



Cohere Medical Policy – Magnetic Resonance Imaging (MRI), Brain Functional

Clinical Policy for Medical Necessity Review

Version: 4

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Important Notices

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Policy Information:

Specialty Area: Diagnostic Imaging

Policy Name: Cohere Medical Policy - Magnetic Resonance Imaging (MRI), Brain Functional
Type: ☒ Adult (18+ yo) | ☒ Pediatric (0-17 yo)

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Medical Necessity Criteria

Service: Magnetic Resonance Imaging (MRI), Brain Functional

Cohere Health takes an evidence-based approach to reviewing imaging and procedure requests, meaning that sufficient clinical information must be provided at the time of submission to determine medical necessity. Documentation must include a recent and detailed history, physical examination related to the onset or change in symptoms, relevant lab results, prior imaging, and details of previous treatments. Advanced imaging or procedures should be requested after a clinical evaluation by the treating provider, which may include a referral to a specialist.

- When a specific clinical indication is not explicitly addressed in the Cohere Health medical policy, medical necessity will be determined based on established clinical best practices, as supported by evidence-based literature, peer-reviewed sources, professional society guidelines, and state or national recommendations, unless otherwise directed by the health plan.
- Requests submitted without clinical documentation, or those that do not align with the provided clinical information—such as mismatched laterality, body part, or CPT code—may be denied for lack of medical necessity due to insufficient or inconsistent clinical information.
- Repeat diagnostic testing due to technical issues—such as patient motion, incomplete exams, or incorrect imaging sequences—may not be considered medically necessary, as it is the responsibility of the imaging center to deliver appropriate, high-quality studies as originally authorized. Similarly, repeat imaging requested at a different facility based solely on provider preference may not be approved for medical necessity.
- When there are multiple diagnostic or therapeutic procedures requested simultaneously or within the past three months, each will be reviewed independently. Clinical documentation must clearly justify all of the following:
 - The medical necessity of each individual request
 - Why prior imaging or procedures were inconclusive or why additional/follow-up studies are needed

- How the results will impact patient management or treatment decisions
- Requests involving adjacent or contiguous body parts may be considered not medically necessary if the documentation demonstrates that the patient's primary symptoms can be adequately assessed with a single study or procedure.
- Cohere Health evaluates imaging exams based on medical necessity, regardless of contrast use. If an initial non-contrast study is completed and the radiologist later determines that contrast is needed to clarify a finding, the original authorization number may be used, provided the contrast-enhanced exam is performed at the same imaging center and within the original request's validity period, unless otherwise directed by the health plan.

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.^{1,2}

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 procedures¹; **OR**
 - Evaluation of eloquent cortex and/or language lateralization prior to surgery for **ANY** of the following:
 - Epilepsy¹; **OR**
 - Brain tumors¹; **OR**
 - Vascular malformations¹; **OR**

- Evaluation of preserved eloquent cortex as a one-time, postintervention follow-up study^{1,3}; **OR**
- Radiation treatment planning potentially involving areas of eloquent cortex^{1,3}; **OR**
- Radiation posttreatment evaluation of preserved eloquent cortex^{1,3}; **OR**
- Repeat imaging (defined as a repeat request following recent imaging of the same anatomic region with the same 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 may not be 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 symptoms⁵.

*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)

HCPCS Code	Code Description
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

Medical Evidence

Kaptan et al. (2024) discuss current developments in functional magnetic resonance imaging (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.⁶

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.⁷

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 CO₂ inhalation. The refined RS approach was implemented in a new cohort of 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 CO₂ inhalation MRI reference standard.⁸

References

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Policy Revision History/Information

Original Date: April 1, 2022		
Review History		
Version 2	07/26/2024	Policy criteria reviewed and updated per medical literature.
Version 3	10/30/2024	Edited repeat imaging criteria language.
Version 4	07/31/2025	Annual review Added new reference citation and updated numbering accordingly Reorganized indications to improve clarity and reduce redundancy Clarified the indications for repeat imaging to improve usability and organization Removed non-indications that were outside scope of policy