Cohere Medicare Advantage Policy - Magnetic Resonance Imaging (MRI), Brain, Functional

Clinical Policy for Medical Necessity Review

Version: 2
Cohere Health UMC Approval Date: October 2, 2025
Last Annual Review: October 2, 2025
Revision: Not Applicable
Next Annual Review: October 2, 2026

Important Notices

Notices & Disclaimers:

GUIDELINES ARE SOLELY FOR COHERE'S USE IN PERFORMING MEDICAL NECESSITY REVIEWS AND ARE NOT INTENDED TO INFORM OR ALTER CLINICAL DECISION-MAKING OF END USERS.

Cohere Health, Inc. ("**Cohere**") has published these clinical guidelines to determine the medical necessity of services (the "**Guidelines**") for informational purposes only, and solely for use by Cohere's authorized "**End Users**". These Guidelines (and any attachments or linked third-party content) are not intended to be a substitute for medical advice, diagnosis, or treatment directed by an appropriately licensed healthcare professional. These Guidelines are not in any way intended to support clinical decision-making of any kind; their sole purpose and intended use is to summarize certain criteria Cohere may use when reviewing the medical necessity of any service requests submitted to Cohere by End Users. Always seek the advice of a qualified healthcare professional regarding any medical questions, treatment decisions, or other clinical guidance. The Guidelines, including any attachments or linked content, are subject to change at any time without notice. This policy may be superseded by existing and applicable Centers for Medicare & Medicaid Services (CMS) statutes.

Other Notices:

Policy Information:

Specialty Area: Diagnostic Imaging
Policy Name: Cohere Medicare Advantage Policy - Magnetic Resonance Imaging (MRI), Brain, Functional
Type: [**X**] Adult (18+ yo) | [**X**] Pediatric (0-17 yo)

Table of Contents

Medical Necessity Criteria

Service: Magnetic Resonance Imaging (MRI), Brain, Functional

Related CMS Documents

Please refer to CMS Medicare Coverage Database for the most current applicable CMS National Coverage.[1-5]

- National Coverage Determination (NCD). Magnetic resonance imaging (MRI)(220.2)
- Local Coverage Determination (LCD). MRI and CT scans of the head and neck (L37373)
  - Billing and Coding. MRI and CT scans of the head and neck (A57204)
- Local Coverage Determination (LCD). MRI and CT scans of the head and neck (L35175)
  - Billing and Coding. MRI and CT scans of the head and neck (A57215)

Description

Functional magnetic resonance imaging (fMRI) is an advanced imaging modality used to visualize brain metabolism in real time. It uses changes in blood oxygen level-dependent (BOLD) signals to track task activation-related brain activity. In cases where there are concerns about patient task performance, non-task fMRI can be used as an adjunct to provide additional context. Metal hardware can limit certain exams. fMRI of the brain is noninvasive and is generally a simple outpatient procedure. Claustrophobia may be an issue as the procedure requires the patient to lie inside the scanner for approximately 1 hour.[6,7]

Medical Necessity Criteria

Indications

Functional magnetic resonance imaging (fMRI) of the brain is considered appropriate if **ALL** of the following are **TRUE**:

- The study is ordered by a neurologist, neurosurgeon, or radiation oncologist; **AND**
- **ANY** of the following:
  - Evaluation of cerebral vascular reactivity when considering revascularization procedures[6]; **OR**
  - Evaluation of eloquent cortex and/or language lateralization prior to surgery for **ANY** of the following[6]:
    - Epilepsy[8]; **OR**
    - Brain tumors[9,10]; **OR**
    - Vascular malformations; **OR**
    - Evaluation of preserved eloquent cortex as a one-time, postintervention follow-up study[11]; **OR**
    - Radiation treatment planning potentially involving areas of eloquent cortex[11]; **OR**
    - Radiation post-treatment evaluation of preserved eloquent cortex[11]; **OR**
  - Repeat imaging (defined as repeat request following recent imaging of the same anatomic region with the same modality or similar modality) will be considered reasonable and necessary if **ALL** of the following are **TRUE**:
    - There are no established guidelines; **AND**
    - **ANY** of the following:
      - There are new or worsening symptoms not addressed in the guidelines, such that repeat imaging would influence treatment; **OR**
      - There is need for a one-time clarifying follow-up of a prior indeterminate finding; **OR**
      - In the absence of change in symptoms, there is an established need for monitoring, which would influence management.

Non-Indications

Functional magnetic resonance imaging (fMRI) of the brain is not considered appropriate if **ANY** of the following is **TRUE**:

- The patient has undergone advanced imaging of the same body part within 3 months without undergoing treatment or developing new or worsening symptoms.

*NOTE: MRI in patients with claustrophobia should be requested at the discretion of the ordering provider.
**NOTE: MRI in pregnant patients should be requested at the discretion of the ordering provider and obstetric care provider.

Level of Care Criteria

Inpatient or Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Codes	Code Description/Definition
70554	Magnetic resonance imaging, brain, functional MRI; including test selection and administration of repetitive body part movement and/or visual stimulation, not requiring physician or psychologist administration
70555	Magnetic resonance imaging, brain, functional MRI; requiring physician or psychologist administration of entire neurofunctional testing

Disclaimer: S Codes are non-covered per CMS guidelines due to their experimental or investigational nature.

Evaluation of Clinical Harms and Benefits

Clinical determinations for Medicare Advantage beneficiaries are made in accordance with 42 CFR 422.101 guidance outlining CMS's required approach to decision hierarchy in the setting of NCDs/LCDs identified as being "not fully established". When clinical coverage criteria are "not fully established" Medicare Advantage organizations are instructed to create publicly accessible clinical coverage criteria based on widely-accepted clinical guidelines and/or scientific studies backed by a robust clinical evidence base. Clinical coverage criteria provided by Cohere Health in this manner include coverage rationale and risk/benefit analysis.

The potential clinical harms of using these criteria for functional magnetic resonance imaging (fMRI) of the brain may include:

- Adverse effects from delayed or denied treatment, such as a risk of malfunctioning implanted medical devices (e.g., implanted pacemakers, cochlear implants) and allergic reaction to contrast material, if used in the study.[6,12,13]
- Gadolinium-based contrast is not recommended during pregnancy or in patients with acute or chronic kidney injury or disease.[6,12,13]
- If sedation is used for the study (for anxiety or claustrophobia), there is a risk of over-sedation. The patient will be monitored during the procedure to reduce this risk.
- There is an uncertain risk for magnetic resonance imaging (MRI) in pregnant patients. The decision to image a pregnant patient should be made on an individual basis in consultation with the patient's obstetric provider.[14]
- There is a risk of increased healthcare costs and complications from the inappropriate use of additional interventions.[15]

The clinical benefits of using these criteria for functional magnetic resonance imaging (fMRI) of the brain may include:

- Improved patient selection may result in better long-term outcomes. In patients with medial temporal lobe, temporal, or extratemporal epilepsy, fMRI can determine lateralization of language functions instead of the

intracarotid amobarbital procedure (IAP). The use of fMRI may be considered for lateralizing memory functions in place of IAP in patients with medial temporal lobe epilepsy (Level C) but is of unclear utility in other types of epilepsy types.[11]

- Appropriate allocation of healthcare resources at the individual beneficiary and population levels. Resting-state blood oxygen level-dependent fMRI provides a task-free method of measuring cerebrovascular reserve (the potential capacity of brain tissue to receive more blood flow when needed), which is an effective marker in evaluating ischemic risk.[16]
- A meta-analysis shows the benefit of preoperative fMRI planning for the resection of brain tumors in reducing post-surgical morbidity, particularly when used with other advanced imaging techniques like diffusion-tensor imaging (DTI), intraoperative MRI, or cortical stimulation.[17]
- Enhanced overall patient satisfaction and healthcare experience.

Medical Evidence

Kaptan et al. (2024) discussed current developments in functional MRI (fMRI) and the impact on facilitating the creation of clinically significant biomarkers for disorders impacting sensorimotor processing in the central nervous system (CNS). Research has focused on corticospinal fMRI to evaluate sensorimotor projections at various hierarchical levels of the neuraxis. This includes the cervical spinal cord, brainstem, cerebellum, subcortical structures, and cortical regions. Unlike imaging the brain or spinal cord separately, corticospinal fMRI can identify neural activity in important CNS areas related to upper limb sensorimotor processing. The authors note that the technique requires further research as it applies to neural activity from lower limb stimulations or tasks.[18]

Luna et al. (2021) performed a meta-analysis to evaluate the comparative postoperative morbidity in patients with brain tumors undergoing surgery with preoperative fMRI guidance versus those undergoing surgery without fMRI guidance or with the use of standard (non-functional) neuronavigation. A total of 68 observational studies and existing data demonstrate a decrease in postoperative morbidity when utilizing preoperative fMRI for planning brain resections. This benefit is particularly notable when combined with other advanced imaging modalities like diffusion-tensor imaging, intraoperative MRI, or cortical stimulation.[17]

Liu et al. (2021) conducted a study to refine and assess resting-state (RS) cerebrovascular reactivity (CVR) MRI methodology and its correlation to neurosurgical intervention outcomes. Data from 170 health controls identify the optimal frequency range of temporal filtering based on spatial correlation with the reference standard CVR map obtained with CO_2 inhalation. The refined RS approach was implemented in a new cohort with 50 individuals diagnosed with Moyamoya disease. Comparative analysis of CVR values between cerebral hemispheres with and without revascularization surgery was conducted using the Mann-Whitney U test. The authors conclude that utilizing RS blood oxygen level-dependent (BOLD) fMRI, CVR mapping offered a non-task-based approach for quantifying cerebrovascular reserve. This method effectively illustrated the therapeutic impact of revascularization surgery in Moyamoya disease patients, demonstrating comparable results to the established CO_2 inhalation MRI reference standard.[16]

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Policy Revision History/Information

Original Date: October 17, 2024		
Review History		
Version 2	10/02/2025	Annual review. Added indication requiring that "the study is ordered by a neurologist, neurosurgeon, or radiation oncologist." Reorganized indications to improve clarity and reduce redundancy. Clarified the indications for repeat imaging to improve usability and organization. Removed relative contraindications (contrast allergy, metallic clips, incompatible implantable devices, metallic foreign body).