MEDICAL POLICY

MEDICAL POLICY DETAILS	
Medical Policy Title	**Magnetic Resonance Spectroscopy (MRS)**
Policy Number	**6.01.03**
Category	**Technology Assessment**
Original Effective Date	**10/18/01**
Committee Approval Date	**10/18/01, 09/19/02, 09/18/03, 07/15/04, 01/05/05, 07/21/05, 05/18/06, 05/17/07, 08/16/07, 06/19/08, 06/18/09, 11/18/10, 11/17/11, 11/15/12**
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Deletion Date	**(DELETED: 05/27/10-11/18/10)**
Product Disclaimer	• *If a product excludes coverage for a service, it is not covered, and medical policy criteria do not apply.* • *If a commercial product (including an Essential Plan or Child Health Plus product), medical policy criteria apply to the benefit.* • *If a Medicaid product covers a specific service, and there are no New York State Medicaid guidelines (eMedNY) criteria, medical policy criteria apply to the benefit.* • *If a Medicare product (including Medicare HMO-Dual Special Needs Program (DSNP) product) covers a specific service, and there is no national or local Medicare coverage decision for the service, medical policy criteria apply to the benefit.* • *If a Medicare HMO-Dual Special Needs Program (DSNP) product DOES NOT cover a specific service, please refer to the Medicaid Product coverage line.*

POLICY STATEMENT

I. Based upon our criteria and assessment of the peer-reviewed literature, magnetic resonance spectroscopy (MRS) has been medically proven to be effective and, therefore, is considered **medically appropriate** for the following indications when conventional imaging by magnetic resonance imaging (MRI) or computed tomography (CT) provides limited information:

   A. Differentiation of cerebral tumor versus abscess or other infectious or inflammatory process; or
   B. Differentiation of cerebral tumor versus radiation necrosis; or
   C. Seizures, especially temporal lobe epilepsy; or
   D. Grading of primary glial neoplasm, particularly high-grade versus low-grade glioma.

II. Based upon our criteria and assessment of peer-reviewed literature, MRS has not been medically proven to be effective and, therefore, is considered **investigational** for all other indications.

Refer to Corporate Medical Policy #11.01.03 Experimental and Investigational Services.

Refer to Corporate Medical Policy #6.01.29 Positron Emission Tomography (PET) Oncologic Applications

POLICY GUIDELINE

Although some indications may be determined by positron emission tomography (PET) or MRS, only one technique (PET or MRS) should be performed, not both.

DESCRIPTION

MRS is a non-invasive procedure used to measure the concentrations of different low molecular weight chemicals within tissues. It is also known as nuclear magnetic resonance (NMR) spectroscopy. MRS utilizes the same equipment as magnetic resonance imaging (MRI), modified with additional software and hardware, but applies different signals or frequencies to acquire information. In MRI, the frequency is determined by spatial position, whereas, in MRS, the chemical content of the substance scanned determines the frequency. While an MRI provides an anatomic image, MRS provides a functional image related to underlying dynamic physiology. It has become possible to integrate MRS with routine MRI, so that local abnormalities detected by MRI can also be examined biochemically by MRS before and after therapeutic interventions. An MRI image is first generated, and then MRS spectra are developed at the site of interest, termed the voxel.

In normal brain tissue, MRS depicts the following principal spectral peaks: N-acetyl groups, especially N-acetylasparate (NAA); choline-containing compound (Cho), such as a membrane phospholipid (e.g., phosphocholine or glycerophosphocholine); and creatine and phosphocreatine.

MRS has been studied most extensively in a variety of brain pathologies. Different spectral patterns in both healthy and diseased brains are the basis of clinical applications of MRS. MRS findings characteristically associated with non-necrotic brain tumors include elevated Cho levels and reduced NAA levels. Peripheral applications of MRS include the study of myocardial ischemia, peripheral vascular disease, and skeletal muscle. Applications in non-CNS oncologic evaluation have also been explored.

RATIONALE

The basic hardware for MRS is substantially equivalent to that used for conventional MRI. A number of MRI scanners have received Section 510(k) clearance for marketing by the U.S. Food and Drug Administration (FDA) for use in the United States. Multiple software packages for performing proton MRS have received Section 510(k) marketing clearance by the FDA since 1993. The FDA requires specific clearance for different neutron probes for MRS.

Although there are many studies available regarding MRS, controlled clinical trials are limited. However, small studies have indicated that MRS can change patient management in the determination of cerebral tumor versus abscess or other infectious or inflammatory process, and cerebral tumor versus radiation necrosis. Studies with very small sample size and methodological flaws indicate possible future use of MRS for evaluation of prostate cancer, breast cancer, cervical cancer, pancreatic cancer, esophageal cancer, and myocardial ischemia.

Several clinical trials, in various stages, are studying MRS for several indications, including prostate cancer, brain metabolism, breast cancer, and human immunodeficiency virus (HIV).

CODES

- *Eligibility for reimbursement is based upon the benefits set forth in the member's subscriber contract.*
- *CODES MAY NOT BE COVERED UNDER ALL CIRCUMSTANCES. PLEASE READ THE POLICY AND GUIDELINES STATEMENTS CAREFULLY.*
- *Codes may not be all inclusive as the AMA and CMS code updates may occur more frequently than policy updates.*
- *Code Key: Experimental/Investigational = (E/I), Not medically necessary/ appropriate = (NMN).*

CPT Codes

Code	Description
76390	Magnetic resonance spectroscopy
0609T **(E/I)**	Magnetic resonance spectroscopy, determination and localization of discogenic pain (cervical, thoracic, or lumbar); acquisition of single voxel data, per disc, on biomarkers (i.e., lactic acid, carbohydrate, alanine, laal, propionic acid, proteoglycan, and collagen) in at least 3 discs

Code	Description
0610T **(E/I)**	transmission of biomarker data for software analysis
0611T **(E/I)**	postprocessing for algorithmic analysis of biomarker data for determination of relative chemical differences between discs
0612T **(E/I)**	interpretation and report

HCPCS Codes

Code	Description
No code(s)	

ICD10 Codes

Code	Description
C71.0-C71.9	Malignant neoplasm of brain (code range)
C79.31-C79.49	Secondary malignant neoplasm of brain and other parts of the nervous system (code range)
G03.9	Meningitis, unspecified
G04.90	Encephalitis and encephalomyelitis, unspecified
G04.91	Myelitis, unspecified
G06.0	Intracranial abscess and granuloma
G37.4	Subacute necrotizing myelitis of central nervous system
G46.0-G46.8	Vascular syndromes of brain in cerebrovascular diseases (code range)
I67.89	Other cerebrovascular disease
I68.0	Cerebral amyloid angiopathy
I68.8	Other cerebrovascular disorders in diseases classified elsewhere
R56.9	Unspecified convulsions

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*Key Article

KEY WORDS

MRS, Nuclear magnetic resonance spectroscopy, Nuclear MRS, Proton magnetic resonance spectroscopy; Proton MRS

CMS COVERAGE FOR MEDICARE PRODUCT MEMBERS

Based upon our review, Magnetic Resonance Spectroscopy is addressed in a National Medicare Coverage Determination. Please refer to the following website for Medicare Members: [https://www.cms.gov/medicare-coverage-database/view/ncd.aspx?ncdid=287&ncdver=2&bc=AgAAgAAAAAAA&=]