Evolent Clinical Guideline 2017 for Cervical Spine Magnetic Resonance Imaging (MRI)

Guideline Number: Evolent_CG_2017	**Applicable Codes**	
"Evolent" refers to Evolent Health LLC and Evolent Specialty Services, Inc. 		
Original Date: September 1997	**Last Revised Date:** June 2025	**Implementation Date:** January 2026

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STATEMENT

General Information

- *It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.*
- *Where a specific clinical indication is not directly addressed in this guideline, medical necessity determination will be made based on widely accepted standard of care criteria. These criteria are supported by evidence-based or peer-reviewed sources such as medical literature, societal guidelines and state/national recommendations.*
- *The guideline criteria in the following sections were developed utilizing evidence-based and peer-reviewed resources from medical publications and societal organization guidelines as well as from widely accepted standard of care, best practice recommendations.*

Purpose

Magnetic resonance imaging (MRI) produces high quality multiplanar images of organs and structures within the body without radiation. It is the preferred modality for evaluating the internal structure of the spinal cord, providing assessment of conditions such as degenerative disc pathology, osteomyelitis, and discitis.

Special Note

If there is a combination request* for an overlapping body part, either requested at the same time or sequentially (within the past 3 months), one of the following must be demonstrated:

- The results of the prior study should be inconclusive or show a need for additional or follow-up imaging evaluation
- The office notes should clearly document an indication why overlapping imaging is needed and how it will change management for the patient.

(*Unless approvable in the **combination section** as noted in the guidelines)

INDICATIONS FOR CERVICAL SPINE MRI

Evaluation of Neurologic Deficits [1,2]

- With any of the following new neurological deficits documented on physical exam that localizes to the cervical spine:
    - Extremity muscular weakness (not likely caused by plexopathy or peripheral

neuropathy)

- Pathologic reflexes (e.g., Babinski, Lhermitte's sign, [3] Chaddock Sign, [4] Hoffman's and other upper motor neuron signs); **OR** abnormal deep tendon reflexes (not likely caused by plexopathy, or peripheral neuropathy)
- Absent/decreased sensation along a particular cervical dermatome (nerve distribution): pin prick, touch, vibration, proprioception, or temperature (and not likely caused by plexopathy or peripheral neuropathy)
- Upper or lower extremity increase muscle tone/spasticity
- New onset bowel or bladder dysfunction (e.g., retention or incontinence)—not related to an inherent bowel or bladder process
- Gait abnormalities (see **Table 1** below for more details)

- Suspected cervical cord compression with any neurological deficits as listed above

Evaluation of Neck Pain [5,6]

- With new or worsening objective **neurologic deficits** on exam, as above
- Failure of **conservative treatment*** for a minimum of six (6) weeks within the last six (6) months:

NOTE - Failure of conservative treatment is defined as one of the following:

- Lack of meaningful improvement after a full course of treatment; **OR**
- Progression or worsening of symptoms during treatment; **OR**
- Documentation of a medical reason the member is unable to participate in treatment

  Closure of medical or therapy offices, patient inconvenience, or noncompliance without explanation does not constitute "inability to complete" treatment.

- With progression or worsening of symptoms during the course of **conservative treatment***
- With an abnormal electromyography (EMG) or nerve conduction study (if performed) indicating a cervical radiculopathy. [7,8]
- Isolated neck pain in pediatric population when at least **ONE** of the following red flags are present [9,10] (Note: conservative care is not required if red flags are present).
  - Age 5 or younger
  - Constant pain
  - Pain lasting > 4 weeks
  - Abnormal neurologic examination
  - Early morning stiffness and/or gelling
  - Night pain that prevents or disrupts sleep

- Radicular pain
- Fever, weight loss, or malaise
- Postural changes (e.g., kyphosis or scoliosis)
- Limp (or refusal to walk in a younger child)

Evaluation of Suspected Myelopathy [11,12]

- Progressive symptoms including hand clumsiness, worsening handwriting, difficulty with grasping and holding objects, diffuse numbness in the hands, pins and needles sensation, increasing difficulty with balance and ambulation
- Any of the **neurological deficits** as noted above

NOTE: Does **NOT** require conservative care

Evaluation of Known or Suspected Multiple Sclerosis (MS) [12,13]

- Evidence of MS on recent baseline Brain MRI
- Suspected or known MS with new or changing symptoms consistent with cervical spinal cord disease (focal **neurologic deficit** or clinical sign, e.g., Lhermitte sign) [3]
- Suspected or known pediatric demyelinating diseases (MS/ADEM)
- For evaluation of neuromyelitis optica spectrum disorders (recurrent or bilateral optic neuritis; recurrent transverse myelitis) [14]
- For known MS, prior to the initiation or change of disease modification treatments and assess disease burden (to establish a new baseline) [15]
- Follow-up scans, including brain and spine imaging, if patients have known cervical spine disease:
  - 3-6 months after starting/changing treatment
  - Every 6-12 months until stable on disease modifying treatment
  - Once stable on disease modifying treatment, every 1-2 years to assess for subclinical disease activity, less frequently when stable for 2-3 years

Evaluation of Trauma or Acute Injury [16]

- Presents with any of the following **neurological deficits** as above
- With progression or worsening of symptoms during the course of **conservative treatment***
- History of underlying spinal abnormalities (i.e., ankylosing spondylitis) (Both MRI and CT are indicated) [17,18]

- When the patient is clinically unevaluable or there are preliminary imaging findings (x-ray or CT) needing further evaluation
- When office notes specify that the C-spine cannot be clinical cleared because of a high-risk feature such as neurological deficit, midline spinal tenderness, altered mental status, high risk mechanism, unable to rotate neck as described in the NEXUS (National Emergency X-Radiography Utilization Study) or CCR (Canadian Cervical Rules) criteria for imaging:
    - CT for initial imaging
    - MRI when suspect spinal cord or nerve root injury or when patient is obtunded, and CT is negative
    - CT or MRI for treatment planning of unstable spine

Evaluation of Compression Fractures [19]

- With history of malignancy
    - To aid in differentiation of benign osteoporotic fractures from metastatic disease
        - A follow-up MRI in 6-8 weeks after initial MRI when initial imaging cannot decipher (indeterminate) benign osteoporotic fracture from metastatic disease [20]
- Fracture on initial imaging in a young patient (<50) with no history of trauma and concern for pathologic fracture
- Fracture with imaging characteristics concerning for underlying malignancy
- With an associated new focal **neurologic deficit** as above
- Prior to a planned surgery/intervention or if the results of the MRI will change management

Evaluation of Tumor, Cancer, or Metastasis

With any of the Following:

- **Primary tumor** [21]
    - Initial staging primary spinal tumor
    - Follow-up of known primary cancer of patient undergoing active treatment within the past year or as per surveillance imaging guidance for that cancer
    - Known spinal tumor with new signs or symptoms (e.g., new or increasing nontraumatic pain, physical, laboratory, and/or imaging findings)
    - With an associated new focal **neurologic deficit** as above
- **Metastatic tumor** [6,22]
    - With evidence of metastasis on bone scan needing further clarification **OR** inconclusive findings on a prior imaging exam

- With an associated new focal **neurologic deficit**
- Known malignancy with new signs or symptoms (e.g., new or increasing nontraumatic pain, radiculopathy or neck pain that occurs at night and wakes the patient from sleep with known active cancer, physical, laboratory, and/or imaging findings) in a tumor that tends to metastasize to the spine [23]

Evaluation of Known or Suspected Infection [24]

E.g., Osteomyelitis or abscess

- As evidenced by signs and/or symptoms, laboratory (i.e., abnormal white blood cell count, ESR and/or CRP) or prior imaging findings
- Follow-up imaging of infection
  - With worsening symptoms/laboratory values (i.e., white blood cell count, ESR/CRP) or x-ray findings

Evaluation of Known or Suspected Inflammatory Disease or Atlantoaxial Instability [25]

- Rheumatoid arthritis with neurologic signs/symptoms, or evidence of subluxation on x-ray (lateral x-ray in flexion and neutral should be the initial study) [26,27]
  - Patients with negative x-ray but symptoms suggestive of cervical instability or in patients with neurologic deficits [28]
- High-risk disorders affecting the atlantoaxial articulation (i.e. Down syndrome, Marfan syndrome) with neurological signs/symptoms, abnormal neurological exam, or evidence of abnormal or inconclusive x-ray of the cervical spine [29]
- Spondyloarthropathies, known or suspected
  - Ankylosing Spondylitis/Spondyloarthropathies with non-diagnostic or indeterminate x-ray and appropriate rheumatology workup
- Known and suspected neuroinflammatory conditions (such as sarcoidosis, Bechet's)
  - Initial evaluation of suspected neuroinflammatory conditions after initial workup and detailed neurological examination
  - Follow-up of known neuroinflammatory conditions when there are either:
    - New or worsening signs or symptoms OR
    - To evaluate treatment response

Evaluation of Spine Abnormalities Related to Immune System Suppression [24]

E.g. HIV, chemotherapy, leukemia, or lymphoma

- As evidenced by signs/symptoms, laboratory, or prior imaging findings

Other Indications

Note: See **combination requests**, below, for initial advanced imaging assessment and pre-operatively

- Tethered cord or spinal dysraphism (known or suspected), based on preliminary imaging, neurological exam, and/or high-risk cutaneous stigmata [30,31]
- Known Arnold-Chiari syndrome (For **initial imaging** (one-time initial assessment) see **Combinations** below)
- Known Chiari I malformation without syrinx or hydrocephalus, follow-up imaging after initial diagnosis with new or changing signs/symptoms or exam findings consistent with spinal cord pathology [32]
- Known Chiari II (Arnold-Chiari syndrome), III, or IV malformation
- Syrinx or syringomyelia (known or suspected) [33]
    - With neurologic findings and/or predisposing conditions (e.g., Chiari malformation, prior trauma, neoplasm, arachnoiditis, severe spondylosis)
    - To further characterize a suspicious abnormality seen on prior imaging
    - Known syrinx with new/worsening symptoms
- Toe walking in a child with signs/symptoms of myelopathy (upper motor neuron signs/hyperreflexia) localized to the Cervical Spine [34]
- Initial evaluation of trigeminal neuralgia [35] not explained on recent Brain imaging
- Horner's syndrome with symptoms localizing the lesion to the cervical spine (radicular signs) [36,37]
- CSF leak highly suspected and supported by patient history and/or physical exam findings (e.g., known or suspected spontaneous intracranial hypotension (SIH), post lumbar puncture headache, post spinal surgery headache, orthostatic headache, rhinorrhea or otorrhea, or cerebrospinal-venous fistula) [38]

PREOPERATIVE OR POSTOPERATIVE ASSESSMENT

When not otherwise specified in the guideline:

Preoperative Evaluation:

- Imaging of the area requested is needed to develop a surgical plan

Postoperative Evaluation:

- Evaluation of post operative pseudarthrosis, hardware complication and/or extent of fusion after initial x-rays

  NOTE: for this indication, advanced imaging should not occur until > 6 months after surgery

- Surgical infection as evidenced by signs/symptoms, laboratory, or prior imaging findings
- New or changing neurological deficits or symptoms post-operatively [39] (see **neurological deficit** section above)
- Known or suspected complications
- A clinical reason is provided how imaging may change management

NOTE: This section applies only within the first few months following surgery unless otherwise specified

FURTHER EVALUATION OF INDETERMINATE FINDINGS

Unless follow-up is otherwise specified within the guideline

- For initial evaluation of an inconclusive finding on a prior imaging report that requires further clarification.
- One follow-up exam of a prior indeterminate MR/CT finding to ensure no suspicious interval change has occurred. (No further surveillance unless specified as highly suspicious or change was found on last follow-up exam).

IMAGING IN KNOWN GENETIC CONDITIONS

- Down Syndrome [40]:
  - With signs or symptoms suggestive of possible atlantoaxial instability (such as neck pain, neck stiffness, head tilt, gait changes, radicular pain or a new onset neurologic deficit)
- LZTR1-related Schwannomatosis [41]:
  - Every two years starting at age 12
- Neurofibromatosis 1 (NF1) [42,43]:
  - Signs and symptoms concerning for spinal tumor

- NF2-Related Schwannomatosis [44]:
  - Prior to cranial surgery OR
  - Signs and symptoms concerning for spinal tumor
- SMARCA4 and SMARCB1 (Includes SMARCB1-associated Schwannomatosis and Rhabdoid Tumor Predisposition Syndrome) [41,45]:
  - At diagnosis
  - Monthly from age 0-6 months
  - Every 2 months from age 7-18 months
  - Every 3 months from age 19 months – 5 years
  - Annually after age 5
- Von Hippel-Lindau (VHL) [46]:
  - Annually (including at diagnosis) starting at age 11
- For other syndromes and rare diseases not otherwise addressed in the guideline, coverage is based on a case-by-case basis using societal guidance.

Combination Studies for Known Genetic Conditions

NOTE: When medical necessity is met for an individual study **AND** conscious sedation is required (such as for young pediatric patients or patients with significant developmental delay), the entire combination is indicated

Cervical Spine/Thoracic Spine/Lumbar Spine MRI

- Marfan Syndrome [47]:
  - For low back pain, proximal leg pain, genital/rectal pain OR weakness and numbness above knee
- NF2-Related Schwannomatosis [44]:
  - Signs and symptoms concerning for spinal tumor

Brain/Cervical Spine/Thoracic Spine/Lumbar Spine MRI

- LZTR1-related Schwannomatosis [41]:
  - Every two years starting at age 12
- Neurofibromatosis 1 (NF1) [42,43]:
  - Signs and symptoms concerning for spinal tumor

Brain/Cervical Spine/Thoracic Spine/Lumbar Spine/Abdomen MRI

- Von Hippel-Lindau (VHL) [46]:

- Annually (including at diagnosis) starting at age 11

Brain/Cervical Spine/Thoracic Spine/Lumbar Spine/Whole Body MRI

- SMARCA4 and SMARCB1 (Includes SMARCB1-associated Schwannomatosis and Rhabdoid Tumor Predisposition Syndrome) [41,45]:
  - At diagnosis
  - Monthly from age 0-6 months
  - Every 2 months from age 7-18 months
  - Every 3 months from age 19 months – 5 years
  - Annually after age 5

OTHER COMBINATION STUDIES WITH CERVICAL SPINE MRI

Note: When medical necessity is met for an individual study **AND** conscious sedation is required (such as for young pediatric patients or patients with significant developmental delay), the entire combination is indicated.

Cervical Spine MRI and Cervical Spine CT

- OPLL (Ossification of posterior longitudinal ligament) [48]
- Pathologic or complex fractures
- Malignant process of spine with both bony and soft tissue involvement
- Unstable craniocervical junction
- Clearly documented indication for bony and soft tissue abnormality where assessment will change management for the patient

Brain/Cervical Spine MRI

- Horner's syndrome with symptoms localizing the lesion to the brain and cervical spine (vertigo, altered facial sensation, contralateral CN IV palsy, crossed motor/sensory signs, radicular signs) [36,37]

Brain/Cervical Spine/Thoracic Spine MRI

- Combination studies for MS: These body regions might be evaluated separately or in combination as guided by physical examination findings (e.g., localization to a particular segment of the spinal cord), patient history (e.g., symptom(s), time course, and where in the CNS the likely localization(s) is/are), and other available information, including prior

imaging.

- For evaluation of neuromyelitis optica spectrum disorders (recurrent or bilateral optic neuritis; recurrent transverse myelitis) [49]
- For known MS, prior to the initiation or change of disease modification treatments and assess disease burden (to establish a new baseline) [13,15]
- Follow-up scans, including brain and spine imaging, if patients have known spine disease:
  - 3-6 months after starting/changing treatment
  - Every 6-12 months until stable on disease modifying treatment
  - Once stable on disease modifying treatment, every 1-2 years to assess for subclinical disease activity, less frequently when stable for 2-3 years

Brain/Cervical Spine/ Thoracic Spine/Lumbar Spine MRI

- For initial evaluation of a suspected Arnold Chiari malformation
- Follow-up imaging of a known type II or type III Arnold Chiari malformation. For Arnold Chiari type I, follow-up imaging only if new or changing signs/symptoms [31,50–52]
- Oncological Applications (e.g., primary nervous system, metastatic) [21]
  - Drop metastasis from brain or spine
  - Suspected leptomeningeal carcinomatosis [53]
  - Known tumor evaluation and monitoring in neurocutaneous syndromes
- CSF leak highly suspected and supported by patient history and/or physical exam findings (e.g., known or suspected spontaneous intracranial hypotension (SIH), post lumbar puncture headache, post spinal surgery headache, orthostatic headache, rhinorrhea or otorrhea, or cerebrospinal-venous fistula) [38]
- Tumor evaluation and monitoring in cancer predisposition syndromes

Cervical Spine/Thoracic Spine MRI

- Initial evaluation of known or suspected syrinx or syringomyelia
  - With neurologic findings and/or predisposing conditions (e.g., Chiari malformation, prior trauma, neoplasm, arachnoiditis, severe spondylosis) [33]
  - To further characterize a suspicious abnormality seen on prior imaging
  - Known syrinx with new/worsening symptoms
- For evaluation of highly suspected multiple sclerosis (MS) when Brain MRI has indeterminate findings and/or does not fulfill the McDonald criteria for the diagnosis of MS
- With suspected transverse myelitis - with appropriate clinical symptoms (e.g., bilateral

weakness, sensory disturbance, and autonomic dysfunction which typically evolve over hours or days)

Cervical Spine/Thoracic Spine/Lumbar Spine MRI

- Survey/complete initial assessment of infant/child with congenital scoliosis or juvenile idiopathic scoliosis under the age of 10 [54,55] (e.g., congenital scoliosis, idiopathic scoliosis, scoliosis with vertebral anomalies)
- In the presence of neurological deficit, progressive spinal deformity, or for preoperative planning [56,57]
- Back pain with known vertebral anomalies (hemivertebrae, hypoplasia, agenesis, butterfly, segmentation defect, bars, or congenital wedging) in a child on preliminary imaging
- Scoliosis with any of the following [57,58]:
  - Progressive spinal deformity
  - Neurologic deficit (new or unexplained)
  - Early onset
  - Atypical curve (e.g., short segment, >30° kyphosis, left thoracic curve, associated organ anomalies)
  - Pre-operative planning
  - When office notes clearly document how imaging will change management
- Arnold-Chiari malformations [31,59]
  - Arnold-Chiari I
    - For evaluation of spinal abnormalities associated with initial diagnosis of Arnold-Chiari Malformation. (C/T/L spine due to association with tethered cord and syringomyelia), and initial imaging has not been completed [55]
  - Arnold-Chiari II-IV - For initial evaluation and follow-up as appropriate
    - Usually associated with open and closed spinal dysraphism, particularly meningomyelocele) [60]
- Tethered cord, or spinal dysraphism (known or suspected) based on preliminary imaging, neurological exam, and/or high-risk cutaneous stigmata, [30,31,60] when anesthesia required for imaging [61] (e.g., meningomyelocele, lipomeningomyelocele, diastematomyelia, fatty/thickened filum terminale, and other spinal cord malformations)
- Oncological Applications (e.g., primary nervous system, metastatic) [21]
  - Drop metastasis from brain or spine (imaging also includes brain)
  - Suspected leptomeningeal carcinomatosis (LC) [62]
  - Known tumor evaluation and monitoring in neurocutaneous syndromes

- CSF leak highly suspected and supported by patient history and/or physical exam findings (e.g., known or suspected spontaneous intracranial hypotension (SIH), post lumbar puncture headache, post spinal surgery headache, orthostatic headache, rhinorrhea or otorrhea, or cerebrospinal-venous fistula) [38]

Combination Studies for Malignancy for Initial Staging or Restaging

Unless otherwise specified in this guideline, indication for combination studies for malignancy for initial staging or restaging:

- Concurrent studies to include CT or MRI of any of the following areas as appropriate depending on the cancer: Abdomen, Brain, Chest, Neck, Pelvis, Cervical Spine, Thoracic Spine or Lumbar Spine.

CODING AND STANDARDS

Codes

72141, 72142, 72156, +0698T

Applicable Lines of Business

☒	CHIP (Children's Health Insurance Program)
☒	Commercial
☒	Exchange/Marketplace
☒	Medicaid
☒	Medicare Advantage

BACKGROUND

*Conservative Treatment

Non-operative conservative treatment should include a multimodality approach consisting of at least one (1) active and one (1) inactive component targeting the affected region

Active Modalities

- Physical therapy

- Physician-supervised home exercise program**
- Chiropractic care

Inactive Modalities

- Medications (e.g., NSAIDs, steroids, analgesics)
- Injections (e.g., epidural injection, selective nerve root block)
- Medical Devices (e.g., TENS unit, bracing)

**Home Exercise Program

The following two elements are required to meet conservative therapy guidelines for HEP [1]:

- Documentation of an exercise prescription/plan provided by a physician, physical therapist, or chiropractor; **AND**
- Follow-up documentation regarding completion of HEP after the required 6-week timeframe or inability to complete HEP due to a documented medical reason (e.g., increased pain or inability to physically perform exercises).

Cervical Myelopathy

Symptom severity varies, and a high index of suspicion is essential for making the proper diagnosis in early cases. Symptoms of pain and radiculopathy may not be present. The natural history of myelopathy is characterized by neurological deterioration. The most frequently encountered symptom is gait abnormality (86%) followed by increased muscular reflexes (79.1%), pathological reflexes (65.1%), paresthesia of upper limb (69.8%) and pain (67.4%). [11]

NEXUS Criteria for C-Spine Imaging [63]

Clears patients from cervical spine fracture clinically, without imaging when none of the following are present

- Focal neurologic deficit present
- Midline spinal tenderness present
- Altered level of consciousness present
- Intoxication present
- Distracting injury present

Canadian C-Spine Rule [64]

Clinically clears cervical spine fracture without imaging in alert, stable trauma patients.

With all of the following:

- Low risk factor present
    - Sitting position in the ED, ambulatory at any time, delayed (not immediate onset)

neck pain, no midline tenderness. Simple rearend motor vehicle collision (MVC) (not simple if pushed into traffic, hit by bus/large truck, rollover, hit by high-speed vehicle) **AND**

- Able to actively rotate neck 45° left and right **AND**
- None of the following high-risk factors
  - Age ≥65 years
  - Extremity paresthesia's
  - Dangerous mechanism (e.g., fall from ≥3 ft (0.9 m) / 5 stairs, axial load injury, high speed MVC/rollover/ejection, bicycle collision, motorized recreational vehicle)

Gait and Spine Imaging

Table 1 *(65–68)*

Gait	**Characteristic**	**Work up/Imaging**
Hemiparetic	Spastic unilateral, circumduction	Brain and/or, Cervical spine imaging based on associated symptoms
Diplegic	Spastic bilateral, circumduction	Brain, Cervical and Thoracic Spine imaging
Myelopathic	Wide based, stiff, unsteady	Cervical and/or Thoracic spine MRI based on associated symptoms
Cerebellar Ataxic	Broad based, clumsy, staggering, lack of coordination, usually also with limb ataxia	Brain imaging
Apraxic	Magnetic, shuffling, difficulty initiating	Brain imaging
Parkinsonian	Stooped, small steps, rigid, turning en bloc, decreased arm swing	Brain Imaging
Choreiform	Irregular, jerky, involuntary movements	Medication review, consider brain imaging as per movement disorder Brain MR guidelines
Sensory ataxic	Cautious, stomping, worsening without visual input (ie + Romberg)	EMG, blood work, consider spinal (cervical or thoracic cord imaging) imaging based on EMG
Neuropathic	Steppage, dragging of toes	EMG initial testing; BUT if there is a foot drop, lumbar

Gait	Characteristic	Work up/Imaging
		spine MRI is appropriate without EMG Pelvis MR if there is evidence of plexopathy
Vestibular	Insecure, veer to one side, worse when eyes closed, vertigo	Consider Brain/IAC MRI

Contraindications and Preferred Studies

- Contraindications and reasons why a CT/CTA cannot be performed may include: impaired renal function, significant allergy to IV contrast, pregnancy (depending on trimester)
- Contraindications and reasons why an MRI/MRA cannot be performed may include: impaired renal function, claustrophobia, non-MRI compatible devices (such as non-compatible defibrillator or pacemaker), metallic fragments in a high-risk location, patient exceeds wight limit/dimensions of MRI machine

SUMMARY OF EVIDENCE

Diagnosis and Treatment of Cervical Radiculopathy from Degenerative Disorders [1]

Study Design: The document outlines the development of clinical guidelines by the North American Spine Society (NASS) for the diagnosis and treatment of cervical radiculopathy from degenerative disorders. The guidelines were developed through a systematic review of the literature and expert consensus. The methodology included a comprehensive literature search, evidence analysis, and formulation of evidence-based recommendations.

Target Population: The guidelines are intended for adult patients (18 years or older) with a chief complaint of pain in a radicular pattern in one or both upper extremities related to compression and/or irritation of one or more cervical nerve roots. The target population includes patients with varying degrees of sensory, motor, and reflex changes, as well as dysesthesias and paresthesias related to nerve root(s) without evidence of spinal cord dysfunction (myelopathy).

Key Factors:

1. **Objective**: To provide evidence-based recommendations for the diagnosis and treatment of cervical radiculopathy from degenerative disorders.
2. **Scope and Purpose**: The guidelines aim to assist practitioners in improving the quality and efficiency of care delivered to patients with cervical radiculopathy from degenerative disorders.

3. **Methodology**: The guidelines were developed through multidisciplinary collaboration, evidence analysis training, disclosure of potential conflicts of interest, and standardized levels of evidence and grades of recommendation.
4. **Recommendations**:
    - **Diagnosis/Imaging**: Suggested diagnostic tests include MRI, CT, and CT myelography. Provocative tests such as the shoulder abduction and Spurling's tests may be considered.
    - **Outcome Measures**: Recommended outcome measures include the Neck Disability Index (NDI), SF-36, SF-12, and Visual Analog Scale (VAS).
    - **Medical/Interventional Treatment**: The role of pharmacological treatment, physical therapy/exercise, manipulation/chiropractics, epidural steroid injections, and ancillary treatments such as bracing, traction, electrical stimulation, acupuncture, and TENS are discussed.
    - **Surgical Treatment**: Various surgical options are compared, including anterior cervical decompression with fusion (ACDF), anterior cervical decompression alone (ACD), anterior cervical decompression and fusion with instrumentation (ACDFI), and posterior decompression with or without fusion.

ACR Appropriateness Criteria® Cervical Pain or Cervical Radiculopathy [6]

Study Design: The study design involves a systematic review of literature and expert panel recommendations to establish guidelines for imaging procedures in various clinical scenarios related to cervical pain and radiculopathy. The criteria are revised periodically to incorporate new evidence and advancements in imaging technology.

Target Population: The target population includes adults experiencing cervical pain or cervical radiculopathy. The document addresses different clinical scenarios such as acute or increasing cervical pain without radiculopathy, acute or increasing cervical pain with radiculopathy, prior cervical spine surgery, suspected or known infection, diagnosis of malignancy, suspected cervicogenic headache, chronic cervical pain without radiculopathy, and chronic cervical pain with radiculopathy.

Key Factors

Imaging Procedures: The document categorizes imaging procedures based on their appropriateness for different clinical scenarios. Procedures include radiography, MRI, CT, CT myelography, MRA, bone scan, FDG-PET/CT, and others.

Relative Radiation Levels: Each imaging procedure is assessed for its relative radiation level, indicating the potential adverse health effects associated with radiation exposure.

Clinical Scenarios: The criteria provide specific recommendations for initial imaging based on the presence or absence of trauma, "red flag" symptoms, and other clinical indicators.

Expert Panel: The guidelines are developed by an expert panel consisting of radiologists, neurologists, orthopedic surgeons, and other specialists from various institutions.

ACR Appropriateness Criteria® Acute Spinal Trauma [16]

Study Design: The document is a revised guideline by the American College of Radiology (ACR) for the appropriateness of imaging procedures in acute spinal trauma. It includes a summary of literature reviews, expert panel recommendations, and evidence-based criteria for various clinical scenarios.

Target Population: The guidelines focus on patients aged 16 years and older who have experienced acute blunt trauma to the cervical, thoracic, or lumbar spine. Specific criteria are provided for different age groups and clinical conditions, including low-risk patients, those with suspected arterial injury, and obtunded patients.

Key Factors:

Imaging Procedures: The document outlines the appropriateness of various imaging modalities such as CT, MRI, MRA, and radiography for different clinical scenarios. It emphasizes the use of CT without IV contrast as the initial imaging modality for most cases.

Clinical Criteria: The guidelines incorporate the NEXUS and Canadian C-Spine Rule (CCR) criteria for determining the need for cervical spine imaging. These criteria are based on factors such as age, mechanism of injury, and clinical symptoms.

Radiation Levels: The document includes relative radiation level designations for each imaging procedure, highlighting the importance of minimizing radiation exposure.

Expert Panel: The guidelines were developed by an expert panel on neurological imaging, including specialists from various institutions and organizations.

ANALYSIS OF EVIDENCE

Shared Findings:

Diagnosis and Imaging: All three articles emphasize the importance of imaging in diagnosing cervical spine conditions. "Bono et al 2010" discusses the use of MRI and CT for diagnosing cervical radiculopathy. [1] "Eldaya et al 2024" provides detailed appropriateness criteria for various imaging modalities in different scenarios of cervical pain and radiculopathy. [6] "Hassankhani et al 2024" highlights the role of CT and MRI in acute spinal trauma. [16]

Clinical Guidelines: The articles stress the need for evidence-based clinical guidelines. "Bono et al 2010" outlines the North American Spine Society's guidelines for diagnosing and treating cervical radiculopathy. [1] "Eldaya et al 2024" presents the American College of Radiology's appropriateness criteria for imaging cervical pain and radiculopathy. [6]

"Hassankhani et al 2024" discusses the ACR's guidelines for imaging acute spinal trauma. [16]

Role of MRI: MRI is consistently recommended across all articles for its superior ability to visualize soft tissue abnormalities. "Bono et al 2010" mentions MRI's role in diagnosing cervical radiculopathy. [1] "Eldaya et al 2024" lists MRI as appropriate for various cervical pain scenarios. [6] "Hassankhani et al 2024" emphasizes MRI's importance in detecting ligamentous, spinal cord, or nerve root injuries. [16]

POLICY HISTORY

Date	Summary

June 2025	• Guideline name changed from Cervical Spine MRI to Cervical Spine Magnetic Resonance Imaging (MRI)
	• Guideline number changed from Evolent CG 040 to Evolent CG 2017
	• Added new bullet-point to the General Statement section
	• Checked the Medicare Advantage box in the Applicable Lines of Business table
	• Added a Summary of Evidence and Analysis of Evidence
	• Updated references and background
	• MS
	  ○ Moved combo section down
	  ○ Changed follow up of known MS after changing or starting treatment to 3-6 months from 6-12 months
	• Evaluation Compression Fractures
	  ○ Added
	  ■ Fracture on initial imaging in a young patient (<50) with no history of trauma and concern for pathologic fracture
	  ■ Fracture with imaging characteristics concerning for underlying malignancy
	• Clarified trauma imaging criteria
	• Updated the Genetics and Rare Diseases section
	  ○ Clarified Horner’s syndrome

June 2024	• Aligned Combinations Studies across guidelines

Date	Summary
	• Added Contraindications and Preferred Studies section • Reduced background section • Updated references

LEGAL AND COMPLIANCE

Guideline Approval

Committee

Reviewed / Approved by Evolent Specialty Services Clinical Guideline Review Committee

Disclaimer

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Evolent Clinical Guidelines are comprehensive and inclusive of various procedural applications for each service type. Our guidelines may be used to supplement Medicare criteria when such criteria is not fully established. When Medicare criteria is determined to not be fully established, we only reference the relevant portion of the corresponding Evolent Clinical Guideline that is applicable to the specific service or item requested in order to determine medical necessity.

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