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Clinical Appropriateness Guidelines

Advanced Imaging

Appropriate Use Criteria: Imaging of the Chest

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Description and Application of the Guidelines

The Carelon Clinical Appropriateness Guidelines (hereinafter “the Carelon Clinical Appropriateness Guidelines” or the “Guidelines”) are designed to assist providers in making the most appropriate treatment decision for a specific clinical condition for an individual. The Guidelines establish objective and evidence-based criteria for medical necessity determinations, where possible, that can be used in support of the following:

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

The Carelon guideline development process complies with applicable accreditation and legal standards, including the requirement that the Guidelines be developed with involvement from appropriate providers with current clinical expertise relevant to the Guidelines under review and be based on the most up-to-date clinical principles and best practices. Resources reviewed include widely used treatment guidelines, randomized controlled trials or prospective cohort studies, and large systematic reviews or meta-analyses. Carelon reviews all of its Guidelines at least annually.

Carelon makes its Guidelines publicly available on its website. Copies of the Guidelines are also available upon oral or written request. Additional details, such as summaries of evidence, a list of the sources of evidence, and an explanation of the rationale that supports the adoption of the Guidelines, are included in each guideline document.

Although the Guidelines are publicly available, Carelon considers the Guidelines to be important, proprietary information of Carelon, which cannot be sold, assigned, leased, licensed, reproduced or distributed without the written consent of Carelon. Use of the Guidelines by any external AI entity without the express written permission of Carelon is prohibited.

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

The Guidelines do not address coverage, benefit or other plan specific issues. Applicable federal and state coverage mandates take precedence over these clinical guidelines, and in the case of reviews for Medicare Advantage Plans, the Guidelines are only applied where there are not fully established CMS criteria. If requested by a health plan, Carelon will review requests based on health plan medical policy/guidelines in lieu of the Carelon Guidelines. Pharmaceuticals, radiotracers, or medical devices used in any of the diagnostic or therapeutic interventions listed in the Guidelines must be FDA approved or conditionally approved for the intended use. However, use of an FDA-approved or conditionally approved product does not constitute medical necessity or guarantee reimbursement by the respective health plan.

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

General Clinical Guideline

Clinical Appropriateness Framework

Critical to any finding of clinical appropriateness under the guidelines for a specific diagnostic or therapeutic intervention are the following elements:

- Prior to any intervention, it is essential that the clinician confirm the diagnosis or establish its pretest likelihood based on a complete evaluation of the patient. This includes a history and physical examination and, where applicable, a review of relevant laboratory studies, diagnostic testing, and response to prior therapeutic intervention.
- The anticipated benefit of the recommended intervention is likely to outweigh any potential harms, including from delay or decreased access to services that may result (net benefit).
- Widely used treatment guidelines and/or current clinical literature and/or standards of medical practice should support that the recommended intervention offers the greatest net benefit among competing alternatives.
- There exists a reasonable likelihood that the intervention will change management and/or lead to an improved outcome for the patient.

Providers may be required to submit clinical documentation in support of a request for services. Such documentation must a) accurately reflect the clinical situation at the time of the requested service, and b) sufficiently document the ordering provider's clinical intent.

If these elements are not established with respect to a given request, the determination of appropriateness will most likely require a peer-to-peer conversation to understand the individual and unique facts that would justify a finding of clinical appropriateness. During the peer-to-peer conversation, factors such as patient acuity and setting of service may also be taken into account to the extent permitted by law.

Simultaneous Ordering of Multiple Diagnostic or Therapeutic Interventions

Requests for multiple diagnostic or therapeutic interventions at the same time will often require a peer-to-peer conversation to understand the individual circumstances that support the medical necessity of performing all interventions simultaneously. This is based on the fact that appropriateness of additional intervention is often dependent on the outcome of the initial intervention.

Additionally, either of the following may apply:

- Current literature and/or standards of medical practice support that one of the requested diagnostic or therapeutic interventions is more appropriate in the clinical situation presented; or
- One of the diagnostic or therapeutic interventions requested is more likely to improve patient outcomes based on current literature and/or standards of medical practice.

Repeat Diagnostic Intervention

In general, repeated testing of the same anatomic location for the same indication should be limited to evaluation following an intervention, or when there is a change in clinical status such that additional testing is required to determine next steps in management. At times, it may be necessary to repeat a test using different techniques or protocols to clarify a finding or result of the original study.

Repeated testing for the same indication using the same or similar technology may be subject to additional review or require peer-to-peer conversation in the following scenarios:

- Repeated diagnostic testing at the same facility due to technical issues

- Repeated diagnostic testing requested at a different facility due to provider preference or quality concerns
- Repeated diagnostic testing of the same anatomic area based on persistent symptoms with no clinical change, treatment, or intervention since the previous study
- Repeated diagnostic testing of the same anatomic area by different providers for the same member over a short period of time

Repeat Therapeutic Intervention

In general, repeated therapeutic intervention in the same anatomic area is considered appropriate when the prior intervention proved effective or beneficial and the expected duration of relief has lapsed. A repeat intervention requested prior to the expected duration of relief is not appropriate unless it can be confirmed that the prior intervention was never administered. Requests for on-going services may depend on completion of previously authorized services in situations where a patient's response to authorized services is relevant to a determination of clinical appropriateness.

Imaging of the Chest

General Information/Overview

Scope

These guidelines address advanced imaging of the chest in both adult and pediatric populations. For interpretation of the Guidelines, and where not otherwise noted, “adult” refers to persons age 19 and older, and “pediatric” refers to persons age 18 and younger. Where separate indications exist, they are specified as **Adult** or **Pediatric**. Where not specified, indications and prerequisite information apply to persons of all ages.

See the Coding section for a list of modalities included in these guidelines.

Technology Considerations

Anatomic coverage for thoracic imaging includes the area between the lung apices and the costophrenic sulci—specifically, the lung parenchyma, pleura, mediastinum, and musculoskeletal structures of the thorax. Chest imaging studies are not appropriate for cardiac and coronary artery imaging. For imaging of the heart, see the Carelon guidelines for the specific CPT code being requested. Vascular imaging of the thorax is addressed in the Vascular Imaging guidelines.

In the majority of clinical situations, chest radiographs should have been performed within 30 days of the imaging request. When radiographs are not sufficient to guide management, **computed tomography (CT)** is most often the study of choice for imaging the thorax; it is widely available and provides excellent resolution of soft tissue and the bony thorax.[1] **High-resolution CT (HRCT)** uses thin-section acquisition and high spatial frequency reconstruction to optimize visualization of the fine lung parenchyma and airways.[2] It is primarily indicated for characterization of diffuse lung or small airways disease. HRCT is usually performed without contrast and using dynamic (inspiratory and expiratory) breathing, and often produces a lower radiation dose than a standard chest CT. **Low-dose chest CT (LDCT)** also employs a dose reduction strategy and is primarily used in lung cancer screening. Disadvantages of CT include exposure to ionizing radiation and risks associated with infusion of iodinated contrast media, including allergic reactions or renal compromise.

Magnetic resonance imaging (MRI) is generally less useful for thoracic imaging; speed of image acquisition is slower and motion artifact in this region may interfere with image quality. However, it does provide superior resolution of the lung apices and chest wall (including breast). It may also be used for problem solving following CT, or for situations in which CT is contraindicated. **Breast MRI** requires a dedicated breast coil. For breast imaging related to cancer screening or diagnosis, see Oncologic Imaging guidelines. The presence of implantable devices such as pacemakers or defibrillators, a potential need for sedation in pediatric patients, and claustrophobia are the main limitations of MRI. Infusion of gadolinium may also confer an unacceptable risk in persons with advanced renal disease.

Definitions

Phases of the care continuum are broadly defined as follows:

- **Screening –** testing in the absence of signs or symptoms of disease
- **Diagnosis –** testing based on a reasonable suspicion of a particular condition or disorder, usually due to the presence of signs or symptoms
- **Management –** testing to direct therapy of an established condition, which may include preoperative or postoperative imaging, or imaging performed to evaluate the response to nonsurgical intervention
- **Surveillance –** periodic assessment following completion of therapy, or for monitoring known disease that is stable or asymptomatic

Clinical Indications

The following section includes indications for which advanced imaging of the chest is considered medically necessary, along with prerequisite information and supporting evidence where available. Indications, diagnoses, or imaging modalities not specifically addressed are considered not medically necessary.

It is recognized that imaging often detects abnormalities unrelated to the condition being evaluated. Such findings must be considered within the context of the clinical situation when determining whether additional imaging is required.

Congenital and Developmental Conditions

Congenital thoracic anomalies

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT chest

Congenital pulmonary airway malformation (Pediatric only)

Advanced imaging is considered medically necessary for diagnosis and management of **EITHER** of the following conditions:

- Congenital lobar emphysema
- Congenital cystic adenomatoid malformation

IMAGING STUDY

- CT chest

Chest wall deformities including pectus excavatum (Pediatric only)

Advanced imaging is considered medically necessary in **EITHER** of the following scenarios:

- Preoperative evaluation
- Postoperative evaluation for complications or recurrence

IMAGING STUDY

- CT or MRI chest

Pulmonary sequestration

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT chest

Infectious and Inflammatory Conditions

Pneumonia

Advanced imaging is considered medically necessary in **ANY** of the following scenarios:

- Immunosuppressed patients with signs or symptoms of pneumonia

- Evaluation of known or suspected complications of pneumonia following nondiagnostic radiographs
- Recurrent pneumonia in the same location within 6 months
- Follow-up of pneumonia at 6-12 weeks when **EITHER**
    - Radiographs show persistent abnormality
    - Pneumonia originally detected only by CT

IMAGING STUDY

- CT chest

Rationale

Clinical signs and symptoms of pneumonia resolve faster than findings on radiography, but may take up to 3 months to resolve. It is common for pneumonia to persist on radiographs after clinical resolution, with the rate of radiographic clearance estimates at 35% within 3 weeks and 84% within 12 weeks.[3, 4] Patients over age 50 are 2 to 4 times more likely to have delayed radiographic resolution of pneumonia. Therefore, it is important to wait at least 4 weeks after clinical resolution before performing advanced imaging, to exclude non-infectious causes of persistent airspace disease. The American College of Radiology Appropriate Use Criteria states “Performing chest radiography 6 to 12 weeks after suspected pneumonia is usually appropriate to confirm resolution and exclude underlying malignancy,” noting that imaging modality used for follow-up to ensure resolution should ideally be the same in which the suspected PNA was first detected.[5]

Recurrent pneumonia is defined as at least 2 episodes of pneumonia in 1 year or 3 lifetime episodes. Recurrent pneumonia in the same area is likely due to underlying structural disease—primarily right middle lobe syndrome (airway disease of uncertain pathophysiology) (61%) and congenital lung malformations (21%); diagnostic imaging involving bronchoscopy with or without CT is indicated.[6] Recurrent pneumonia in different areas is more likely due to systemic illness (60% related to cystic fibrosis, primary ciliary dyskinesia, or severe gastroesophageal reflux disease) and a more extensive clinical/lab workup is usually performed prior to diagnostic imaging, which is reserved for situations where lab testing (such as immune status assessment, sweat chloride test for cystic fibrosis, tuberculin skin test, pulmonary function tests, and echocardiogram) is inconclusive.[6]

Other infectious or inflammatory conditions

Advanced imaging is considered medically necessary for diagnosis and management of **ANY** of the following conditions:

- Lung abscess
- Sternal wound infection or dehiscence
- Mediastinitis
- Infectious and inflammatory conditions not listed elsewhere in this guideline

IMAGING STUDY

- CT chest

Trauma

Blunt or penetrating trauma to the thorax

Also see Vascular Imaging guidelines.

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT chest

Tumor or Neoplasm

The following section addresses conditions which may be indicative of underlying neoplasm, as well as benign tumors of the thorax. For cancer screening guidelines and management of documented malignancy, please refer to the Oncologic Imaging guidelines.

Chest wall mass

Advanced imaging is considered medically necessary in **ANY** of the following scenarios**:**

- Palpable chest wall mass with nondiagnostic radiograph or ultrasound
- Chest wall mass identified on prior imaging when further information is needed to determine need for biopsy or surgery
- Preoperative planning following biopsy

Note: For breast masses (including gynecomastia), see Oncologic Imaging guidelines for breast cancer.

IMAGING STUDY

- CT or MRI chest

Pulmonary nodule or mass

For biopsy planning, see Perioperative or periprocedural evaluation, not otherwise specified.

Advanced imaging is considered medically necessary in the following scenarios**:**

Pulmonary nodule(s) detected on lung cancer screening CT

- Follow up according to the most current version of Lung-RADS

Calcified nodules detected on a diagnostic chest CT

- Follow up of calcified nodules other than those with benign calcification patterns* is at the discretion of the ordering provider

**Benign calcification patterns include granulomas and popcorn calcifications, for which routine follow up is not medically necessary*

Noncalcified nodules detected on a diagnostic chest CT*

- Younger than age 35
    - Nodules ≥ 1 cm or with suspicious morphology**
- Age 35 or older
    - Solid nodules: see **Table 1**
    - Subsolid nodules: see **Table 2**

Nodules identified on incomplete thoracic CT*

- Less than 6 mm: see table 1 or 2 “less than 6 mm”
- 6 mm to 8 mm: 3 to 12 month follow up with complete chest CT
- Greater than 8 mm or suspicious morphology**: complete chest CT

**Carelon Guidelines for pulmonary nodules follow the 2017 recommendations of the Fleischner Society.[12] These recommendations apply to patients age 35 or older who are not immunocompromised, do not have cancer, and are not enrolled in a lung cancer screening program.*

***Suspicious morphology includes nodules with irregular or spiculated margins*

IMAGING STUDY

- CT chest (all indications)
- FDG-PET, FDG-PET/CT when **BOTH** of the following are criteria are met:
    - Nodule is well-demarcated, solid or part solid, and lacks a benign calcification pattern.
    - Size is greater than 8 mm in greatest diameter

Table 1. Follow-up recommendations for solid noncalcified pulmonary nodules

Solid nodule size	Risk	Solitary	Multiple
Less than 6 mm	Low	No follow up	No follow up
Less than 6 mm	**High***	Optional follow-up exam at 12 months	Optional follow-up exam at 12 months
6 mm to 8 mm	N/A	1. 6 to 12 months 2. 18 to 24 months	1. 3 to 6 months 2. 18 to 24 months
More than 8 mm	N/A	1. 3 months 2. 6 months 3. 18 to 24 months unless FDG-PET/CT or tissue sampling provided a definitive diagnosis	1. 3 to 6 months 2. 18 to 24 months
Any size when prior imaging has documented 24 months of stability	N/A	No follow up	No follow up

***High risk** includes the following:

- Smoking history (any)
- First-degree relative with lung cancer
- Significant exposure to asbestos, uranium and/or radon, typically through high-risk profession

Table 2. Follow-up recommendations for subsolid noncalcified pulmonary nodules

Subsolid nodule size	Solitary ground glass	Solitary part solid	Multiple subsolid
Less than 6 mm	No routine follow up	No routine follow up	1. 3 to 6 months 2. 24 months 3. 48 months
Greater than or equal to 6 mm	1. 6 to 12 months 2. Every 2 years thereafter for a total of 5 years	1. 3 to 6 months 2. Every year for 5 years	1. 3 to 6 months 2. Follow up based on most suspicious nodule (part solid or ground glass)

Abbreviation: Lung-RADS™, American College of Radiology Lung CT Screening Reporting and Data System. Adapted from MacMahon H, Naidich DP, Goo JM, et al. *Radiology*. 2017; 284(1):228-243.[7]

Rationale

Carelon Guidelines for pulmonary nodules follow the 2017 recommendations of the Fleischner Society, a high-quality evidence-based guideline directly applicable to American patients.[7] These recommendations apply to asymptomatic patients age 35 or older who are not immunocompromised, who do not have cancer, and who are not enrolled in a lung cancer screening program.

Fleischner endorses the use of Lung-RADS guidelines to determine follow up when pulmonary nodules are detected as part of a lung cancer screening program. Carelon Guidelines incorporate the use of Lung-RADS for follow up of pulmonary nodules detected on lung cancer screening CT.

SOLID PULMONARY NODULE IN ASYMPTOMATIC PATIENTS UNDER AGE 35

Primary lung cancer is rare in persons under age 35 (1% of all cases), and the risks from radiation exposure are greater. In young patients, infectious/inflammatory causes are more likely than cancer, and use of serial CT should be minimized. Exceptions may include nodules greater than 1 cm in size or with suspicious morphology. In such cases, follow-up imaging is at the ordering provider's discretion; a single 12-month follow-up CT may be considered to confirm stability.

Most nodules smaller than 1 cm will not be visible on chest radiographs; however, for larger solid nodules that are clearly visualized and are considered low risk, follow up with radiography rather than CT may be appropriate for lower radiation exposure.

NODULE SMALLER THAN 6 mm SEEN ON PREVIOUS IMAGING

Nodules of this size do not require routine follow up in low-risk patients. Since the average risk of cancer in solid nodules smaller than 6 mm in high-risk patients is less than 1%, and the relative risk of cancer in a nonsmoker is much less (0.15) than in a smoker, the risk of malignancy in low-risk patients is very low.

For high-risk patients, some nodules of this size with suspicious morphology, upper lobe location, or both may warrant follow up at 12 months. These features may increase cancer risk to 1%-5%.

NODULE LARGER THAN 8 mm

High-risk patients should usually proceed directly to FDG-PET/CT or biopsy. CT surveillance is recommended for nodules greater than 8 mm when:

- Nodules have a low (less than 5%) risk of malignancy (as a rule of thumb, patients older than age 70, patients 50-70 years of age with no high-risk features, and patients younger than age 50 with only one high-risk feature)
- Nodules with intermediate risk (5%-65%) especially when FDG-PET/CT is negative or equivocal, and the lesion is too small to biopsy
- Patients are at high surgical risk

Lymphadenopathy

See Oncologic Imaging for patients with documented malignancy. Thoracic lymphadenopathy is defined as at least one lymph node greater than 1 cm in short axis diameter.

Advanced imaging is considered medically necessary in **ANY** of the following scenarios:

- Palpable thoracic or supraclavicular lymph nodes, when not amenable to percutaneous biopsy
- Associated clinical or lab findings suggestive of malignancy
- Evaluation of mediastinal or hilar lymph nodes in **ANY** of the following scenarios:
    - Abnormal or enlarged lymph nodes suggested by other imaging
    - Single follow up at least 3 months after discovery of nodes with a short axis diameter greater than 1.4 cm without suspicious features
    - Lymphadenopathy with suspicious features:
        - Necrosis
        - Loss of fatty hilar morphology
        - Heterogenous or hypervascular enhancement
        - Irregular borders
        - Interval enlargement
        - Multiple enlarged nodes on the same side of the mediastinum (ipsilateral/unilateral)

IMAGING STUDY

- CT chest

- FDG-PET/CT in patients with multiple abnormal (by size or feature) lymph nodes when CT is insufficient to determine the optimal node to biopsy

Rationale

Enlarged or borderline enlarged mediastinal lymph nodes are not infrequently seen on chest CT examinations performed for other indications. While the pretest probability of nodal malignancy in patients without a known primary is low, lymphoproliferative disease and occult malignancy are important differential considerations. The American College of Radiology (ACR) has published a consensus based white paper on the management of incidental mediastinal lymph nodes to address appropriate use of surveillance imaging for incidental mediastinal lymphadenopathy.[8] If there is no satisfactory clinical explanation for the nodes, they recommend 3-6 month follow up (commonly done with chest CT) for lymph nodes greater than 14 mm in short axis diameter. Nodes that are stable or that decreased in size during the interval do not require further follow up. Enlarging nodes may require biopsy and FDG-PET/CT can be used to direct biopsy when multiple options exist. More intensive management including biopsy, FDG-PET/CT, or follow up may be beneficial in patients with additional signs and symptoms of malignancy or in lymph nodes with features that confer a higher post test likelihood of malignant disease. Enlarged palpable lymph nodes of the chest wall can usually be assessed with ultrasound and biopsy as needed.

Other thoracic mass lesions

Advanced imaging is considered medically necessary for diagnosis and management of **ANY** of the following findings or conditions:

- Mediastinal mass (see separate indication for lymphadenopathy)
- Pancoast tumor
- Pleural mass
- Thymoma
- Benign tumors (pediatric only)

IMAGING STUDY

ADULT

- CT chest
- MRI chest for evaluation of mediastinal and hilar masses when CT is insufficient for problem solving or for evaluation of chest wall extension in Pancoast tumor

PEDIATRIC

- CT or MRI chest

Parenchymal Lung Disease – not otherwise specified

Bronchiectasis

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT chest
- Consider chest HRCT technique

Bronchiolitis obliterans

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT chest

Interstitial lung disease (ILD), non-occupational including idiopathic pulmonary fibrosis (IPF)

In a patient with persistent cough or undifferentiated dyspnea but without other signs or symptoms, please see the Chronic cough or Dyspnea indications, respectively.

Advanced imaging is considered medically necessary in **ANY** of the following scenarios:

Diagnosis when **ANY** of the following are present:

- Bilateral inspiratory crackles on physical exam
- Clubbing of the fingers
- Other diagnostic tests (chest radiography, pulmonary function tests) suggestive of ILD/IPF
- Additional risk factors (**ANY** of the following):
    - Connective tissue disease
    - Predisposing drugs
    - Known telomerase mutation
    - Familial ILD/IPF with at least two affected first-degree relatives

Management when **ANY** of the following are present:

- Worsening pulmonary signs or symptoms
- Progression of disease on other diagnostic tests (chest radiography, pulmonary function)
- To direct biopsy when initial imaging does not show a pattern consistent with definite usual interstitial pneumonitis (UIP)

IMAGING STUDY

- CT chest (high resolution (HRCT) technique preferred)

Rationale

Interstitial lung disease (ILD) is an umbrella term for a variety of diseases that cause fibrosis of the pulmonary interstitium. For patients with suggestive symptoms or lab abnormalities, such as a restrictive pattern and reduced diffusing capacity on pulmonary function testing, high resolution chest CT is the best noninvasive test to establish the diagnosis and is recommended by both evidence and consensus based guidelines.[9,10,11,12] CT can make a confident diagnosis of usual interstitial pneumonitis (UIP), an irreversible form of pulmonary fibrosis with high morbidity and mortality in many cases avoiding biopsy. CT can also suggest etiologies for the disease. Repeat CT may be indicated in patients with known pulmonary fibrosis and worsening symptoms or to direct biopsy in patients with probable UIP.

Occupational lung disease (Adult only)

Advanced imaging is considered medically necessary for diagnosis and management of **ANY** of the following conditions:

- Asbestosis
- Berylliosis
- Silicosis
- Coal worker’s pneumoconiosis
- Progressive massive fibrosis
- Hard metal pneumoconiosis
- Talcosis
- Caplan’s syndrome in patients with rheumatoid arthritis

IMAGING STUDY

- CT chest

Rationale

Interstitial lung disease (ILD) can occur from a variety of occupational exposures, the most common being asbestosis and silicosis. CT is more accurate than radiography[13] for the diagnosis and management of asbestosis related lung disease and is recommended by guidelines.[14] Guidelines recommend chest radiography as the initial screening modality for occupational lung disease, but note that CT may be appropriate in some screening scenarios. In patients with occupational exposure and clinically suspected interstitial lung disease, CT chest and chest radiography are often complementary modalities. Chest HRCT, in some cases, may provide a definitive diagnosis and obviate the need for surgical biopsy.[14]

Pulmonary embolism

See Vascular Imaging guidelines.

Sarcoidosis

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT chest

Pleural Conditions

Bronchopleural fistula (Adult only)

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT chest

Pleural fluid collection

Advanced imaging is considered medically necessary for diagnosis and management of **ANY** of the following conditions:

- Pleural effusion
- Hemothorax
- Empyema
- Chylothorax

IMAGING STUDY

- CT chest

Pneumothorax, unexplained or recurrent

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT chest

Chest Wall and Diaphragmatic Conditions

Breast implant rupture

See breast cancer section of the Oncologic Imaging guidelines for suspected breast implant associated anaplastic large cell lymphoma (BIA-ALCL)

Advanced imaging is considered medically necessary in the following scenario:

- Detection of rupture in symptomatic patients with silicone breast implants

IMAGING STUDY

- MRI breast

Rationale

MRI is considered the gold standard in the evaluation of patients with suspected rupture of silicone implants and is recommended for the evaluation of symptomatic patients.[15] MRI has significantly greater diagnostic accuracy compared to ultrasound and is especially sensitive for the diagnosis of intracapsular rupture.[16,17]

MRI is rated as “usually appropriate," as is breast ultrasound, by evidence-based guidelines for the evaluation of asymptomatic silicone breast implants. The authors state, “The FDA updated guidance recommends that for asymptomatic patients, the first US or MRI should be performed at 5 to 6 years postoperatively, then every 2 to 3 years thereafter.” They further state, “There is currently no consensus on whether ruptured implants require surgery in asymptomatic patients, and the benefits of screening for implant rupture are controversial. Some authors have advocated a patient-centered approach with shared decision making between the patient and surgeon rather than generalized recommendations for all patients with silicone implants. Most studies focused on symptomatic women, in whom the expected prevalence of rupture would be higher than among asymptomatic women. In addition, numerous studies evaluating the rupture rate of more modern implants have shown this rate to be low. Studies of asymptomatic women have reported sensitivities and specificities of 64% and 77%, accuracy of 94%, sensitivity of 89%, specificity of 97%, accuracy of 92%, positive predictive value (PPV) of 99%, and negative predictive value (NPV) of 79%.”[20] MRI is also not necessary and is not recommended for the evaluation of saline breast implants.[20]

Diaphragmatic hernia

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT chest

Pectoralis muscle tear

Advanced imaging is considered medically necessary for preoperative planning in patients with suspected full thickness tear of the tendon or myotendinous junction.

IMAGING STUDY

- MRI chest

Thoracic outlet syndrome

Also see Vascular Imaging guidelines.

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT or MRI chest for neurogenic thoracic outlet syndrome
- CTA or MRA chest for vascular thoracic outlet syndromes

Perioperative or periprocedural evaluation, not otherwise specified

Lung volume reduction procedures

Advanced imaging is considered medically necessary for evaluation prior to planned lung volume reduction procedures

IMAGING STUDY

- CT chest

Navigational bronchoscopy planning for pulmonary mass or nodule

Advanced imaging is considered medically necessary for use in navigational bronchoscopy when being done for **EITHER** of the following reasons:

- Planning of a biopsy to be done using navigational bronchoscopy, when neither percutaneous biopsy nor traditional bronchoscopy can be performed.
- Placement of fiducial markers for radiation therapy or localization for surgical resection of a pulmonary mass

IMAGING STUDY

- CT chest

Transplant-related imaging

Advanced imaging is considered medically necessary in the following scenarios:

- Single evaluation prior to lung, liver, kidney, or hematopoietic stem cell transplantation
- Evaluation for complications following lung, liver, kidney, or hematopoietic stem cell transplantation

Note: For patients on the transplant list but who have not undergone transplantation and who have a change in clinical condition, please refer to the applicable sign- or symptom-based indication.

IMAGING STUDY

- CT chest

Signs and Symptoms

Cough (chronic or persistent)

Advanced imaging is considered medically necessary for evaluation of cough present for at least 8 weeks in the following scenarios:

- Cough not responding to appropriate treatment and unexplained by clinical evaluation, chest radiography, and pulmonary function testing or spirometry
- Cough in immunosuppressed individuals

Note: Chronic cough, in the context of other signs and symptoms, should be evaluated based on the most likely disease or diseases responsible (see indication for bronchiectasis or interstitial lung disease).

IMAGING STUDY

- CT chest

Rationale

CHRONIC COUGH IN ADULTS

Advanced imaging cannot diagnose the most common causes of chronic cough and the most common causes of cough should first be evaluated prior to advanced imaging.[18,19]

Likely causes of chronic cough without conclusive chest X-ray and lung function include upper airway cough syndrome, cough-variant asthma, gastroesophageal reflux,[18] primary and secondary smoking, environmental and occupational irritants, and ACE inhibitors.[19]

Stepwise workup of chronic cough without conclusive chest X-ray is recommended. Before performing HRCT or bronchoscopy, consider asthma, COPD, upper airway cough syndrome, and gastroesophageal reflux.[18]

CHRONIC COUGH IN PEDIATRIC PATIENTS

The majority of pediatric patients with chronic wet cough will respond to antibiotic treatment with a number needed to treat of 3. [20]

Dyspnea

Advanced imaging is considered medically necessary when **BOTH** of the following apply:

- Dyspnea is not explained by cardiac evaluation
- Dyspnea is not explained by chest radiography

IMAGING STUDY

- CT chest

Rationale

The differential diagnosis for dyspnea is broad, but most etiologies are cardiovascular or pulmonary. When cardiac evaluation, generally including clinical examination and transthoracic echocardiography, has not revealed a cause for the dyspnea, pulmonary causes including asthma, bronchitis, chronic obstructive pulmonary disease, and interstitial lung disease are often considered in the differential diagnosis. Chest radiography is often able to guide further evaluation and can in some cases provide a specific diagnosis. When chest radiography is normal despite persistent clinical symptoms, or when chest radiography reveals an abnormality which requires further characterization, CT is a useful study. The American College of Radiology Appropriateness Criteria note that the protocol can be tailored to include adjuncts such as expiratory images or prone images, so knowledge of the clinically suspected diagnosis is helpful for planning of CT imaging.[21]

Fever of unknown origin

Advanced imaging is considered medically necessary in **EITHER** of the following scenarios:

- Fever of duration greater than 3 weeks, which is unexplained following a standard diagnostic evaluation to identify the source
- Unexplained fever in immunocompromised patient

IMAGING STUDY

- CT chest

Hemoptysis

Advanced imaging is considered medically necessary for evaluation following nondiagnostic chest radiographs.

IMAGING STUDY

- CT chest
- MRI chest for suspected vascular anomaly in pediatric patients

Note: Bronchoscopy is a complementary modality to assess hemoptysis.

Rationale

Hemoptysis is defined as the expectoration of blood that originates from the tracheobronchial tree or pulmonary parenchyma and is usually categorized based on the volume and rate of bleeding with massive hemoptysis defined as hemoptysis that can threaten life. This is inconsistently defined but has been suggested to be as low as >100 mL of expectorated blood in 24 hours.[22] The most common causes of hemoptysis are bronchiectasis, tuberculosis, pneumonia, and cancer. Radiographs can identify the cause of hemoptysis between 35% and 50% of the time.[23] Guidelines state that chest radiographs continue to be a reasonable imaging choice in patients with nonmassive hemoptysis[32], and recommend radiography as the initial imaging modality in patients with non-massive hemoptysis. [24] CT is indicated in patients with a negative radiograph and persistent unexplained hemoptysis as it is significantly more sensitive (overall 64%-100%) than any other imaging modality.[23]

Hoarseness, dysphonia, and vocal cord weakness/paralysis – primary voice complaint

Also see Head and Neck Imaging guidelines.

Advanced imaging is considered medically necessary for initial evaluation in **EITHER** of the following scenarios:

- Following laryngoscopy, when findings suggest recurrent laryngeal nerve dysfunction or identify a suspicious lesion
- Evaluation of symptoms persisting longer than 1 month which are unexplained by laryngoscopy

IMAGING STUDY

- CT chest

Rationale

Most hoarseness is self-limited or caused by a pathology that can be identified by laryngoscopy.

Clinicians should visualize the patient's larynx, or refer the patient to a clinician who can visualize the larynx, when hoarseness fails to resolve by a maximum of 3 months after onset, or irrespective of duration if a serious underlying cause is suspected.

Benign lesions of the vocal cords such as cysts, nodules, polyps, and gastroesophageal reflux are frequently diagnosed and managed with laryngoscopy alone. The symptoms of viral laryngitis typically resolve spontaneously after 1-3 weeks; thus initial observation is reasonable. However, guidelines recommend direct visualization via laryngoscopy when dysphonia persists beyond this time frame. [38]

Hoarseness is common in young children (15%-24%) and usually due to benign lesions seen on laryngoscopy such as vocal cord nodules, which account for approximately 77% of cases.[26]

The American Academy of Otolaryngology-Head and Neck Surgery recommends not obtaining CT or MRI in patients with a primary complaint of hoarseness prior to examining the larynx.[26]

Horner's syndrome

Also see Brain Imaging and Head and Neck Imaging guidelines.

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT or MRI chest

Paraneoplastic syndrome

Also see Oncologic Imaging guidelines.

Advanced imaging is considered medically necessary for diagnosis and management.

IMAGING STUDY

- CT chest

Rationale

Paraneoplastic syndromes occur when a tumor secretes bioactive substances that result in signs and/or symptoms distant from its site of origin and unrelated to organ invasion.[27] They occur in about 8% of all cancers and are caused by a variety of neoplasms, especially neuroendocrine tumors like small cell lung cancer. Examples of paraneoplastic syndromes include, but are not limited to, hypercalcemia, syndrome of inappropriate diuretic hormone secretion (SIADH), opsoclonus-myoclonus, stiff person (anti-GAD antibodies), myasthenia gravis (Lambert-Eaton), and encephalitis (NMDA receptor antibody).[27]

Advanced imaging (CT or FDG-PET/CT) is used to identify the primary neoplasm in patients who present with paraneoplastic syndromes of unknown etiology. Chest CT has been shown to have a sensitivity of 89% and a specificity of 93% for the detection of the most common primary associated with paraneoplastic syndrome: lung cancer.[27]

Weight loss

Also see Abdomen and Pelvis Imaging guidelines.

Advanced imaging is considered medically necessary for evaluation of unintentional weight loss exceeding 5% of body weight within a 12-month interval in **EITHER** of the following scenarios:

- Persistence following a negative comprehensive clinical evaluation (including a history and physical examination, age-appropriate cancer screening, chest radiography, and initial laboratory evaluation) after a period of observation
- Abnormal findings suggestive of malignancy on history, physical exam, imaging, or laboratory evaluation

IMAGING STUDY

- CT chest

Rationale

Persistent unintentional weight loss is defined as a substantive weight loss over a period of 6-12 months.[29] Weight loss is not uncommon in elderly patients and is typically related to one of the 9 Ds: dementia, dentition, depression, diarrhea, drugs, functional dysfunction, dysgeusia (altered taste), or dysphagia. When unintentional weight loss remains unexplained, it may be due to the 9th D: acute or chronic disease. Initial evaluation should include a clinical examination including laboratory studies, chest radiography, and where clinical appropriate, abdominal ultrasonography.[29]

The most common cause of malignancy in patients with unintentional weight loss is gastrointestinal primary (47%), and gastrointestinal causes account for 45% of nonmalignant organic etiologies.[30] Therefore, endoscopy and/or colonoscopy should be considered for initial evaluation when there is evidence of a GI source. CT with contrast is sensitive for the detection of lymphoma, lung, and genitourinary cancers, which are the next most common causes of malignancy in patients with unintentional weight loss.

Abnormal Test Findings

Imaging abnormalities

For follow-up of findings on CT, refer to corresponding indication (e.g. Pulmonary nodule, Pneumonia, Lymphadenopathy)

Advanced imaging is considered medically necessary for follow up of **ANY** of the following abnormalities identified on radiography:

- Pulmonary nodule/mass, structural or parenchymal abnormality
- Hilar enlargement or mediastinal widening
- Hyperlucent lung in pediatric patients
- Unexplained diaphragmatic elevation or immobility
- Findings suggesting tracheal or bronchial pathology

IMAGING STUDY

- CT chest

Positive sputum cytology

Advanced imaging is considered medically necessary for follow up.

IMAGING STUDY

- CT chest

Tracheal or bronchial lesion or other findings on bronchoscopy

Advanced imaging is considered medically necessary for follow up.

IMAGING STUDY

- CT chest

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Codes

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

CPT/HCPCS

71250	Computed tomography, thorax, diagnostic; without contrast material
71260	Computed tomography, thorax, diagnostic; with contrast material(s)
71270	Computed tomography, thorax, diagnostic; without contrast material, followed by contrast material(s) and further sections
71550	MRI chest, without contrast
71551	MRI chest, with contrast
71552	MRI chest, without contrast, followed by re-imaging with contrast
77046	MRI breast without contrast material(s); unilateral
77047	MRI breast without contrast material(s); bilateral
77048	MRI breast without and with contrast with CAD; unilateral
77049	MRI breast without and with contrast with CAD; bilateral
78811	PET imaging, limited area
78812	PET imaging, skull to mid-thigh
78813	PET imaging, whole body
78814	PET imaging, with concurrently acquired CT for attenuation correction and anatomic localization; limited area
78815	PET imaging, with concurrently acquired CT for attenuation correction and anatomic localization; skull base to mid-thigh
78816	PET imaging, with concurrently acquired CT for attenuation correction and anatomic localization; whole body
C8903	MRI with contrast, breast; unilateral
C8905	MRI without contrast followed by with contrast, breast; unilateral

C8906	MRI with contrast, breast; bilateral
C8908	MRI without contrast followed by with contrast, breast; bilateral

ICD-10 Diagnosis

Refer to the ICD-10 CM manual

History

Status	Review Date	Effective Date	Action
Revised	07/17/2025	04/04/2026	Independent Multispecialty Physician Panel (IMPP) review. Revised the following indications: Pneumonia, Lymphadenopathy, and Imaging abnormalities.
Revised	07/16/2024	03/23/2025 except for Healthy Blue LA Medicaid, Simply Healthcare FL Medicaid; 04/20/2025 for Premera; 05/18/2025 for Regence	IMPP review. Revised the following indications: Lymphadenopathy. Added new indication for Dyspnea.
Revised	07/18/2023	04/14/2024 for commercial, Medicare, and Medicaid except LA	IMPP review. Added new indication: Navigational bronchoscopy planning for pulmonary mass or nodule. Added required language to General Clinical Guideline per new Medicare regulations.
Revised	05/09/2022	04/09/2023 for commercial, Medicare, and Medicaid except LA; 06/18/2023 for LA Medicaid	IMPP review. Revised indications: Imaging abnormalities.
Revised	05/09/2022	11/06/2022 for commercial, Medicare, and non-Anthem Medicaid; 04/09/2023 for Anthem Medicaid except LA Medicaid; 06/18/2023 for LA Medicaid	IMPP review. Added Lung volume reduction procedures indication.
Revised	05/26/2021	03/13/2022	IMPP review. Revised indications Pneumonia, Pulmonary nodule, Interstitial lung disease.

Status	Review Date	Effective Date	Action
Revised	05/26/2021	11/07/2021	IMPP review. Added Transplant-related imaging indication.
Revised	02/03/2020	03/14/2021	IMPP review. Revised indications include Hoarseness/dysphonia/vocal cord weakness. Added HCPCS codes C8903, C8905, C8906, and C8908.
Revised	-	01/01/2021	Annual CPT code update: revised descriptions for 71250, 71260, 71270.
Revised	03/11/2020	03/12/2020	IMPP review. Revised Pneumonia indication to allow CT for diagnosis of COVID-19 pneumonia.
Revised	10/28/2019	08/17/2020	IMPP review. Updates made to the following indications: Pulmonary nodule, Other thoracic mass lesions, Interstitial lung disease and pulmonary fibrosis, Occupational lung disease, and Breast implant rupture. Added indication for Lymphadenopathy. Moved indication for Asbestos-related lesions.
Restructured	09/12/2018	01/01/2019	IMPP review. Advanced Imaging guidelines redesigned and reorganized to a condition-based structure. Incorporated AIM guidelines for pediatric imaging.
Revised	07/11/2018	03/09/2019	IMPP review. Renamed the Administrative Guidelines to “General Clinical Guideline.” Retitled Pretest Requirements to “Clinical Appropriateness Framework” to summarize the components of a decision to pursue diagnostic testing. Revised to expand applicability beyond diagnostic imaging, retitled Ordering of Multiple Studies to “Ordering of Multiple Diagnostic or Therapeutic Interventions” and replaced imaging-specific terms with “diagnostic or therapeutic intervention.” Repeated Imaging split into two subsections, “repeat diagnostic testing” and “repeat therapeutic intervention.”
Reviewed and revised	-	03/12/2018	IMPP review and revision.
Created	-	03/30/2005	Original effective date.