Magnetic Resonance Neurography

Medicare Advantage Medical Policy # MA-170
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Applies to all products administered or underwritten by the Health Plan, unless otherwise provided in the applicable contract. Medical technology is constantly evolving, and we reserve the right to review and update Medical Policy periodically.

Services Are Considered Investigational

Coverage is not available for investigational medical treatments or procedures, drugs, devices or biological products.

Based on review of available data, the Health Plan considers Magnetic Resonance Neurography to be **investigational.***

Background/Overview

Magnetic resonance (MR) imaging of the peripheral nervous system, also known as magnetic resonance neurography (MR Neurography or MRN), is a special type of magnetic resonance imaging used to visualize peripheral nerves. Specially designed phased-array surface coils provide superior resolution of small structures so that normal-sized nerves can be distinguished from surrounding soft tissues, and the internal structure of the nerves can be visualized.
The procedure is purported to show high-resolution images of peripheral nerves in order to diagnose peripheral nerve disorders. Proposed uses for MRN include defining the specific location of nerve entrapment (e.g., radiculopathy) and compression as well as diagnosing malignant infiltration and invasion. MRN may detect secondary findings of muscle denervation.
Nerve injuries secondary to either compression or traumatic accidents are generally diagnosed and managed without imaging the nerves directly. Standard magnetic resonance imaging (MRI) can occasionally help to visualize the nerves, but historically this method of imaging has proven to be so unreliable that MRI has never been a major diagnostic tool in the management of these patients. MRN has been developed to improve the use of magnetic resonance imaging using special software and hardware.

Proponents of MRN state that MR Neurography may be useful for both preoperative diagnosis and presurgical planning. Direct nerve imaging with MR Neurography has the potential to demonstrate nerve continuity, distinguish intraneural from perineural masses, and localize nerve compressions prior to surgical exploration. Proponents also believe that the technology can add clinically useful diagnostic information in many situations where neurological examinations, electrodiagnostic tests, and existing image techniques are inconclusive. Preliminary studies suggest a wide range of indications, including carpal tunnel syndrome, cubital tunnel syndrome or ulnar nerve entrapment at the elbow, cervical radiculopathy, brachial plexopathy or thoracic outlet syndrome, lumbosacral plexopathy, sciatica, traumatic peripheral nerve injuries, peripheral

nerve tumors and cysts, or any other condition thought to be due to nerve compression or impingement.

MR Neurography of the spinal and peripheral nerves has been proposed as an additional diagnostic tool for diagnosing pathology related to nerves. The following indications have been proposed for MR Neurography:
- Prediction of resectability of peripheral nerve lesions and the need for intraoperative monitoring;
- Identification of nerves enhancing the safety of image-guided procedures;
- Assistance in surgical planning by clarifying intraneural versus perineural location of lesion;
- Assessment of nerve continuity immediately after injury.

MRN has been used to supplement diagnostic evaluations following electromyography (EMG) and nerve conduction studies for patients who are suspected of having peripheral nerve tumors, chronic compression syndromes, nerve injury following trauma, post-irradiation neuritis and nerve lesions. MRN has the ability to generate high-resolution longitudinal and cross-sectional images of major peripheral nerves. It appears to be a promising technique, but has not been studied in large populations of patients. Large-scale controlled studies are needed to determine its efficacy in managing conditions such as neurofibromas as well as its ability to distinguish benign from malignant lesions.

FDA or Other Governmental Regulatory Approval

U.S. Food and Drug Administration (FDA)
Magnetic resonance imaging equipment has been approved by the FDA for a number of years. MR Neurography uses FDA-approved MRI machines that are equipped with specialized hardware and software need to image the nerve structures.

Rationale/Source

This medical policy was developed through consideration of peer-reviewed medical literature generally recognized by the relevant medical community, U.S. Food and Drug Administration approval status, nationally accepted standards of medical practice and accepted standards of medical practice in this community, technology evaluation centers, reference to federal regulations, other plan medical policies, and accredited national guidelines.

Description of Technology
Peripheral nerve disorders can often be diagnosed using a combination of clinical history and neurological exam. In some cases, electromyography (EMG), nerve conduction studies (NCS) and nerve biopsy may be used. MRN has been proposed as another diagnostic tool to diagnose peripheral nerve disorders.
MRN is a specialized type of magnetic resonance imaging (MRI) which focuses in on the peripheral nerves. Using specialized equipment, MRN enhances the images of peripheral nerves.

Brachial Plexopathy
The brachial plexus is a group of spinal nerves which extend along the arm to the hand. When the brachial plexus isn't operating correctly, brachial plexopathy can occur. This can lead to lack of

movement and lack of feeling in the arm and shoulder. Cause can be from disease (usually an autoimmune disorder) to traumatic injury. Diagnosis can be done by EMG, NCS or MRI.
In a retrospective review by Fisher and colleagues (2016), the authors reviewed 121 MRN exams that were done on individuals with suspected but unknown brachial plexopathy. After the interpretation of the MRN exams, the impact of the MRN on the pre-imaging clinical diagnosis and treatment plan was classified as concordant, mild change or substantial change. Mild change was defined as the difference in severity of disease unlikely to affect treatment planning. Substantial change was defined as a large deviation from expected severity of disease, a separate disease etiology, or actionable and previously unknown incidental findings. A total of 47 electrodiagnostic exams were performed prior to the MRN and 31 of these electrodiagnostic exams were concordant with the MRN findings, and 16 electrodiagnostic exams showed a discordance in the diagnosis between electromyography and MRN. After MRN, there was a change in pre-imaging clinical impression for 91 of the participants (mild change in diagnosis in 57 participants and substantial change in 34 participants). A total of 19 participants proceeded to therapies that would not have been ordered if not for the MRN results. Limitations to this study include the retrospective nature and the subjectivity in categorizing a mild or substantial change in diagnosis. There were no future outcomes data for the participants and for those who had electrodiagnostic exams prior to MRN exams, the results were available prior to imaging almost 55% of the time which may have led to an influence of interpretation of the MRN.

Upadhyaya (2018) presented findings of a single-institution, prospective, observational study of 25 children who presented to the hospital with brachial plexopathy and a history of non-obstetric trauma and received MRN scanning 6 weeks or more following their trauma. Impairment of movement at the shoulder was found in 24 children, at the elbow in 24 children, and at the wrist in 19 children. Impairment of movement at all three levels was found in 18 children (pan-plexopathy). Signs of injury were found at the level of the roots in 22 children, at the level of the trunks in 20 children, and at the level of the cords in 22 children. None of the MRN results were correlated with electrophysiological studies (nerve conduction velocity [NCV] or EMG) or surgical findings. This study was based solely on analysis of results of scanning. There is no documentation of how the results influenced treatment of the associated conditions.

In a 2021 single-institution retrospective study by Kwee and colleagues, MRI scans of the brachial plexus were reviewed in 15 consecutive participants with and 45 random participants without brachial plexus abnormalities. The aim was to evaluate the diagnostic performance of MRN as an adjunct to conventional MRI for the assessment of brachial plexus pathology. All scans were reviewed by three different physicians. Median interpretation times ranging from 20-30s were reported. Agreement between the reviewers was substantial as judged by kappa coefficients of 0.715 – 0.739. Brachial plexus abnormalities could be detected with moderate sensitivity (53.3 to 73.3%) and high specificity (95.6 to 100%). There was a 100% detection rate by at least two readers of the following conditions: traumatic injury, metastases, radiation-induced plexopathy, schwannoma, and inflammatory process of unknown cause. The majority of readers did not detect neuralgic amyotrophy, iatrogenic injury after first rib resection, and cervical disc herniation. The authors

concluded that neurography is a useful tool when assessing for brachial plexus abnormalities because interpretation time is short and the majority of abnormalities can be detected. Study limitations included that the participant population was heterogeneous and the reference standard (retrospective review of all MRI data by a senior neuroradiologist) may not have been adequate because some plexus abnormalities may not even be visible by conventional MRI.

Braga Silva (2022) conducted a systematic review of the literature with the aim of analyzing the applicability of MRN in peripheral nerve injuries. Nineteen articles were included: most were reviews with few randomized control trials. According to this review, MRN is an important tool for planning the repair of closed nerve injuries and for prognosis. Most of the articles suggested that MRN could improve treatment, providing more accurate early diagnosis of nerve damage and reducing the need for exploratory surgery. MRN has many advantages including non-invasive technique, objective visualization of neural and perineural tissues, fascicular representation, and objective visualization of serial interval images of successful treatment. Although not part of the recommended protocol, MRN is increasingly being used. However, there are a number of limitations of MRN including technical challenges and the inability to identify certain nerve injuries. Some neuropathies in the subclinical stage can intensify the T2 signal and therefore simulate nerve injury. MRN also lacks appropriate visualization of the long axis of the nerve and the ability to distinguish between regeneration and chronic degeneration. The authors concluded that additional research and development in imaging techniques is needed to enable more specific reading of MRI and to guide clinical decisions. Furthermore, "multicenter studies are still needed to validate the promising results of these techniques and to standardize clinical MRI protocols and normative quantitative values for various functional parameters, to make them reproducible between centers."

Chronic Inflammatory Demyelinating Polyneuropathy (CIDP)
CIDP is a rare disorder which typically presents with symmetrical motor function impairment that may or may not be coupled with sensory disturbances. It generally progresses over the course of at least 2 months but may follow a relapsing/remitting course. This disorder affects approximately 5-7 cases per 100,000 individuals and over 50% of affected individuals will be unable to walk without support during the course of the disease. Approximately 10% of these individuals will become persistently disabled or will die. Although the exact etiology is unknown, it is thought to be the result of an autoimmune attack (humoral and cell-mediated) on the peripheral nerves which damages the myelin sheath. This myelin damage is documented by NCS or nerve biopsies. It can be difficult to diagnose and atypical CIDP can account up to 50% of all cases. Several neuropathies share a similar clinical presentation with CIDP. Once the diagnosis is made, prompt treatment is needed to halt inflammatory demyelination, prevent secondary axonal degeneration, and minimize the chances of permanent disability.

Ishikawa (2017) described the results of a study involving 13 participants with CIDP had whole-body MRN. Those images were compared with the images of 12 healthy control participants to assess local conditions during the disease process. The volumes of the peripheral nerves were calculated from the serial axial magnetic resonance images. The participants with a diagnosis of

CIDP had larger volumes than the control group and the volume was positively correlated with the duration of disease. There is no documentation of the impact of disease management based on MRN findings and the study has limitations including the lack of comparison to other diagnostic tests for CIDP.

A 2020 prospective study by Su and colleagues evaluated the distribution of hypertrophy and characteristics of peripheral nerves in participants with CIDP. The goal was to ascertain the rate of abnormalities of the peripheral nerves and relativity between the nerve diameter with measurement of clinical outcomes. There were 31 participants with CIDP and 21 healthy participants in the control group. All participants underwent MRN. In both the participants with CIDP and healthy group, the ganglia presented low signal intensities similar to filling defects. None of the participants in the control group were found to have nerve bilateral hypertrophy whereas it was observed in the brachial plexus of 19 participants and in the lumbosacral plexus of 25 participants with CIDP. When comparing those with CIDP to the control group, there were no significant differences in the nerve diameters between the left and right sides. The diameters of the C5–C8 and L4–S1 nerve roots and sciatic and femoral nerves were larger in those with CIDP than those in the control group. Currently there is no consensus regarding correlation between the nerve size and clinical characteristic, course of the disease, or response to treatment. This study did not show significant differences between the individuals with and without hypertrophy nor was there association with the degree of hypertrophy. There was no comparison between MRN to other diagnostic tests for CIDP.

Oudeman (2020) reported on the diagnostic performance of MRN versus ultrasound (using cross-sectional areas of the nerve) in the diagnosis of CIDP, multifocal motor neuropathy and segmented spinal muscular atrophy. There were 13 participants with CIDP, 10 with multifocal motor neuropathy, 12 with segmented spinal muscular atrophy, and 30 healthy controls. Mild hypertrophy was seen in all groups and one radiologist scored moderate hypertrophy in all groups, including the control group. There was an increased signal intensity found in those with multifocal motor neuropathy, segmented spinal muscular atrophy, and CIDP. Two radiologists also noted increased signal intensity in several of the control group. MRN positive predictive value ranged between 27% and 80% with a negative predictive value ranging between 50% and 64%. Ultrasound showed higher cross-sectional areas in those with CIDP compared to segmented spinal muscular atrophy. Most of the recruited participants with CIDP and multifocal motor neuropathy were treatment naïve and while the group sizes were large enough to show evidence of discriminative properties, they were too small to provide reliable cutoff values with corresponding sensitivities and specificities. The participant groups presented in an identical fashion which could pose a diagnostic challenge. Variations in radiologist observations also posed a challenge in this study.

Wu (2020) reported on the value of lumbosacral nerve roots on MRN in the diagnosis of CIDP and analyzing the correlations with electrophysiological parameters of lower extremities by quantifying cross-sectional areas and signal intensity of L3 to S1 nerve roots. The study included 21 individuals with CIDP and 21 controls. Cross-sectional areas showed enlarged nerve roots in all slices in the CIDP group compared to the control group. Signal intensity was also noted to be higher in the L3 to

S1 nerve roots in those with CIDP when compared to the control group (mean signal intensity 1.314 ± 0.199 and 1.155 ± 0.094 respectively). NCS were done on all participants to assess the magnetic resonance neurography findings to electrophysiological parameters of the lower extremities. Cross-sectional areas of L5 and S1 nerve roots correlated positively with central latency of tibial nerve. There was also positive correlation of the L5 nerve root with the latency of the sural nerve. There were no correlations found between the cross-sectional areas of the lumbosacral nerve roots and electrophysiological parameters of common peroneal nerve and sensory nerves. There were also no correlations between the signal intensity of L3 to S1 nerve roots and the electrophysiological parameters of superficial peroneal nerve and motor nerves. While those in the CIDP group showed enlarged nerve roots, higher signal intensity in nerve roots, and positive correlations with electrophysiological parameters, there was a lack of information of improved health outcomes.

In 2021, Su and colleagues reported on a prospective case-control study with the aim of evaluating the performance of MRN in diagnosing abnormalities of the brachial and lumbosacral (LS) plexus in CIDP. MRN was performed on 37 individuals with CIDP and 37 age- and gender-matched controls. Two radiologists blinded to the clinical information performed the qualitative and quantitative assessments. The sizes of the nerve roots were significantly larger in CIDP. Nerve-to-muscle T2 signal intensity ratio, contrast-enhanced ratio (CR), and apparent diffusion coefficient were significantly higher in CIDP compared to controls while fractional anisotropy (FA) was lower. There was a modest negative correlation between FA and duration of disease in CIDP. In the LS plexus, the combination of CR and FA has the highest sensitivity, specificity, accuracy, and area under the curve (AUC). The authors concluded that MRN has a high diagnostic performance in the LS plexus. They recommended that neurography, combined with diffusion tensor imaging and contrast enhancement, be used in diagnosis and management of CIDP. However, there is currently no consensus regarding correlation between the nerve size and clinical characteristics, course of the disease, or response to treatment. This study found no significant correlation between the clinical disability scores and any MRI parameters.

A 2023 systematic review and meta-analysis by Chen and colleagues evaluated the value of MRN in CIDP. With 14 studies included, the pooled sensitivity was 0.73 (95% confidence interval [CI], 0.66-0.79) and the pooled specificity was 0.89 (95% CI, 0.84-0.92). The review has limitations including studies with small group sizes and differing parameters applied in the studies.

Other Conditions

Filler (2005) published a non-randomized controlled trial which consisted of 239 consecutive participants with sciatica of unknown etiology for which standard diagnosis and treatment failed. These individuals, who had similar symptoms, underwent conventional MRI and MRN followed by MR-guided marcaine injection into the piriformis muscle. The diagnostic efficacy revealed that piriformis muscle asymmetry and sciatic nerve hyperintensity at the sciatic notch exhibited a 93% specificity and 64% sensitivity in distinguishing individuals with from those without piriformis syndrome. It must be noted that this is a single study regarding a single anatomic area and diagnostic issue, and thus is not generalizable to other uses for MRN.

A 2023 retrospective review by Bharadwaj and colleagues reported sciatic nerve variations in those with lumbosacral neuropathic symptoms for evaluation of extraspinal sciatica or piriformis syndrome. Records were reviewed for 127 symptomatic individuals who underwent lumbosacral MRN. There were 64 variant sciatic nerves identified. Abnormal hyperintensity was seen more often in variant compared to conventional anatomy and a sciatic nerve split at the level of the ischial tuberosity was also seen more often in variant compared to conventional anatomy. An increased nerve caliber, abnormal hyperintensity, and asymmetric piriformis size were associated with the symptomatic side compared to the asymptomatic side. Clinical symptoms were more often correlated with variant compared to conventional sciatic nerve anatomy. While this study shows that variant sciatic nerve anatomy in relation to the piriformis muscle can be identified by MRN, this study was done at a single center therefore results may not be applicable to various demographics. Imaging protocols may differ between institutions and there was no discussion of how results affected net health outcomes.

Du (2010) reported on the use of MRN in the management of spinal and peripheral nerve disorders. They retrospectively reviewed the charts of 191 individuals who had undergone MRN. Ninety-one of those individuals also underwent comparative EMG/NCS. When the MRN was compared to EMG/NCS, 29 individuals received the same diagnostic information, 41 individuals received additional diagnostic information, 15 individuals received less diagnostic information and 6 individuals received a different diagnosis altogether. The median timeframe of imaging was 12 months following the onset of symptoms. The authors suggest several potential uses for MRN. They also noted that MRN is less useful if done greater than 1 year after the onset of symptoms and that MRN is limited due to its ability to only image a selected region of the nerve pathway.

A 2018 retrospective, single institution study by Dessouky reported on 202 individuals with complaints of chronic lumbosacral and pelvic pain who underwent MRN. Previous diagnostic imaging (including lumbar MRI, EMG/NCV, and pelvic MRI) was completed on 139 of the participants with a lack of definitive diagnosis. As a result of the MRN findings, 186 individuals had a change in diagnosis (the most common diagnoses from the MRN findings were neuropathy, failed back syndrome, pyriformis syndrome, and pelvic floor dysfunction) and 152 individuals had a change in treatment. The most common changes in treatment included conservative therapy (including medication and physical therapy), injections, and surgery. A total of 131 individuals were available for follow-up with a mean duration of 10.5 ± 7 months. During the follow-up period, 42 participants had recurrence of pain while 89 did not. There are several limitations to this study including the retrospective nature design and short-term follow-up period. The single institution design could potentially lead to selection bias and findings which are not generalizable. Only pain outcomes were analyzed. There is no information provided regarding functional outcome measurements. With a lack of comparison group, it is not clear what the outcomes of standards of care would have been. Multicenter prospective trials are necessary to help mitigate the limitations of this study.

A 2020 study by Vaeggemose evaluated whether MRN of the sciatic and tibial nerve can detect diabetic peripheral neuropathy in persons with type 2 diabetes. Included in the study were 20 participants with type 2 diabetes (10 with polyneuropathy and 10 without polyneuropathy) and 20 healthy controls. Diabetic peripheral neuropathy was defined using findings from vibratory perception threshold tests, NCS, and clinical exams. Neuropathy was diagnosed by at least two abnormal nerve findings from the following: NCS ≥ 2, vibratory perception threshold at index finger and big toe (≥ 98th percentile), neuropathy symptom score ≥ 1, and neurological impairment score ≥ 7. MRN of the sciatic and tibial nerves was compared pairwise between the groups. While the authors concluded MRI accurately detected diabetic neuropathy, there was no comparison to other methods, and there was no discussion of how results affected net health outcomes.

In 2021, Zhang retrospectively studied a cohort of 55 individuals with trigeminal neuralgia with the aim of evaluating the usefulness of MRN in the diagnosis and management of this condition. MRN images were examined by two independent radiologists. The impact of MRN on the diagnosis and proposed clinical management was evaluated by two surgeons in neurosurgery and pain management. A total of 33 of 55 individuals underwent intervention for pain. MRN interpretation did not change treatment planning or management in 10 individuals, had a mild effect in 5 individuals and was substantial (that is. MRN changed the diagnosis or involvement of the nerve along with a change in the proposed treatment) in 18 of the 33 individuals (54.5%) who received surgical intervention. Follow-up time was from 1 week to 12 months. Pain was reduced after intervention in 25 of the 33 individuals. The correlation between MRN results and intervention response was either excellent (19 individuals) or moderate (14 individuals). The authors concluded that MRN is useful in the evaluation of peripheral trigeminal neuropathies, can accurately show nerve abnormalities and had significant impact on clinical management. However this study has several limitations including the retrospective design, short follow up period and lack of a control group. Multicenter prospective trials are necessary to evaluate the impact of MRN on management of trigeminal neuralgia and to assess clinical outcomes.

Boecker (2022) conducted a retrospective matched-pair cohort study with the aim of evaluating the role of MRN in accelerating decision-making regarding diagnosis and treatment in peripheral nerve surgery of the upper extremity. There were 29 individuals with peripheral nerve injuries (PNI) who underwent MRN in addition to established diagnostics like electroneurography and neurosonography and were matched with similar individuals without supplementary MRN for a total of 58 individuals. Standard of care for PNI is a “watch and wait” strategy for 3 to 6 months but ideally surgical intervention should be conducted as fast as possible once a firm diagnostic decision has been reached in order to avoid irreversible muscle degeneration. Within the first 90 days following PNI, individuals who had MRN benefited from significantly faster decision making about treatment (38.2 ± 7.7 days) vs individuals without MRN (79.0 ± 14.2 days). There was no evidence of accelerated decision-making in individuals with MRN after 90 days post-PNI. The authors concluded that MRN had significant time-sparing effects on the decision-making process, saving approximately 4 weeks during the first 90 days after PNI. Limitations include that this study was

single-center, retrospective, there may be a selection bias caused by the study design and there was no discussion of how results affected functional health outcomes.

In a 2021 prospective case-control study by Rother, peripheral nerve damage in alcohol-dependent people (ADP) was characterized and quantified by MRN. There were 31 adults with a history of excessive alcohol consumption and 20 age- and sex-matched healthy controls who were examined. The ADP group was further divided into those with alcohol-related polyneuropathy (ALN) and those without (non-ALN). The non-ALN group contained only 6 participants. MRN detected nerve damage in ADP with and without ALN. There was a positive correlation between some MRN markers (ρ, T2w-signal, cross sectional area of the tibial nerve) with the clinical neurological severity score. The conclusion was that "MRN detects and quantifies peripheral nerve damage in ADP in vivo even in the absence of clinically overt ALN." Microstructural markers may distinguish between ADP with and without obvious ALN. Limitations of this study include the smaller size of the control group compared to the ADP group, the single-center design, and lack of discussion of how results affected health outcomes.

At this time there is inadequate data regarding the diagnostic performance of MRN, in terms of defining the normal range of morphologies, the sensitivity and specificity of identification of abnormalities in comparison to other diagnostic tests, and the impact on net health outcomes.

Supplemental Information

American College of Radiology
The American College of Radiology's Appropriateness Criteria® on "Plexopathy" (2012) stated that "Magnetic resonance neurography, diffusion tensor imaging (DTI), and tractography are exciting developments currently under investigation."

U.S. Preventive Services Task Force Recommendations
Not applicable.

Medicare National Coverage
There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

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Policy History

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11/18/2025 Utilization Management Committee review/approval. New policy.
Next Scheduled Review Date: 11/2026

Coding

The five character codes included in the Health Plan Medical Policy Coverage Guidelines are obtained from Current Procedural Terminology (CPT®)‡, copyright 2025 by the American Medical Association (AMA). CPT is developed by the AMA as a listing of descriptive terms and five character identifying codes and modifiers for reporting medical services and procedures performed by physician.

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Policy Coverage Guidelines should refer to the most current Current Procedural Terminology which contains the complete and most current listing of CPT codes and descriptive terms. Applicable FARS/DFARS apply.

Codes used to identify services associated with this policy may include (but may not be limited to) the following:

Code Type	Code
CPT	76498
HCPCS	None
ICD-10 Diagnosis	All related diagnoses

*Investigational – A medical treatment, procedure, drug, device, or biological product is Investigational if the effectiveness has not been clearly tested and it has not been incorporated into standard medical practice. Any determination we make that a medical treatment, procedure, drug, device, or biological product is Investigational will be based on a consideration of the following:

A. Whether the medical treatment, procedure, drug, device, or biological product can be lawfully marketed without approval of the U.S. Food and Drug Administration (FDA) and whether such approval has been granted at the time the medical treatment, procedure, drug, device, or biological product is sought to be furnished; or
B. Whether the medical treatment, procedure, drug, device, or biological product requires further studies or clinical trials to determine its maximum tolerated dose, toxicity, safety, effectiveness, or effectiveness as compared with the standard means of treatment or diagnosis, must improve health outcomes, according to the consensus of opinion among experts as shown by reliable evidence, including:
    1. Consultation with technology evaluation center(s);
    2. Credible scientific evidence published in peer-reviewed medical literature generally recognized by the relevant medical community; or
    3. Reference to federal regulations.

**Medically Necessary (or "Medical Necessity") - Health care services, treatment, procedures, equipment, drugs, devices, items or supplies that a Provider, exercising prudent clinical judgment, would provide to a patient for the purpose of preventing, evaluating, diagnosing or treating an illness, injury, disease or its symptoms, and that are:

A. In accordance with nationally accepted standards of medical practice;
B. Clinically appropriate, in terms of type, frequency, extent, level of care, site and duration, and considered effective for the patient's illness, injury or disease; and
C. Not primarily for the personal comfort or convenience of the patient, physician or other health care provider, and not more costly than an alternative service or sequence of services

at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of that patient's illness, injury or disease.

For these purposes, "nationally accepted standards of medical practice" means standards that are based on credible scientific evidence published in peer-reviewed medical literature generally recognized by the relevant medical community, Physician Specialty Society recommendations and the views of Physicians practicing in relevant clinical areas and any other relevant factors.

‡ Indicated trademarks are the registered trademarks of their respective owners.

NOTICE: If the Patient's health insurance contract contains language that differs from the Health Plan's Medical Policy definition noted above, the definition in the health insurance contract will be relied upon for specific coverage determinations.

NOTICE: Medical Policies are scientific based opinions, provided solely for coverage and informational purposes. Medical Policies should not be construed to suggest that the Health Plan recommends, advocates, requires, encourages, or discourages any particular treatment, procedure, or service, or any particular course of treatment, procedure, or service.

NOTICE: Federal and State law, as well as contract language, including definitions and specific contract provisions/exclusions, take precedence over Medical Policy and must be considered first in determining eligibility for coverage.

NOTICE: All codes listed on the Medical Policy require prior authorization. This ensures appropriate utilization and alignment with current clinical guidelines.

Medicare Advantage Members

Established coverage criteria for Medicare Advantage members can be found in Medicare coverage guidelines in statutes, regulations, National Coverage Determinations (NCD)s, and Local Coverage Determinations (LCD)s. To determine if a National or Local Coverage Determination addresses coverage for a specific service, refer to the Medicare Coverage Database at the following link: https://www.cms.gov/medicare-coverage-database/search.aspx. You may wish to review the Guide to the MCD Search here: https://www.cms.gov/medicare-coverage-database/help/mcd-benehelp.aspx.

When coverage criteria are not fully established in applicable Medicare statutes, regulations, NCDs or LCDs, internal coverage criteria may be developed. This policy is to serve as the summary of evidence, a list of resources and an explanation of the rationale that supports the adoption of this internal coverage criteria.

InterQual®
Interqual® is utilized as a source of medical evidence to support medical necessity and level of care decisions. InterQual® criteria are intended to be used in connection with the independent professional medical judgment of a qualified health care provider. InterQual® criteria are clinically based on best practice, clinical data, and medical literature. The criteria are updated continually and released annually. InterQual® criteria are a first-level screening tool to assist in determining if the proposed services are clinically indicated and provided in the appropriate level or whether further evaluation is required. The utilization review staff does the first-level screening. If the criteria are met, the case is approved; if the criteria are not met, the case is referred to the medical director.