Magnetic Resonance Imaging (MRI) is used to diagnose a variety of central nervous system disorders. Unlike computed tomography (CT) scanning, MRI does not make use of ionizing radiation or require iodinated contrast material to distinguish normal from pathologic tissue. Rather, the difference in the number of protons contained within hydrogen-rich molecules in the body (water, proteins, lipids, and other macromolecules) determines recorded image qualities and makes possible the distinction of white from gray matter, tumor from normal tissue, and flowing blood within vascular structures. MRI provides superior tissue contrast when compared to CT, is able to image in multiple planes, is not affected by bone artifact, provides vascular imaging capability, and makes use of safer contrast media (gadolinium chelate agents). Its major disadvantage over CT is the longer scanning time required for study, making it less useful for emergency evaluations of acute bleeding or for unstable patients. Because a powerful magnetic field is required to obtain an MRI, patients with ferromagnetic materials in place may not be able to undergo MRI study. These include patients with cardiac pacemakers, implanted neurostimulators, cochlear implants, metal in the eye and older ferromagnetic intracranial aneurysm clips. All of these may be potentially displaced when exposed to the powerful magnetic fields used in MRI.

Medicare will consider Magnetic Resonance Imaging of the Brain medically reasonable and necessary when used to aid in the diagnosis of lesions of the brain and to assist in therapeutic decision making in the following conditions:

- For detecting or evaluating extra-axial tumors, A-V malformations, cavernous hemangiomas, small intracranial aneurysms, cranial nerve lesions, demyelination disorders including multiple sclerosis, lesions near dense bone, acoustic neuromas, pituitary lesions, and brain radiation injuries;
- For development abnormalities of the brain including neuroectodermal dysplasia;
- For subacute central nervous system hemorrhage or hematoma;
- For acute cerebrovascular accidents;
- For complex partial seizures, seizures refractory to therapy, temporal lobe epilepsy, or other atypical seizure disorders;

- MRI is usually not the procedure of choice in patients who have acute head trauma, acute intracranial bleeding, or investigation of skull fracture or other bone abnormality,
or as follow-up for hydrocephalus. However, a MRI may be necessary in patients whose presentation indicates a focal problem or who have had a recent significant change in symptomatology:

- For brain infections;
- Where soft tissue contrast is necessary;
- When bone artifacts limit CT, or coronal, coronosagittal or parasagittal images are desired; [and]
- For procedures in which iodinated contrast material are contraindicated.

**Contraindications:**

The MRI is not covered when the following patient-specific contraindications are present:

MRI is not covered for patients with cardiac pacemakers or with metallic clips on vascular aneurysms unless the Medicare beneficiary meets the provisions of the following exceptions:

- Effective for claims with dates of service on or after July 7, 2011, the contraindications will not apply to pacemakers when used according to the FDA-approved labeling in an MRI environment, or effective for claims with dates of service on or after February 24, 2011, CMS believes that the evidence is promising although not yet convincing that MRI will improve patient health outcomes if certain safeguards are in place to ensure that the exposure of the device to an MRI environment adversely affects neither the interpretation of the MRI result nor the proper functioning of the implanted device itself. We believe that specific precautions (as listed below) could maximize benefits of MRI exposure for beneficiaries enrolled in clinical trials designed to assess the utility and safety of MRI exposure. Therefore, CMS determines that MRI will be covered by Medicare when provided in a clinical study under section 1862(a)(1)(E) (consistent with section 1142 of the Act) through the Coverage with Study Participation (CSP) form of Coverage with Evidence Development (CED) if the study meets the criteria in each of the three paragraphs in CMS Pub 100-03, CMS National Coverage Determination Manual, Chapter 1, Section 220.2.C.1.

- MRI during a viable pregnancy is also contraindicated at this time.
- The danger inherent in bringing ferromagnetic materials within range of MRI units generally constrains the use of MRI on acutely ill patients requiring life support systems and monitoring devices that employ ferromagnetic materials.
- In addition, the long imaging time and the enclosed position of the patient may result in claustrophobia, making patients who have a history of claustrophobia unsuitable candidates for MRI procedures.

**Nationally Non-Covered Indications:**

CMS has determined that MRI of cortical bone and calcifications, and procedures involving spatial resolution of bone and calcifications, are not considered reasonable and necessary indications within the meaning of section 1862(a)(1)(A) of the Act, and are therefore non-covered.

When Magnetic Resonance Imaging is used for an investigational purpose, an acceptable advance notice of Medicare’s denial of payment must be given to the patient when the
provider does not want to accept financial responsibility for the service.

ICD-9 Codes that Support Medical Necessity

Group 1 Paragraph: For procedure codes 70551, 70552, and 70553:

Group 1 Codes:

006.5 AMEBIC BRAIN ABSCESS

013.00 - 013.06 TUBERCULOUS MENINGITIS UNSPECIFIED EXAMINATION - TUBERCULOUS MENINGITIS TUBERCLE BACILLI NOT FOUND BY BACTERIOLOGICAL OR HISTOLOGICAL EXAMINATION BUT TUBERCULOSIS CONFIRMED BY OTHER METHODS (INOCULATION OF ANIMALS)

013.10 - 013.16 TUBERCULOMA OF MENINGES UNSPECIFIED EXAMINATION - TUBERCULOMA OF MENINGES TUBERCLE BACILLI NOT FOUND BY BACTERIOLOGICAL OR HISTOLOGICAL EXAMINATION BUT TUBERCULOSIS CONFIRMED BY OTHER METHODS (INOCULATION OF ANIMALS)

013.20 - 013.26 TUBERCULOMA OF BRAIN UNSPECIFIED EXAMINATION - TUBERCULOMA OF BRAIN TUBERCLE BACILLI NOT FOUND BY BACTERIOLOGICAL OR HISTOLOGICAL EXAMINATION BUT TUBERCULOSIS CONFIRMED BY OTHER METHODS (INOCULATION OF ANIMALS)

013.30 - 013.36 TUBERCULOUS ABSCESS OF BRAIN UNSPECIFIED EXAMINATION - TUBERCULOUS ABSCESS OF BRAIN TUBERCLE BACILLI NOT FOUND BY BACTERIOLOGICAL OR HISTOLOGICAL EXAMINATION BUT TUBERCULOSIS CONFIRMED BY OTHER METHODS (INOCULATION OF ANIMALS)

013.60 - 013.66 TUBERCULOUS ENCEPHALITIS OR MYELITIS UNSPECIFIED EXAMINATION - TUBERCULOUS ENCEPHALITIS OR MYELITIS TUBERCLE BACILLI NOT FOUND BY BACTERIOLOGICAL OR HISTOLOGICAL EXAMINATION BUT TUBERCULOSIS CONFIRMED BY OTHER METHODS (INOCULATION OF ANIMALS)

013.80 - 013.86 OTHER SPECIFIED TUBERCULOSIS OF CENTRAL NERVOUS SYSTEM UNSPECIFIED EXAMINATION - OTHER SPECIFIED TUBERCULOSIS OF CENTRAL NERVOUS SYSTEM TUBERCLE BACILLI NOT FOUND BY
BACTERIOLOGICAL OR HISTOLOGICAL EXAMINATION BUT TUBERCULOSIS CONFIRMED BY OTHER METHODS (INOCULATION OF ANIMALS)

UNSPECIFIED TUBERCULOSIS OF CENTRAL NERVOUS SYSTEM
UNSPECIFIED EXAMINATION - UNSPECIFIED TUBERCULOSIS OF CENTRAL NERVOUS SYSTEM TUBERCLE BACILLI NOT FOUND BY BACTERIOLOGICAL OR HISTOLOGICAL EXAMINATION BUT TUBERCULOSIS CONFIRMED BY OTHER METHODS (INOCULATION OF ANIMALS)

013.90 - 013.96
UNSPECIFIED TUBERCULOSIS OF CENTRAL NERVOUS SYSTEM TUBERCLE BACILLI NOT FOUND BY BACTERIOLOGICAL OR HISTOLOGICAL EXAMINATION BUT TUBERCULOSIS CONFIRMED BY OTHER METHODS (INOCULATION OF ANIMALS)

036.0  MENINGOCOCCAL MENINGITIS
036.1  MENINGOCOCCAL ENCEPHALITIS
036.2  MENINGOCOCCEMIA
042  HUMAN IMMUNODEFICIENCY VIRUS (HIV) DISEASE

046.0 - 046.9
KURU - UNSPECIFIED SLOW VIRUS INFECTION OF CENTRAL NERVOUS SYSTEM

047.0 - 047.9
MENINGITIS DUE TO COXSACKIE VIRUS - UNSPECIFIED VIRAL MENINGITIS

049.0 - 049.9
UNSPECIFIED NON-ARTHROPOD-BORNE VIRAL DISEASES OF CENTRAL NERVOUS SYSTEM

052.0  POSTVARICELLA ENCEPHALITIS
053.0  HERPES ZOSTER WITH MENINGITIS
054.3  HERPETIC MENINGOENCEPHALITIS
054.72  HERPES SIMPLEX MENINGITIS
054.74  HERPES SIMPLEX MYELITIS
055.0  POSTMEASLES ENCEPHALITIS
056.01  ENCEPHALOMYELITIS DUE TO RUBELLA

062.0 - 062.9
JAPANESE ENCEPHALITIS - MOSQUITO-BORNE VIRAL ENCEPHALITIS - UNSPECIFIED

063.0 - 063.9
RUSSIAN SPRING-SUMMER (TAIGA) ENCEPHALITIS - TICK-BORNE VIRAL ENCEPHALITIS - UNSPECIFIED

064  VIRAL ENCEPHALITIS TRANSMITTED BY OTHER AND UNSPECIFIED ARTHROPODS

072.1  MUMPS MENINGITIS
072.2  MUMPS ENCEPHALITIS
090.40  -  JUVENILE NEUROSYPHILIS UNSPECIFIED - OTHER JUVENILE
090.49  NEUROSYPHILIS
094.0  -  TABES DORSALIS - NEUROSYPHILIS UNSPECIFIED
094.9
112.83  CANDIDAL MENINGITIS
114.2  COCCIDIODIAL MENINGITIS
115.01  HISTOPLASMA CAPSULATUM MENINGITIS
115.11  HISTOPLASMA DUBOISII MENINGITIS
115.91  HISTOPLASMOSIS MENINGITIS UNSPECIFIED
130.0  MENINGOENCEPHALITIS DUE TO TOXOPLASMOSIS
162.0  -  MALIGNANT NEOPLASM OF TRACHEA - MALIGNANT NEOPLASM OF
162.9  BRONCHUS AND LUNG UNSPECIFIED
191.0  -  MALIGNANT NEOPLASM OF CEREBRUM EXCEPT LOBES AND
191.9  VENTRICLES - MALIGNANT NEOPLASM OF BRAIN UNSPECIFIED SITE
192.0  MALIGNANT NEOPLASM OF CRANIAL NERVES
192.1  MALIGNANT NEOPLASM OF CEREBRAL MENINGES
192.1  MALIGNANT NEOPLASM OF CEREBRAL MENINGES
194.3  MALIGNANT NEOPLASM OF PITUITARY GLAND AND
194.4  CRANIOPHARYNGEAL DUCT
194.4  MALIGNANT NEOPLASM OF PINEAL GLAND
196.0  NODES OF HEAD FACE AND NECK
198.3  SECONDARY MALIGNANT NEOPLASM OF BRAIN AND SPINAL CORD
198.4  SECONDARY MALIGNANT NEOPLASM OF OTHER PARTS OF NERVOUS
198.4  SECONDARY MALIGNANT NEOPLASM OF OTHER PARTS OF NERVOUS
198.5  SECONDARY MALIGNANT NEOPLASM OF BONE AND BONE MARROW
225.0  BENIGN NEOPLASM OF BRAIN
225.1  BENIGN NEOPLASM OF CRANIAL NERVES
225.2  BENIGN NEOPLASM OF CEREBRAL MENINGES
225.8  BENIGN NEOPLASM OF OTHER SPECIFIED SITES OF NERVOUS SYSTEM
227.3  BENIGN NEOPLASM OF PITUITARY GLAND AND CRANIOPHARYNGEAL
227.4  DUCT
227.4  BENIGN NEOPLASM OF PINEAL GLAND
228.02  HEMANGIOMA OF INTRACRANIAL STRUCTURES
237.0   NEOPLASM OF UNCERTAIN BEHAVIOR OF PITUITARY GLAND AND CRANIOPHARYNGEAL DUCT
237.1   NEOPLASM OF UNCERTAIN BEHAVIOR OF PINEAL GLAND
237.5   NEOPLASM OF UNCERTAIN BEHAVIOR OF BRAIN AND SPINAL CORD
237.6   NEOPLASM OF UNCERTAIN BEHAVIOR OF MENINGES
237.7   - NEUROFIBROMATOSIS UNSPECIFIED - NEOPLASM OF UNCERTAIN BEHAVIOR OF OTHER AND UNSPECIFIED PARTS OF NERVOUS SYSTEM
239.6   NEOPLASM OF UNSPECIFIED NATURE OF BRAIN
239.7   NEOPLASM OF UNSPECIFIED NATURE OF ENDOCRINE GLANDS AND OTHER PARTS OF NERVOUS SYSTEM
253.0   ACROMEGALY AND GIGANTISM - UNSPECIFIED DISORDER OF THE PITUITARY GLAND AND ITS HYPOTHALAMIC CONTROL
298.9   UNSPECIFIED PSYCHOSIS
310.0   FRONTAL LOBE SYNDROME - UNSPECIFIED NONPSYCHOTIC MENTAL DISORDER FOLLOWING ORGANIC BRAIN DAMAGE
310.9   - LEUKODYSTROPHY - UNSPECIFIED CEREBRAL DEGENERATION IN CHILDHOOD
330.0   ALZHEIMER'S DISEASE - CEREBRAL DEGENERATION UNSPECIFIED
331.0   - PARALYSIS AGITANS - SECONDARY PARKINSONISM
332.0   - OTHER DEGENERATIVE DISEASES OF THE BASAL GANGLIA - OTHER EXTRAPYRAMIDAL DISEASES AND ABNORMAL MOVEMENT DISORDERS
333.0   FRIEDREICH'S ATAXIA - SPINOCEREBELLAR DISEASE UNSPECIFIED
340     MULTIPLE SCLEROSIS
341.0   NEUROMYELITIS OPTICA - Demyelinating Disease of Central Nervous System Unspecified
341.9   FLACCID HEMIPLEGIA AND HEMIPARESIS AFFECTING UNSPECIFIED SIDE - UNSPECIFIED HEMIPLEGIA AND HEMIPARESIS AFFECTING NONDOMINANT SIDE
343.0  CONGENITAL DIPLEGIA - INFANTILE CEREBRAL PALSY UNSPECIFIED
343.9
344.00 - QUADRIPLEGIA UNSPECIFIED - PARALYSIS UNSPECIFIED
344.9
345.00 - GENERALIZED NONCONVULSIVE EPILEPSY WITHOUT INTRACTABLE EPILEPSY
345.91 - EPILEPSY - EPILEPSY UNSPECIFIED WITH INTRACTABLE EPILEPSY
348.0 - CEREBRAL CYSTS - UNSPECIFIED CONDITION OF BRAIN
348.9
349.1  NERVOUS SYSTEM COMPLICATIONS FROM SURGICALLY IMPLANTED DEVICE
349.2  DISORDERS OF MENINGES NOT ELSEWHERE CLASSIFIED
349.31 - ACCIDENTAL PUNCTURE OR LACERATION OF DURA DURING A PROCEDURE - OTHER DURAL TEAR
349.81 - CEREBROSPINAL FLUID RHINORRHEA - OTHER SPECIFIED DISORDERS
349.89  OF NERVOUS SYSTEM
349.9  UNSPECIFIED DISORDERS OF NERVOUS SYSTEM
350.1 - TRIGEMINAL NEURALGIA - TRIGEMINAL NERVE DISORDER
350.9  UNSPECIFIED
351.0 - BELL'S PALSY - FACIAL NERVE DISORDER UNSPECIFIED
351.9
352.0 - DISORDERS OF OLFACTORY (1ST) NERVE - UNSPECIFIED DISORDER OF CRANIAL NERVES
352.9
358.00 - MYASTHENIA GRAVIS WITHOUT (ACUTE) EXACERBATION - MYASTHENIA GRAVIS WITH (ACUTE) EXACERBATION
358.01
358.1  MYASTHENIC SYNDROMES IN DISEASES CLASSIFIED ELSEWHERE
368.11  SUDDEN VISUAL LOSS
368.12  TRANSIENT VISUAL LOSS
368.2  DIPOPIA
368.40  VISUAL FIELD DEFECT UNSPECIFIED
368.8  OTHER SPECIFIED VISUAL DISTURBANCES
368.9  UNSPECIFIED VISUAL DISTURBANCE
374.31  PARALYTIC PTOSIS
377.00  PAPILLEDEMA UNSPECIFIED
377.01  PAPILLEDEMA ASSOCIATED WITH INCREASED INTRACRANIAL
SYSTEMS

784.2 SWELLING MASS OR LUMP IN HEAD AND NECK
784.3 APHASIA

784.51 - 784.59 DYSARTHRIA - OTHER SPEECH DISTURBANCE

784.60 - 784.69 SYMBOLIC DYSFUNCTION UNSPECIFIED - OTHER SYMBOLIC DYSFUNCTION

793.0 NONSPECIFIC (ABNORMAL) FINDINGS ON RADIOLOGICAL AND OTHER EXAMINATION OF SKULL AND HEAD

794.00 - 794.09 UNSPECIFIED ABNORMAL FUNCTION STUDY OF BRAIN AND CENTRAL NERVOUS SYSTEM - OTHER NONSPECIFIC ABNORMAL RESULTS OF FUNCTION STUDY OF BRAIN AND CENTRAL NERVOUS SYSTEM

800.00 - 800.99 CLOSED FRACTURE OF VAULT OF SKULL WITHOUT INTRACRANIAL INJURY WITH STATE OF CONSCIOUSNESS UNSPECIFIED - OPEN FRACTURE OF VAULT OF SKULL WITH INTRACRANIAL INJURY OF OTHER AND UNSPECIFIED NATURE WITH CONCUSSION UNSPECIFIED CLOSED FRACTURE OF BASE OF SKULL WITHOUT INTRACRANIAL INJURY WITH STATE OF CONSCIOUSNESS UNSPECIFIED - OPEN FRACTURE OF BASE OF SKULL WITH INTRACRANIAL INJURY OF OTHER AND UNSPECIFIED NATURE WITH CONCUSSION UNSPECIFIED CONCUSSION WITH NO LOSS OF CONSCIOUSNESS - INTRACRANIAL INJURY OF OTHER AND UNSPECIFIED NATURE WITH OPEN INTRACRANIAL WOUND WITH CONCUSSION UNSPECIFIED

850.0 - 854.19 OPTIC NERVE INJURY - INJURY TO UNSPECIFIED OPTIC NERVE AND PATHWAYS

950.0 - 951.0 INJURY TO OCULOMOTOR NERVE - INJURY TO UNSPECIFIED CRANIAL NERVE

996.2 MECHANICAL COMPLICATION OF NERVOUS SYSTEM DEVICE IMPLANT AND GRAFT

997.00 NERVOUS SYSTEM COMPLICATION UNSPECIFIED

997.01 CENTRAL NERVOUS SYSTEM COMPLICATION

997.02 IATROGENIC CEREBROVASCULAR INFARCTION OR HEMORRHAGE

997.09 OTHER NERVOUS SYSTEM COMPLICATIONS

V10.85 PERSONAL HISTORY OF MALIGNANT NEOPlASM OF BRAIN

10— Brain MRI – CMS · FL
V10.86 PERSONAL HISTORY OF MALIGNANT NEOPLASM OF OTHER PARTS OF NERVOUS SYSTEM
V10.88 PERSONAL HISTORY OF MALIGNANT NEOPLASM OF OTHER ENDOCRINE GLANDS AND RELATED STRUCTURES
V45.2* POSTSURGICAL PRESENCE OF CEREBROSPINAL FLUID DRAINAGE DEVICE
V67.1 FOLLOW-UP EXAMINATION FOLLOWING RADIOTHERAPY
V67.2 FOLLOW-UP EXAMINATION FOLLOWING CHEMOTHERAPY

Group 1 Medical Necessity ICD-9 Codes Asterisk Explanation: ** According to the ICD-9-CM book, diagnosis code V45.2 is a secondary diagnosis code and should not be billed as the primary diagnosis.

ICD-9 Codes that DO NOT Support Medical Necessity
Paragraph: All other diagnosis codes not listed as covered in the “ICD-9 Codes that Support Medical Necessity” section of this policy.

Documentation Requirements
The documentation of the study requires a formal written report, with clear identifying demographics, the name of the interpreting provider, reason for the test, and interpretive report and copies of all images obtained. The computerized data with image reconstruction should also be maintained.

The medical record must contain documentation, including a written or electronic request for the procedure which fully supports the medical necessity of the procedure performed. This documentation includes, but is not limited to relevant medical history, physical examination, diagnosis (if known), pertinent signs and symptoms and results of pertinent diagnostic tests and/or procedures. This entire documentation—not just the test report or the findings/diagnosis on the order, must be made available to Medicare upon request.

When a CT scan and MRI are performed on the same day for the same anatomical area, the medical record must clearly reflect the medical necessity for performing both tests.

Rules for Testing Facility to Furnish Additional Tests:
If the testing facility cannot reach the treating physician/practitioner to change the order or obtain a new order and documents this in the medical record, then the testing facility may furnish the additional diagnostic test if all of the following criteria apply:
• The testing center performs the diagnostic test ordered by the treating physician/practitioner;
• The interpreting physician at the testing facility determines and documents that, because of the abnormal result of the diagnostic test performed, an additional diagnostic test is medically necessary;
• Delaying the performance of the additional diagnostic test would have an adverse effect
on the care of the beneficiary:
• The result of the test is communicated to and is used by the treating physician/practitioner in the treatment of the beneficiary; and
• The interpreting physician at the testing facility documents in his/her report why additional testing was done.

Rules for Testing Facility Interpreting Physician to Furnish Different or Additional Tests:
The following applies to an interpreting physician of a testing facility who furnishes a diagnostic test to a beneficiary who is not a hospital inpatient or outpatient. The interpreting physician must document accordingly in his/her report to the treating physician/practitioner.

Test Design:
Unless specified in the order, the interpreting physician may determine, without notifying the treating physician/practitioner, the parameters of the diagnostic test (e.g., number of radiographic views obtained, thickness or tomographic sections acquired, use or non-use of contrast media).

If the provider of the service is other than the ordering/referring physician/nonphysician practitioner, that provider must maintain documentation of test results and interpretation, along with copies of the ordering/referring physician/nonphysician practitioner’s order for the studies. The physician/nonphysician practitioner must state the clinical indication/medical necessity for the study in his/her order for the test.

Appendices

Utilization Guidelines
It is expected that these services would be performed as indicated by current medical literature and/or standards of practice. When services are performed in excess of established parameters, they may be subject to review for medical necessity.

Reviewed/Approved by Michael Pentecost, MD, Associate Chief Medical Officer