

Medical Affairs Policy & Procedure

Title/Service: Magnetic Resonance Spectroscopy (MRS), Nuclear Magnetic Resonance Spectroscopy (NMRS)

Revised	
Reviewed	12/96, 06/15/01, 03/26/04, 06/23/06, 02/16/07, 05/15/08, 04/24/09, 04/28/10, 09/16/2011
Developed	12/96
Policy Committee Approval	09/16/2011

Description:

Magnetic Resonance Spectroscopy (MRS) is a non-invasive diagnostic test used to evaluate metabolic changes of various organs. MRS provides an analysis of the types and quantities of chemicals in those organs and surrounding tissue. A comparison of the chemicals in an area of disease and chemicals in an area of tissue not affected by disease may assist in diagnosis.

Indications of Coverage:

MRS is considered medically necessary for differentiating recurrent brain tumor from radiation necrosis following radiation treatment of a primary brain tumor.

Limitations of Coverage:

- A. Review contract and endorsements for exclusions and prior authorization or benefit requirements.
- B. If used for a condition/diagnosis other than is listed in the Indications of Coverage, deny as experimental or investigative.
- C. If used for a condition/diagnosis that is listed in the Indications of Coverage, but the criteria are not met, deny as not medically necessary.

Documentation Required:

- Referring provider notes
- Radiology report

Rationale:

Evidence regarding the usefulness of MRS and the effect of the technology on patient outcomes is extremely limited; however, there are limited options for imaging brain

tissue, and MRS may be one of the few options for imaging brain tumors. MRS has not been shown to be of any additional benefit in evaluating brain cancer other than in the rare situation where conventional imaging is unable to differentiate between recurrent, residual, or progressive brain cancer and damage due to previous radiation therapy of the brain. The National Comprehensive Cancer Network (NCCN) lists MRS and positron emission tomography (PET) scans as two modalities to differentiate radiation necrosis from tumor, but notes that there are some limitations with PET. No limitations with MRS are reported.

Additional, larger controlled clinical trials are needed to evaluate the effectiveness of MRS in diagnosing individuals with brain tumors. Additionally, whether MRS has any effect on patient outcomes when evaluating any of the other conditions where the use of this technology has been proposed has not been addressed through controlled clinical trials. There are limited studies evaluating the diagnostic accuracy of MRS and whether it has any effect on decision-making or outcome. Several reports have recommended additional studies regarding this technology.

References:

1. American College of Radiology. Practice guideline for the performance and interpretation of magnetic resonance spectroscopy of the central nervous system. Revised 2008. Available at: www.acr.org/SecondaryMainMenuCategories/quality_safety/guidelines/dx/head-neck/mr_spectroscopy.aspx. Accessed: 25 Aug 11.
2. Center for Medicare and Medicaid Services (CMS) National Coverage Determination (NCD): Magnetic Resonance Spectroscopy (MRS). NCD 220.2.1. Baltimore, MD. Effective date: 09/10/2004. Available at: www.cms.gov/medicare-coverage-database/overview-and-quick-search.aspx?list_type=ncd. Accessed: 25 Aug 11.
3. Chuang CF, Chan AA, Larson D, Verhey LJ, McDermott M, Nelson SJ, Pirzkall A. Potential value of MR spectroscopic imaging for the radiosurgical management of patients with recurrent high-grade gliomas. *Technol Cancer Res Treat*. 2007 Oct; 6(5):375-82.
4. Magnetic resonance spectroscopy for evaluation of suspected brain tumor. TEC Assessment Program. June 2003.
5. National Comprehensive Cancer Network. Clinical Practice Guidelines in Oncology. Central Nervous System (CNS) Cancers. Version 2.2011. Available at: www.nccn.org. Accessed: 25 Aug 11.

Approved by the Medical Director