

04-70540-26

Original Effective Date: 05/15/18

Reviewed: 03/28/24

Revised: 04/15/24

## Subject: Magnetic Resonance Imaging (MRI) Chest (Thorax)

THIS MEDICAL COVERAGE GUIDELINE IS NOT AN AUTHORIZATION, CERTIFICATION, EXPLANATION OF BENEFITS, OR A GUARANTEE OF PAYMENT, NOR DOES IT SUBSTITUTE FOR OR CONSTITUTE MEDICAL ADVICE. ALL MEDICAL DECISIONS ARE SOLELY THE RESPONSIBILITY OF THE PATIENT AND PHYSICIAN. BENEFITS ARE DETERMINED BY THE GROUP CONTRACT, MEMBER BENEFIT BOOKLET, AND/OR INDIVIDUAL SUBSCRIBER CERTIFICATE IN EFFECT AT THE TIME SERVICES WERE RENDERED. THIS MEDICAL COVERAGE GUIDELINE APPLIES TO ALL LINES OF BUSINESS UNLESS OTHERWISE NOTED IN THE PROGRAM EXCEPTIONS SECTION.

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### DESCRIPTION:

Magnetic resonance imaging (MRI) is a radiation-free, noninvasive, technique used to produce high quality sectional images of the inside of the body in multiple planes. MRI uses natural magnetic properties of the hydrogen atoms in the body that emit radiofrequency signals when exposed to radio waves within a strong magnetic field. These signals are processed and converted by a computer into high-resolution, three-dimensional, tomographic images. Images and resolution produced by MRI is quite detailed. For some MRI, contrast materials (e.g., gadolinium, gadoteridol, non-ionic and low osmolar contrast media, ionic and high osmolar contrast media) are used to enable visualization of a body system or body structure.

The U.S. Food and Drug Administration's (FDA) cleared MRI systems for marketing through the 5-10(k) process. The Fonar Stand-Up MRI system received FDA marketing clearance in October 2000.

**Summary and Analysis of Evidence:** Magnetic resonance imaging (MRI) is a multiplanar imaging method based on an interaction between radiofrequency electromagnetic fields and certain nuclei in the body (usually hydrogen nuclei) after the body has been placed in a strong magnetic field. MRI differentiates between normal and abnormal tissues, providing a sensitive examination to detect disease. This sensitivity is based on the high degree of inherent contrast due to variations in the magnetic relaxation properties of different tissues, both normal and diseased, and the dependence of the MRI signal on these tissue properties. (ACR, 2022) In the recent years, with the development of ultrafast sequences, magnetic resonance imaging (MRI) has been established as a valuable diagnostic modality in body imaging. Because of improvements in speed and image quality, MRI is now ready for routine clinical use also in the study of pulmonary diseases. The main advantage of MRI of the lungs is its unique combination of morphological and functional assessment in a single imaging session. Clinical indications for MRI of the lung: detection and characterization of pulmonary nodules, tumor-node-metastasis

staging, pulmonary thromboembolic disease, pulmonary hypertension, cystic fibrosis and pneumonia (Hochhegger, et al., 2015).

## **POSITION STATEMENT:**

Magnetic resonance imaging (MRI) of the chest **meets the definition of medical necessity** for the following indications:

### **Chest mass (non-lung parenchymal)**

- Mass or lesion, including lymphadenopathy, after non-diagnostic x-ray or ultrasound (Chest CT indicated for pulmonary nodule).
- Thymoma screening in myasthenia gravis members.
- Congenital thoracic malformation on other imaging.

### **Chest wall pain**

- History of known or suspected cancer.
- Signs and symptoms of infection.
- Suspected muscle or tendon tear where imaging would change treatment.

### **Brachial plexopathy**

- If mechanism of injury or electromyography/nerve conduction velocity (EMG/NCV) studies are suggestive.
- Chest MRI is preferred study, but neck and/or shoulder (upper extremity) MRI can be ordered depending on the suspected location of injury.

### **Cystic fibrosis**

- Can be an alternative to chest CT to evaluate perfusion abnormalities, bronchiectasis, and mucus plugging if needed for treatment planning.

### **Vascular diseases**

- Superior vena cava (SVC) syndrome
- Subclavian Steal Syndrome after positive or inconclusive ultrasound
- Thoracic Outlet Syndrome
- Takayasu's arteritis
- Acute or chronic aortic dissection
- Pulmonary hypertension (to evaluate for cause after echocardiogram or right heart catheterization).

### **Congenital malformations**

- Congenital heart disease with pulmonary hypertension.
- Pulmonary sequestration.

### **Atrial fibrillation with ablation planned**

### **Pre-operative/procedural evaluation**

### **Post-operative/procedural evaluation**

- Post-surgical follow up when records document medical reason requiring additional imaging.

## **BILLING/CODING INFORMATION:**

### **CPT Coding:**

71550	Magnetic resonance (e.g., proton) imaging, chest (e.g., for evaluation of hilar and mediastinal lymphadenopathy); without contrast material(s)
71551	Magnetic resonance (e.g., proton) imaging, chest (e.g., for evaluation of hilar and mediastinal lymphadenopathy); with contrast material(s)
71552	Magnetic resonance (e.g., proton) imaging, chest (e.g., for evaluation of hilar and mediastinal lymphadenopathy); without contrast material(s), followed by contrast material(s) and further sequence

### **HCPCS Coding**

S8042	Magnetic resonance imaging (MRI), low-field
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## **REIMBURSEMENT INFORMATION:**

Reimbursement for magnetic resonance imaging chest (71550, 71551, and 71552) is limited to one (1) magnetic resonance imaging chest within a 6-month period. Magnetic resonance imaging of the chest in excess of one (1) within a 6-month period is subject to medical review for medical necessity.

Documentation should include radiology reason for study, radiology comparison study-date and time, radiology comparison study observation, radiology impression, and radiology study recommendation.

Additional MRI imaging of the same anatomical area may be appropriate for the following, including, but not limited to: diagnosis, staging or follow-up of cancer, follow-up assessment during or after therapy for known metastases, follow-up of member who have had an operative, interventional or therapeutic procedure (e.g., surgery, embolization), reevaluation due to change in clinical status (e.g., deterioration), new or worsening clinical findings, (e.g., neurologic signs, symptoms), medical intervention which warrants reassessment, reevaluation for treatment planning, follow-up during and after completion of therapy or treatment to assess effectiveness, and evaluation after intervention or surgery.

Re-imaging or additional imaging due to poor contrast enhanced exam or technically limited exam is the responsibility of the imaging provider.

## Stand-Up MRI/Sitting MRI

Stand-up MRI and sitting MRI may be reported like a standard MRI. No additional payment will be made for stand-up MRI or sitting MRI.

### LOINC Codes:

The following information may be required documentation to support medical necessity: physician history and physical, physician progress notes, plan of treatment and reason for magnetic resonance imaging, chest.

<b>Documentation Table</b>	<b>LOINC Codes</b>	<b>LOINC Time Frame Modifier Code</b>	<b>LOINC Time Frame Modifier Codes Narrative</b>
Physician history and physical	28626-0	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Attending physician progress note	18741-9	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Plan of treatment	18776-5	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology reason for study	18785-6	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology comparison study-date and time	18779-9	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology comparison study observation	18834-2	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology-study observation	18782-3	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology-impression	19005-8	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim

Radiology study-recommendation (narrative)	18783-1	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
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## PROGRAM EXCEPTIONS:

**Federal Employee Plan (FEP):** Follow FEP guidelines.

**Medicare Advantage products:** No Local Coverage Determination (LCD) were found.

The following National Coverage Determination (NCD) was reviewed on the last guideline reviewed date: Magnetic Resonance Imaging (220.2), located at cms.gov.

## DEFINITIONS:

No guideline specific definitions apply.

## RELATED GUIDELINES:

None applicable.

## OTHER:

Other names used to report MRI:

Nuclear Magnetic Resonance (NMR)

Open MRI

Other names used to report Positional MRI:

Position MRI (pMRI)

Sitting MRI

Stand-Up MRI

Standing MRI

Weight-bearing MRI

## REFERENCES:

1. ACR Practice Parameter for Performing and Interpreting Magnetic Resonance Imaging (MRI), Revised 2022.
2. American College of Radiology ACR Appropriateness Criteria® Suspected Thoracic Aortic Aneurysm, 2017.
3. Ascha M, Renapurkar RD, Tonelli AR. A review of imaging modalities in pulmonary hypertension. *Ann Thorac Med.* 2017 Apr-Jun;12(2):61-73.
4. Bonci G, Steigner ML, Hanley M et al. ACR Appropriateness Criteria® Thoracic Aorta Interventional Planning and Follow-Up. *J Am Coll Radiol.* 2017 Nov;14(11S): S570-S583.
5. Carter BW, Benveniste MF, Betancourt SL et al. Imaging evaluation of malignant chest wall neoplasms. *Radiographics.* 2016 Sep-Oct;36(5):1285-306.

6. Conti-Fine BM, Milani M, Kaminski HJ. Myasthenia gravis: past, present, and future. *Journal of Clinical Investigation* 2006 Nov 1; 116(11): 2843–2854.
7. Dillman JR, Yarram SG, D'Amico AR et al. Interrupted aortic arch: spectrum of MRI findings. *American Journal of Roentgenology* 2008 Jun; 190 (6): 1467-1474.
8. Doherty JU, Kort S, Mehran R et al. ACC/AATS/AHA/ASE/ASNC/HRS/SCAI/SCCT/SCMR/STS 2019 Appropriate Use Criteria for Multimodality Imaging in the Assessment of Cardiac Structure and Function in Nonvalvular Heart Disease : A Report of the American College of Cardiology Appropriate Use Criteria Task Force, American Association for Thoracic Surgery, American Heart Association, American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and the Society of Thoracic Surgeons. *J Nucl Cardiol.* 2019 Aug;26(4):1392-1413.
8. Erbel R, Aboyans V, Boileau C et al. 2014 ESC Guidelines on the diagnosis and treatment of aortic diseases: Document covering acute and chronic aortic diseases of the thoracic and abdominal aorta of the adult. The Task Force for the Diagnosis and Treatment of Aortic Diseases of the European Society of Cardiology (ESC). *Eur Heart J.* 2014 Nov 1;35(41):2873-926.
9. Goiten O, Fuhrman CR, Lacomis JM. Incidental finding on MDCT of patent ductus arteriosus: use of CT and MRI to assess clinical importance. *American Journal of Roentgenology* 2005 Jun; 184 (6): 1924-193.
10. Hochegger B, de Souza VV, Marchiori E, et al. Chest magnetic resonance imaging: a protocol suggestion. *Radiol Bras.* 2015 Nov-Dec;48(6):373-80.
11. Keser G, Direskeneli H, Aksu K. Management of Takayasu arteritis: a systematic review. *Rheumatology (Oxford).* 2014 May;53(5):793-801.
12. Kolandaivelu A. Role of Cardiac Imaging (CT/MR) Before and after RF catheter ablation in patients with atrial fibrillation. *J Atr Fibrillation.* 2012 Aug-Sep; 5(2): 523.
13. Konen E, Merchant N, Provost Y et al. Coarctation of the aorta before and after correction: the role of cardiovascular MRI. *American Journal of Roentgenology* 2004 May; 182 (5): 1333-1339.
14. Kumar R. Myasthenia gravis and thymic neoplasms: A brief review. *World J Clin Cases.* 2015 Dec 16; 3(12): 980–983.
15. Kurukumbi M, Weir R, Kalyanam J et al. Rare association of thymoma, myasthenia gravis and sarcoidosis : a case report. *Journal of Medical Case Reports* 2008 Jul 25; 2:245.
14. Lau C, Feldman DN, Girardi LN et al. Imaging for surveillance and operative management for endovascular aortic aneurysm repairs. *J Thorac Dis.* 2017 Apr;9(Suppl 4): S309-S316.
15. Sodhi KS, Ciet P, Vasanawala S, et al. Practical protocol for lung magnetic resonance imaging and common clinical indications. *Pediatr Radiol.* 2022 Feb;52(2):295-311.
16. Vijayasarithi A, Chokshi FH. MRI of the brachial plexus: A practical review. *Appl Radiol* 2016; 45(4): 9-18.

## **COMMITTEE APPROVAL:**

This Medical Coverage Guideline (MCG) was approved by the Florida Blue Medical Policy and Coverage Committee on 03/28/24.

## GUIDELINE UPDATE INFORMATION:

05/15/18	New Medical Coverage Guideline.
02/15/20	Review/revision. Revise criteria for chest MRI. Added indication and criteria for: lung or chest mass, thoracic aortic disease, myasthenia gravis, thymoma screening, thoracic outlet syndrome, brachial plexopathy, vascular disease, congenital malformations, pulmonary hypertension, atrial fibrillation, pre-operative evaluation and post-operative/procedural evaluation. Updated references.
05/15/22	Review: Position statements and references updated.
07/01/22	Revision to Program Exceptions section.
09/30/23	Review: position statements and references updated.
04/15/24	Review; no change in position statement. Updated program exception and references.