

# MEDICAL POLICY



<b>SUBJECT: MAGNETIC RESONANCE SPECTROSCOPY (MRS)</b>	<b>EFFECTIVE DATE: 09/16/99</b> <b>REVISED DATE: 07/19/01, 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</b> <b>ARCHIVED DATE: 11/21/13</b> <b>EDITED DATE: 06/19/14, 06/18/15, 02/18/16, 02/16/17, 02/15/18</b> <b>(DELETED: 05/27/10-11/18/10)</b> <b>PAGE: 1 OF: 4</b>
<b>POLICY NUMBER: 6.01.03</b> <b>CATEGORY: Technology Assessment</b>	

- *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 product, covers a specific service, medical policy criteria apply to the benefit.*
- *If a Medicare 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.*

## **POLICY STATEMENT:**

- I. Based upon our criteria and review of the peer-reviewed literature, magnetic resonance spectroscopy has been medically proven to be effective and therefore, **medically appropriate** for the following indications:
  - A. Differentiation of cerebral tumor versus abscess, or infectious or inflammatory process; and
  - B. Differentiation of cerebral tumor versus radiation necrosis.
- II. Based upon our criteria and review of peer-reviewed literature, magnetic resonance spectroscopy 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 regarding Positron Emission Tomography (PET) Oncologic Applications.*

## **POLICY GUIDELINES:**

- I. Although some indications may be determined by PET (positron emission tomography) or MRS, only one technique (PET or MRS) should be performed, not both.
- II. The Federal Employee Health Benefit Program (FEHBP/FEP) requires that procedures, devices or laboratory tests approved by the U.S. Food and Drug Administration (FDA) may not be considered investigational and thus these procedures, devices or laboratory tests may be assessed only on the basis of their medical necessity.

## **DESCRIPTION:**

Magnetic Resonance Spectroscopy (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-acetylaspartate (NAA); choline-containing compound (Cho) such as membrane phospholipids (e.g. phosphocholine and glycerophosphocholine); creatine and phosphocreatine.

MRS has been studied most extensively in a variety of brain pathologies. Different spectral patterns in both the healthy and diseased brain are the basis of clinical applications of MRS. MRS findings characteristically associated with non-necrotic brain tumors include elevated choline (Cho) levels and reduced N-acetylaspartate (NAA) levels. Peripheral applications of MRS include the study of myocardial ischemia, peripheral vascular disease, and skeletal muscle.

*Proprietary Information of Excellus Health Plan, Inc.*

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Applications in non-CNS oncologic evaluation have also been explored.

**RATIONALE:**

The basic hardware for MRS is substantially equivalent to that used for conventional magnetic resonance imaging (MRI). A number of magnetic resonance imaging scanners have received 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 clearance by the FDA through the 510(k) process since 1993. The FDA has required specific clearance of probes 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 vs. 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 prostate cancer, breast cancer, cervical cancer, pancreatic cancer, esophageal cancer and the evaluation of myocardial ischemia.

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

**CODES:**      Number                      Description

*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.

**CPT:**                      76390                      Magnetic resonance spectroscopy

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**HCPCS:**                      No code(s)

**ICD10:**                      C71.5                      Malignant neoplasm of cerebral ventricle  
C71.6                      Malignant neoplasm of cerebellum  
C79.31-C79.49                      Malignant neoplasm of brain and other part 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  
G46.3-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

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**KEY WORDS:**

MRS, Nuclear magnetic resonance spectroscopy, Nuclear MRS, Proton magnetic resonance spectroscopy, Proton MRS.

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## CMS COVERAGE FOR MEDICARE PRODUCT MEMBERS

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There is currently a National Coverage Determination (NCD) for Magnetic Resonance Spectroscopy. Please refer to the following websites for Medicare Members: <http://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=287&ncdver=1&bc=AgAAgAAAAAAA&>.