

CLINICAL APPROPRIATENESS GUIDELINES

ADVANCED IMAGING

Appropriate Use Criteria: Low-field MRI

EFFECTIVE JANUARY 1, 2021

Proprietary

Approval and implementation dates for specific health plans may vary. Please consult the applicable health plan for more details.

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Low-field MRI

General Information/Overview

Scope

These guidelines address advanced imaging with low-field MRI 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

Low-field MRI is generally considered to include scanners with a magnetic field strength of 0.5 Tesla (T) or less. Intermediate-field MRI generally includes scanners of greater than 0.5T and less than 1.5T, and high-field MRI includes scanners of 1.5T or greater. Most imaging facilities offer conventional MRI using scanners with a 1.5T magnet, and 3T scanners are widely available. Advantages of high-field MRI include improved signal-to-noise ratio, improved contrast-to-noise ratio, and improved spatial and temporal resolution compared to lower-field scanners. Advantages of lower-field MRI include easier installation, lower maintenance cost, and greater patient comfort.

Open MRI is an MRI scanner in which the magnets are located above and below the patient, rather than in a cylindrical bore as is the case with conventional MRI scanners. The majority of open MRI scanners are 0.2 to 0.3T, though higher-field scanners of up to 1.2T are available. Advantages to open MRI include the ability to image patients who are unable to tolerate conventional MRI due to claustrophobia, as well as larger-sized patients. Disadvantages of open MRI are related to the lower magnetic field strength and include lower signal-to-noise ratio and poorer spatial and temporal resolution. These disadvantages are less significant in open scanners of higher field strength, but those scanners are not widely available. If an open MRI unit of intermediate or high field strength is available, this is generally preferred over a lower-field unit.

Positional MRI involves obtaining MRI images with the patient in a position other than supine; primarily, this refers to images obtained with the patient seated or standing upright. Often, these studies require the use of an open MRI scanner of low field strength.

Contraindications to intermediate- or high-field MRI for which low-field MRI is possible include claustrophobia and patient size. A standard MRI has a bore opening of 60 cm, and some wide-bore MRI units have an opening of 70 cm diameter. For patients in whom the bore size is a limiting factor, open MRI may be appropriate.

Definitions

Signal-to-noise ratio (SNR): Comparison of the signal strength within a volume of tissue being imaged to the signal strength within a background region.

Contrast-to-noise ratio (CNR): The difference in SNR between two tissue types, such as muscle and fluid.

Spatial resolution: Refers to the sharpness of the image; smaller voxel size equals increased spatial resolution.

Temporal resolution: Refers to the length of time between one image and the next in a sequence.

Susceptibility: The degree to which a particular tissue or object is magnetized by a magnetic pulse. Materials with very high susceptibility may cause susceptibility artifact by distorting the magnetic field in the adjacent tissues.

Clinical Indications

The following section includes indications for which the use of low-field MRI 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.

The use of low-field MRI is considered medically necessary when criteria for MRI are met and intermediate- or high-field MRI cannot be performed.

IMAGING STUDY

- Low-field MRI

Codes

CPT® (Current Procedural Terminology) is a registered trademark of the American Medical Association (AMA). CPT® five digit codes, nomenclature and other data are copyright by the American Medical Association. All Rights Reserved. AMA does not directly or indirectly practice medicine or dispense medical services. AMA assumes no liability for the data contained herein or not contained herein.

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.

CPT/HCPCS

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

S8042 Magnetic resonance imaging (mri), low-field

ICD-10 Diagnosis

Refer to the ICD-10 CM manual

History

Status	Review Date	Effective Date	Action
Created	03/25/2019	01/01/2021	Independent Multispecialty Physician Panel (IMPP) review. Original effective date.