideline

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V1.0.2024

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
02/01/2024	Annual evidence-based updates

Policy History and Instructions for Use