



BlueCross BlueShield
of North Carolina

Corporate Medical Policy

Magnetic Resonance Spectroscopy

File Name: magnetic_resonance_spectroscopy
Policy Number: RAD5110
Origination: 12/1997
Last Review: 5/2008
Next Review: 5/2010

Description of Procedure or Service

Magnetic Resonance Spectroscopy (MRS), also known as nuclear magnetic resonance spectroscopy, is a [non-invasive](#) diagnostic test that measures and analyzes the chemical composition of human tissues. MRS relies on the fact that chemicals in the body emit radiofrequency signals when stimulated by a strong magnetic field. By analyzing the different chemical compounds or metabolites in a diseased tissue area and comparing these with the normal metabolite composition of corresponding tissue, MRS has the potential to provide information that can assist in diagnosing pathologic states. It has been used to study metabolic changes in brain tumors, strokes, seizure disorders, Alzheimer's disease, depression and other diseases affecting the brain. It has also been used to study the metabolism of other organs.

Policy

BCBSNC will not provide coverage for Magnetic Resonance Spectroscopy. It is considered investigational. BCBSNC does not cover investigational services.

Benefits Application

Please refer to Certificate for availability of benefits. This policy relates only to the services or supplies described herein. Benefits may vary according to benefit design, therefore certificate language should be reviewed before applying the terms of the policy. See Professional Services.

When Magnetic Resonance Spectroscopy is covered

Not applicable.

When Magnetic Resonance Spectroscopy is not covered

The use of Magnetic Resonance Spectroscopy is considered investigational for all applications. BCBSNC does not provide coverage for investigational services.

Policy: Magnetic Resonance Spectroscopy

Policy Guidelines

MRS has been studied most extensively in a variety of brain pathologies. While MRS has been investigated in a wide variety of clinical situations, there are limited studies specifically focusing on its sensitivity and specificity in specific clinical situations. Lack of definitive studies demonstrating clinical value of MRS extends to its use in multiple sclerosis, cerebrovascular injury, prostate cancer, breast cancer, and mitochondrial disorders.

The available studies all have some degree of shortcomings, and the overall body of evidence does not provide strong and consistent evidence regarding the diagnostic test characteristics or clinical utility of MRS for any condition. Studies of diagnostic performance often included a heterogeneous mix of patients that had clinically important differences and did not clearly delineate how MRS information would be used to guide patient management. Furthermore, there were differences in MRS technique and methods of analysis across studies that make it difficult to synthesize findings from different studies.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable code: 76390

Policy Key Words

Key Words: RAD5110, Magnetic Resonance Spectroscopy, MRS, nuclear magnetic resonance spectroscopy

Medical Term Definitions

Non-invasive

a diagnostic technique that does not involve puncture or incision of the skin or insertion of an instrument or foreign material into the body.

Scientific Background and Reference Sources

MEDLINE search January 1996 through December 1997

MRI Clinics of North America, Volume 6, Number 1, February 1998; "*MR Spectroscopy in the Evaluation of Epilepsy*", pps. 21-29; Jill E. Thompson, M.D., Mauricio Castillo, M.D., and Lester Kwock, PhD.

Neuroimaging Clinics of North America, Volume 8, Number 4, November 1998; "*Proton MR Spectroscopy in Inflammatory and Infectious Brain Disorders*", pps. 863-880; Kim M. Cecil, PhD., Robert E. Lenkinski, PhD.

Neuroimaging Clinics of North America, Volume 8, Number 4, November 1998; "*Proton MR Spectroscopy in Ischemic Stroke and Other Vascular Disorders*", pps. 881-900; Peter E. Ricci, Jr., M.D.

Independent Consultant Review 8/99

Medical Policy Advisory Group - 12/99

Policy: Magnetic Resonance Spectroscopy

BCBSA Medical Policy Reference Manual - 4/30/2000; 6.01.24

Specialty Matched Consultant Advisory Panel - 9/2000

Medical Policy Advisory Group - 10/2000

Specialty Matched Consultant Advisory Panel - 8/2002

BCBSA Medical Policy Reference Manual [Electronic Version]. 6.01.24, 4/29/03

Wartenberg KE, Patsalides A, Yepes MS. (April 2004). Is magnetic resonance spectroscopy superior to conventional diagnostic tools in hypoxic-ischemic encephalopathy. *J Neuroimaging*, 14(2), 180-6. Retrieved on May 10, 2004 from http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15095566.

BCBSA TEC Assessment [Electronic Version]. June 2003.

Rock JP, Scarpace L, Hearshen D, Gutierrez J, Fisher JL, Rosenblum M, et al. (May 2004). Associations among magnetic resonance spectroscopy apparent diffusion coefficients, and image-guided histopathology with special attention to radiation necrosis. Retrieved on May 10, 2004 from http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15113465.

Specialty Matched Consultant Advisory Panel - 7/2004

BCBSA Medical Policy Reference Manual [Electronic Version] 6.01.24, 12/14/05

Centers for Medicare & Medicaid Services. Decision Memo for Magnetic Resonance Spectroscopy for Brain Tumors (CAG-00141N). January 29, 2004. Retrieved 1/20/06 from <http://www.cms.hhs.gov/mcd/viewdecisionmemo.asp?id=52>

Centers for Medicare & Medicaid Services. National Coverage Determination for Magnetic Resonance Spectroscopy (220.2.1). September 2004. Retrieved 1/20/06 from <http://www.cms.hhs.gov>

Ontario Ministry of Health, Medical Advisory Secretariat (MAS). Ontario Health Technology Advisory Committee (OHTAC). Recommendation Functional Brain Imaging. Toronto, ON: MAS; January 25, 2007. Retrieved 2/19/08 from http://www.health.gov.on.ca/english/providers/program/ohtac/tech/reviews/pdf/rev_fbi_012507.pdf

BCBSA Medical Policy Reference Manual [Electronic Version] 6.01.24, 5/08/08

Policy Implementation/Update Information

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| 12/97 | Original Policy developed. Reviewed by the Plan's Medical Director |
| 9/99 | Reformatted, Description of Procedure or Service changed, Medical Term Definitions added. |
| 12/99 | Medical Policy Advisory Group |
| 2/00 | Coding system change |
| 10/00 | Specialty Matched Consultant Advisory Panel review. No change recommended in criteria. System coding changes. Medical Policy Advisory Group review. No change in criteria. Approve. |
| 9/02 | Specialty Matched Consultant Advisory Panel review 8/2002. Added source to Scientific Background and Reference Sources section. No changes in criteria. |
| 8/26/04 | Specialty Matched Consultant Advisory Panel review 7/15/2004 with no changes made to policy criteria. References added. Benefits Application and Billing/Coding sections updated for consistent policy language. |

Policy: Magnetic Resonance Spectroscopy

- 6/5/06 Description of procedure expanded for clarification. Rationale added to Policy Guidelines. Policy number added to Key Words. References updated. Specialty Matched Consultant Advisory Panel review 5/3/06 with no changes to policy coverage criteria.
- 10/2/06 Policy statement changed to indicate BCBSNC will not provide coverage for MRS. It is considered investigational. Information in the "When MRS is Covered" section replaced with the statement "not applicable." Information in the "When MRS is Not Covered" section replaced with the statement "The use of Magnetic Resonance Spectroscopy is considered investigational for all applications. BCBSNC does not provide coverage for investigational services." Policy Guidelines section updated to include the following rationale for noncoverage: The available studies all have some degree of shortcomings, and the overall body of evidence does not provide strong and consistent evidence regarding the diagnostic test characteristics or clinical utility of MRS for any condition. Studies of diagnostic performance often included a heterogeneous mix of patients that had clinically important differences and did not clearly delineate how MRS information would be used to guide patient management. Furthermore, there were differences in MRS technique and methods of analysis across studies that make it difficult to synthesize findings from different studies. References added. Notification date 10/2/06. Effective date 12/11/06.
- 6/16/08 Specialty Matched Consultant Advisory Panel review 5/15/08. No change in policy statement.

Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.