CIGNA MEDICAL COVERAGE POLICIES – RADIOLOGY

Spine Imaging Guidelines

Effective Date: February 1, 2025

Instructions for use

The following coverage policy applies to health benefit plans administered by Cigna. Coverage policies are intended to provide guidance in interpreting certain standard Cigna benefit plans and are used by medical directors and other health care professionals in making medical necessity and other coverage determinations. Please note the terms of a customer's particular benefit plan document may differ significantly from the standard benefit plans upon which these coverage policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a coverage policy.

In the event of a conflict, a customer's benefit plan document always supersedes the information in the coverage policy. In the absence of federal or state coverage mandates, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of:

1. The terms of the applicable benefit plan document in effect on the date of service
2. Any applicable laws and regulations
3. Any relevant collateral source materials including coverage policies
4. The specific facts of the particular situation

Coverage policies relate exclusively to the administration of health benefit plans. Coverage policies are not recommendations for treatment and should never be used as treatment guidelines.

This evidence-based medical coverage policy has been developed by EviCore, Inc. Some information in this coverage policy may not apply to all benefit plans administered by Cigna.

These guidelines include procedures EviCore does not review for Cigna. Please refer to the **Cigna CPT code list** for the current list of high-tech imaging procedures that EviCore reviews for Cigna.

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General Guidelines (SP-1)

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Procedure Codes Associated with Spine Imaging

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MRI/MRA	CPT®
MRI Cervical without contrast	72141
MRI Cervical with contrast	72142
MRI Cervical without and with contrast	72156
MRI Thoracic without contrast	72146
MRI Thoracic with contrast	72147
MRI Thoracic without and with contrast	72157
MRI Lumbar without contrast	72148
MRI Lumbar with contrast	72149
MRI Lumbar without and with contrast	72158
MRA Spinal Canal	72159
MRI Pelvis without contrast	72195
MRI Pelvis with contrast	72196
MRI Pelvis without and with contrast	72197
MR Spectroscopy	76390

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MRI/MRA	CPT®
Magnetic resonance spectroscopy, determination and localization of discogenic pain (cervical, thoracic, or lumbar); acquisition of single voxel data, per disc, on biomarkers (ie, lactic acid, carbohydrate, alanine, laal, propionic acid, proteoglycan, and collagen) in at least 3 discs	0609T
Magnetic resonance spectroscopy, determination and localization of discogenic pain (cervical, thoracic, or lumbar); transmission of biomarker data for software analysis	0610T
Magnetic resonance spectroscopy, determination and localization of discogenic pain (cervical, thoracic, or lumbar); postprocessing for algorithmic analysis of biomarker data for determination of relative chemical differences between discs	0611T
Magnetic resonance spectroscopy, determination and localization of discogenic pain (cervical, thoracic, or lumbar); interpretation and report	0612T

CT	CPT®
CT Cervical without contrast	72125
CT Cervical with contrast (Post-Myelography CT)	72126
CT Cervical without and with contrast	72127
CT Thoracic without contrast	72128
CT Thoracic with contrast (Post-Myelography CT)	72129
CT Thoracic without and with contrast	72130
CT Lumbar without contrast (Post-Discography CT)	72131
CT Lumbar with contrast (Post-Myelography CT)	72132
CT Lumbar without and with contrast	72133

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CT	CPT®
CT Pelvis without contrast	72192
CT Pelvis with contrast	72193
CT Pelvis without and with contrast	72194

Ultrasound	CPT®
Spinal canal ultrasound	76800

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General Guidelines (SP-1.0)

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- Before advanced diagnostic imaging can be considered, there must be an in-person clinical evaluation as well as a clinical re-evaluation after a trial of failed conservative therapy; the clinical re-evaluation may consist of an in-person evaluation or other meaningful contact with the provider's office such as email, web or telephone communications.
- An in-person clinical evaluation for the current episode of the condition is required to have been performed before advanced imaging is considered. This may have been either the initial clinical evaluation or a clinical re-evaluation.
- The in-person clinical evaluation should include a relevant history and physical examination (including a detailed neurological examination), appropriate laboratory studies, non-advanced imaging modalities, results of manual motor testing, the specific dermatomal distribution of altered sensation, reflex examination, and nerve root tension signs (e.g., straight leg raise test, slump test, femoral nerve tension test). *The clinical evaluation must be in-person; other forms of meaningful contact (telephone call, electronic mail, telemedicine, or messaging) are not acceptable as an in-person evaluation.*
  - For those spinal conditions/disorders for which the Spine Imaging Guidelines require a plain x-ray of the spine prior to consideration of an advanced imaging study, the plain x-ray must be performed after the current episode of symptoms started or changed and results need to be available to the requesting provider of the advanced imaging study (see: **Anatomic Guidelines [SP-2.1]**).
- Clinical re-evaluation is required prior to consideration of advanced diagnostic imaging to document failure of significant clinical improvement following a recent (within 12 weeks) six week trial of provider-directed treatment. Clinical re-evaluation can include documentation of an in-person encounter or documentation of other meaningful contact with the requesting provider's office by the individual (e.g., telephone call, electronic mail, telemedicine, or messaging).
  - Provider-directed treatment may include education, activity modification, NSAIDs (non-steroidal anti-inflammatory drugs), narcotic and non-narcotic analgesic medications, oral or injectable corticosteroids, a provider-directed home exercise/ stretching program, cross-training, avoidance of aggravating activities, physical/ occupational therapy, spinal manipulation, interventional pain procedures and other pain management techniques.
- Any bowel/bladder abnormalities or emergent or urgent indications should be documented at the time of the initial clinical evaluation and clinical re-evaluation.
- Altered sensation to pressure, pain, and temperature should be documented by the specific anatomic distribution (e.g., dermatomal, stocking/glove or mixed distribution).

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- Motor deficits (weakness) should be defined by the specific myotomal distribution (e.g., weakness of toe flexion/extension, knee flexion/extension, ankle dorsi/plantar flexion, wrist dorsi/palmar flexion) and gradation of muscle testing should be documented as follows:

Grading of Manual Muscle Testing	
0	No muscle activation
1	Trace muscle activation, such as a twitch, without achieving full range of motion
2	Muscle activation with gravity eliminated, achieving full range of motion
3	Muscle activation against gravity, full range of motion
4	Muscle activation against some resistance, full range of motion
5	Muscle activation against examiner's full resistance, full range of motion

- Pathological reflexes (e.g. Hoffmann's, Babinski, and Chaddock sign) should be reported as positive or negative.
- Asymmetric reflexes and reflex examination should be documented as follows:

Grading of Reflex Testing	
0	No response
1+	A slight but definitely present response
2+	A brisk response
3+	A very brisk response without clonus
4+	A tap elicits a repeating reflex (clonus)

- Advanced diagnostic imaging is often urgently indicated and may be necessary if serious underlying spinal and/or non-spinal disease is suggested by the presence of certain patient factors referred to as "red flags." See: **Red Flag Indications (SP-1.2)**.
- Spinal specialist evaluation can be helpful in determining the need for advanced diagnostic imaging, especially for individuals following spinal surgery.

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- The need for repeat advanced diagnostic imaging should be carefully considered and may not be indicated if prior advanced diagnostic imaging has been performed. Requests for simultaneous, similar studies such as spinal MRI and CT need to be documented as required for preoperative surgical planning. These studies may be helpful in the evaluation of complex failed spinal fusion cases or needed for preoperative surgical planning when the determination of both soft tissue and bony anatomy is required.
- Serial advanced imaging, whether CT or MRI, for surveillance of healing or recovery from spinal disease is not supported by the currently available scientific evidence-based medicine for the majority of spinal disorders.
  - Requests for repeat imaging may be considered on a case-by-case basis (e.g. concern for delayed union or non-union of spinal fracture, pseudoarthrosis of fusion, etc.)
- Advanced imaging is generally unnecessary for resolved or improving spinal pain and/or radiculopathy.
- Advanced diagnostic imaging has not been shown to be of value in individuals with stable, longstanding spinal pain without neurological features or without clinically significant or relevant changes in symptoms or physical examination findings.
- Anatomic regions of the spine/pelvis that are included in the following MRI and CT advanced diagnostic imaging studies:
  - Cervical spine: from the skull base/foramen magnum through T1
  - Thoracic spine: from C7 through L1
  - Lumbar spine: from T12 through mid-sacrum
  - Pelvis: includes hips, sacroiliac joints, sacrum, coccyx
- CT or MRI of the cervical and thoracic spine will image the entire spinal cord since the end of the spinal cord or conus medullaris usually ends at L1 in adults. Therefore, lumbar spine imaging is not needed when the goal is to image only the spinal cord unless there is known or suspected low lying conus medullaris (e.g. tethered cord).

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General Considerations (SP-1.1)

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- See: **General Guidelines (SP-1.0)**

Background and Supporting Information

Straight leg raise test (also known as the Lasegue's test) – With the individual in the supine position, the hip medially rotated and adducted, and the knee extended, the examiner flexes the hip until the individual complains of pain or tightness in the back or back of the leg. If the pain is primarily back pain, it is less specific whereas if the pain is primarily in the leg, it is more likely nerve root irritation/radiculopathy. Disc herniation or pathology causing pressure between the two extremes are more likely to cause pain in both areas. The examiner then slowly and carefully drops the leg back (extends it) slightly until the individual feels no pain or tightness. The individual is then asked to flex the neck so the chin is on the chest, or the examiner may dorsiflex the individual's foot, or both actions may be done simultaneously. Both of these maneuvers are considered to be provocative tests for neurological tissue.

Slump test – The individual is seated on the edge of the examination table with the legs supported, the hips in neutral position, and the hands behind the back. The examination is performed in sequential steps. First, the individual is asked to "slump" the back into thoracic and lumbar flexion. The examiner maintains the individual's chin in neutral position to prevent neck and head flexion. The examiner then uses one arm to apply overpressure across the shoulders to maintain flexion of the thoracic and lumbar spines. While this position is held, the individual is asked to actively flex the cervical spine and head as far as possible (i.e., chin to chest). The examiner then applies overpressure to maintain flexion of all three parts of the spine (cervical, thoracic, and lumbar) using the hand of the same arm to maintain overpressure in the cervical spine. With the other hand, the examiner then holds the individual's foot in maximum dorsiflexion. While the examiner holds these positions, the individual is asked to actively straighten the knee as much as possible. The test is repeated with the other leg and then with both legs at the same time. If the individual is unable to fully extend the knee because of pain, the examiner releases the overpressure to the cervical spine and the individual actively extends the neck. If the knee extends further, the symptoms decrease with neck extension, or the positioning of the individual increases the individual's symptoms, then the test is considered positive.

Femoral nerve tension test (also known as the prone knee bending test) – The individual lies prone while the examiner passively flexes the knee as far as possible so that the individual's heel rests against the buttock. At the same time, the examiner should ensure that the individual's hip is not rotated. If the examiner is unable to flex the

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individual's knee past 90 degrees because of a pathological condition in the hip, the test may be performed by passive extension of the hip while the knee is flexed as much as possible. The flexed knee position should be maintained for 45 to 60 seconds. Unilateral neurological pain in the lumbar area, buttock, and/or posterior thigh may indicate an L2 or L3 nerve root lesion. Pain in the anterior thigh indicates tight quadriceps muscles or stretching of the femoral nerve.

Hoffmann's sign – The examiner holds the individual's middle finger and briskly flicks the distal phalanx. A positive test is noted if the interphalangeal joint of the thumb of the same hand flexes.

Babinski's sign – The examiner runs a sharp instrument along the plantar surface of the foot from the calcaneus along the lateral border to the forefoot. A positive test occurs with extension of the great toe with flexion and splaying of the other toes. A negative test occurs with no movement of the toes at all or uniform bunching up of the toes.

Chaddock sign – The examiner strokes the lateral malleolus. A positive test occurs with extension of the great toe.

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Red Flag Indications (SP-1.2)

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Red Flag Indications are intended to represent the potential for life or limb threatening conditions. Red Flag Indications are clinical situations in which localized spine pain and associated neurological features are likely to reflect serious underlying spinal and/or non-spinal disease and warrant exception to the requirement for documented failure of six weeks of provider-directed treatment. Advanced diagnostic imaging of the symptomatic level is indicated and/or work-up for a non-spinal source of spine pain for Red Flag Indications.

- Red Flag Indications include:
  - Motor Weakness
  - Aortic Aneurysm or Dissection
  - Cancer
  - Cauda Equina Syndrome
  - Fracture
  - Infection
  - Severe Radicular Pain

Motor Weakness

(See: Grading of Manual Muscle Testing and Reflex Testing in **General Guidelines [SP-1.0]**)

History, Symptoms or Physical Exam Findings (In-person clinical evaluation for the current episode of the condition required)	Advanced Diagnostic Imaging
Clinical presentation including one or more of the following: • New onset motor weakness of grade 3/5 or less of specified muscle(s); • New onset foot drop; • New onset bilateral lower extremity weakness; • Progressive objective motor /sensory/deep tendon reflex deficits on clinical re-evaluation.	MRI of the relevant spinal level without contrast **OR** MRI of the relevant spinal level without and with contrast

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Aortic Aneurysm or Dissection

History, Symptoms or Physical Exam Findings (In-person clinical evaluation for the current episode of the condition required)	Advanced Diagnostic Imaging
• New onset of back and/or abdominal pain in an individual with a known AAA; ***or*** • Acute dissection is suspected.	No spine imaging indicated, see: **Aortic Disorders, Renal Vascular Disorders and Visceral Artery Aneurysms (PVD-6)** in the Peripheral Vascular Disease Imaging Guidelines

Cancer

History, Symptoms or Physical Exam Findings (In-person clinical evaluation for the current episode of the condition required)	Advanced Diagnostic Imaging
There is clinical suspicion of spinal malignancy AND ONE or more of the following: • Night pain • Uncontrolled or unintended weight loss • Pain unrelieved by change in position • Age >70 years • Severe and worsening spinal pain despite a reasonable (generally after 1 week) trial of provider-directed treatment with re-evaluation	ONE of the following: • MRI of the relevant spinal level without contrast **OR** • MRI of the relevant spinal level without and with contrast **OR** • CT of the relevant spinal level without contrast **OR** • CT Myelogram of the relevant spinal level

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History, Symptoms or Physical Exam Findings (In-person clinical evaluation for the current episode of the condition required)	Advanced Diagnostic Imaging
ANY of the following: Known malignancy(ies) and acute spinal cord compression from primary or metastatic spinal neoplastic disease is suspected by history and physical examination **OR** Individual with a known history of cancer AND metastatic or Stage IV cancer with new onset back pain **OR** Individual with known history of cancer AND back pain AND suspicion of spinal malignancy	See: **Spinal/Vertebral Metastases (ONC-31.6)** in the Oncology Imaging Guidelines

Cauda Equina Syndrome

History, Symptoms or Physical Exam Findings (In-person clinical evaluation for the current episode of the condition required)	Advanced Diagnostic Imaging
Clinical presentation including one or more of the following: • Acute onset of bilateral sciatica; • Perineal sensory loss (“saddle anesthesia”); • Decreased anal sphincter tone; • New onset bowel/bladder incontinence; • Otherwise unexplained acute urinary retention.	MRI Lumbar Spine without contrast (CPT® 72148) **OR** MRI Lumbar Spine without and with contrast (CPT® 72158)

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Fracture

History, Symptoms or Physical Exam Findings (In-person clinical evaluation for the current episode of the condition required)	Advanced Diagnostic Imaging
• Clinical suspicion of a pathological spinal fracture. ◦ Advanced imaging is indicated after x-ray; no conservative treatment is needed.	See: **Spinal Compression Fractures (SP-11.1)** for appropriate imaging studies
• Clinical suspicion of a spinal fracture after trauma ◦ Advanced imaging is indicated after x-ray; no conservative treatment is needed.	See: **Neck (Cervical Spine) Trauma (SP-3.2)**, **Upper Back (Thoracic Spine) Trauma (SP-4.2)**, or **Low Back (Lumbar Spine) Trauma (SP-6.2)** for appropriate imaging studies
• Clinical suspicion of a spinal fracture related to ankylosing spondylitis or DISH ◦ Advanced imaging is indicated ***without*** x-ray or conservative treatment.	See: **Neck (Cervical Spine) Trauma (SP-3.2)**, **Upper Back (Thoracic Spine) Trauma (SP-4.2)**, **Low Back (Lumbar Spine) Trauma (SP-6.2)**, or **Inflammatory Spondylitis (SP-10.2)** for appropriate imaging studies

Infection

History, Symptoms or Physical Exam Findings (In-person clinical evaluation for the current episode of the condition required)	Advanced Diagnostic Imaging
There is a clinical suspicion of spinal infection (e.g., disc space infection, epidural abscess or spinal osteomyelitis) and one or more of the following: • Fever; • History of IV drug use; • Recent bacterial infection (UTIs, pyelonephritis, pneumonia); • Recent spinal intervention (e.g., surgery, pain injection, or stimulator implantation); • Immunocompromised states; • Long term use of systemic glucocorticoids; • Organ transplant recipient taking anti-rejection medication; • Diabetes mellitus; • HIV/AIDS; • Chronic dialysis; • Immunosuppressant therapy; • Neoplastic involvement of the spine; • Laboratory values indicative of infection (e.g., elevated WBC, ESR, CRP, positive cultures); • Decubitus ulcer or wound overlying spine; • Abnormal x-ray or CT suspicious for infection	**ONE** of the following: • MRI of the relevant spinal level without and with contrast **OR** • MRI without contrast **OR** • 3-phase bone scan complete spine **OR** • Gallium scan whole body **OR** • CT Spine area of interest with IV contrast **OR** • CT Spine area of interest without IV contrast
There is a clinical suspicion of spinal infection (e.g., disc space infection, epidural abscess or spinal osteomyelitis) and one or more of the following: • New neurologic deficit on physical examination • Cauda equina syndrome	**ONE** of the following: • MRI of the relevant spinal level without and with contrast **OR** • MRI without contrast **OR** • CT Spine area of interest with IV contrast **OR** • CT Spine area of interest without IV contrast

Severe Radicular Pain

All of the following must be present (In-person clinical evaluation for the current episode of the condition required)	Advanced Diagnostic Imaging
• Severe radicular pain in a specified spinal nerve root distribution (minimum 9/10 on the VAS); and • Documented significant functional loss at work or at home; and • Severity of pain unresponsive to a minimum of seven (7) days of provider-directed treatment; and • Treatment plan includes one of the following: ◦ Transforaminal epidural steroid injection (TFESI) at any level(s); or ◦ Interlaminar epidural steroid injection (ILESI) at the cervical or thoracic levels; or ◦ A plan for urgent/emergent spinal surgery; or ◦ A plan for an urgent/emergent referral to/consultation from a spine specialist (Interventional Pain physician or Spine Surgeon)	MRI of the relevant spinal level without contrast **OR** MRI without and with contrast

Definitions (SP-1.3)

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- **Radiculopathy**, for the purpose of this policy, is defined as the presence of pain resulting in significant functional limitations (i.e., diminished quality of life and impaired, age-appropriate activities of daily living), dysaesthesia(s) or paraesthesia(s) reported by the individual in a specified dermatomal distribution of an involved named spinal root(s) and **ONE or MORE** of the following:
  - Loss of strength of specific named muscle(s) or myotomal distribution(s) or demonstrated on detailed neurologic examination (within the prior 3 months), concordant with nerve root compression of the involved named spinal nerve root(s).
  - Altered sensation to light touch, pressure, pin prick or temperature demonstrated on a detailed neurologic examination (within the prior 3 months) in the sensory distribution concordant with nerve root compression of the involved named spinal nerve root(s).
  - Diminished, absent or asymmetric reflex(es) on a detailed neurologic examination (within the prior 3 months) concordant with nerve root compression of the involved named spinal nerve root(s).
  - Either of the following:
    - A concordant radiologist's interpretation of an advanced diagnostic imaging study (MRI or CT) of the spine demonstrating compression of the involved named spinal nerve root(s) or foraminal stenosis at the concordant level(s) (Performed within the prior 12 months).
    - Electrodiagnostic studies (EMG/NCV's) diagnostic of nerve root compression of the involved named spinal nerve root(s). (Performed within the prior 12 months).
- **Radicular pain** is pain which radiates to the upper or lower extremity along the course of a spinal nerve root, typically resulting from compression, inflammation and/or injury to the nerve root.
- **Radiculitis** is defined, for the purpose of this policy, as radicular pain without objective neurological findings.

Evidence Discussion (SP-1)

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Prior to advanced imaging, it is critical to perform a detailed history and physical examination in the evaluation of a patient for spinal pathology. Features of the clinical history and physical examination not only help in the formulation of a differential diagnosis but also influence decisions about diagnostic imaging. Also, as the more common findings on imaging studies are often nonspecific and nondiagnostic, clinical history and exam findings play a crucial role. These incidental findings may lead to unnecessary further diagnostic workup and additional negative downstream outcomes.

Multiple studies have shown most patients with acute neck or back pain will improve with 6 weeks of conservative care, however, conservative care would not be necessary for patients with red flag indications.

Risks associated with imaging include but are not limited to radiation exposure and contrast complications. Studies have also linked the increase rate of imaging with the increase rate of surgery and also found early magnetic resonance imaging (MRI) had an eightfold increased risk of surgery. It should also be of note that routine repeat advanced imaging for many spinal conditions has been shown to have limited value.

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Imaging Techniques (SP-2)

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Anatomic Guidelines (SP-2.1)

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- Anatomic regions of the spine/pelvis that are included in the following MRI and CT advanced diagnostic imaging studies:
  - Cervical spine: from the skull base/foramen magnum through T1
  - Thoracic spine: from C7 through L1
  - Lumbar spine: from T12 through mid-sacrum
  - Pelvis: includes hips, sacroiliac joints, sacrum, coccyx
- CT or MRI cervical and thoracic spine will image the entire spinal cord since the end of the spinal cord or conus medullaris usually ends at L1 in adults. Therefore, lumbar spine imaging is not needed when the goal is to image only the spinal cord unless there is known or suspected low lying conus medullaris (e.g. tethered cord).
- The results of plain x-rays performed after the current episode of symptoms started or changed need to be available to the requesting provider of the advanced imaging study for the following conditions:
  - See: **Spinal Compression Fractures (SP-11)**
  - See: **Lumbar Spine Spondylolysis/Spondylolisthesis (SP-8)**
  - See: **Inflammatory Spondylitis (SP-10.2)**
  - See: **Neck (Cervical Spine) Trauma (SP-3.2)**, **Upper Back (Thoracic Spine) Trauma (SP-4.2)**, and **Low Back (Lumbar Spine) Trauma (SP-6.2)**
  - See: **Coccydynia without Neurological Features (SP-5.2)**
  - See: **Spinal Deformities (e.g. Scoliosis/Kyphosis) (SP-14)** and **Spinal Dysraphism (PEDSP-4)** in the Pediatric and Special Populations Spine Imaging Guidelines
  - See: **Sacro-Iliac (SI) Joint Pain, Inflammatory Spondylitis/Sacroiliitis and Fibromyalgia (SP-10)**
  - See: **Post-Operative Spinal Disorders (SP-15)**

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MRI of the Spine (SP-2.2)

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- See: **Procedure Codes Associated with Spine Imaging**
- For MR Spectroscopy, all spine uses are considered not medically necessary.
  - See: **Imaging of Intervertebral Discs (SP-2.5)**
- MRI Spine is performed either without contrast, with contrast *or* without and with contrast. A “with contrast” study alone is indicated only to complete a study begun without contrast. Contrast is generally not indicated for most disc and nerve root disorders, fractures and degenerative disease.
- MRI Spine indications include:
  - Evaluation of disc disease, spinal cord and nerve root disorders and most other spinal conditions including evaluation of congenital anomalies of the spine and spinal cord
  - Suspicion for or surveillance of known spine/spinal canal/spinal cord neoplastic disease
  - Suspicion, diagnosis of or surveillance of spinal infections, multiple sclerosis or other causes of myelitis, syringomyelia, cauda equina syndrome or other “red flag” indications. See: **Red Flag Indications (SP-1.2)**.
  - Preoperative evaluation to define abnormal or variant spinal anatomy that could influence the outcome of a potential surgical procedure. See: **Prior to Spine Surgery (SP-16.1)**.
  - Spinal imaging for individuals having undergone recent spinal surgery e.g., laminectomy, discectomy, spinal decompression, when history and physical examination is suspicious for hematoma, post-surgical infection, or cerebrospinal fluid (CSF) leak.

Positional MRI:

- Positional MRI is also referred to as dynamic, weight-bearing or kinetic MRI. Currently, there is inadequate scientific evidence to support the medical necessity of this study. As such, it should be considered not medically necessary.

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CT of the Spine (SP-2.3)

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- See: **Procedure Codes Associated with Spine Imaging**
- CT Spine indications include:
  - Contraindication to MRI
    - CT (contrast as requested) can be approved when ANY of the following MRI contraindications are documented:
      - Implanted ferromagnetic materials
      - Electronically, magnetically or mechanically activated implanted devices that are not determined by the manufacturer as MRI compatible/conditional
  - CT without contrast, or CT without and with contrast (even if MRI has already been performed), for any spinal trauma/fractures, especially spinal trauma/fractures that could result in spinal instability and spinal cord/spinal nerve compression
  - CT without contrast, or CT without and with contrast (even if MRI has already been performed), for spinal neoplastic disease – primary or metastatic
  - CT without contrast, or CT without and with contrast (even if MRI has already been performed), in conjunction with myelography or discography (see: **CT/ Myelography [SP-2.4]** and **Imaging of Intervertebral Discs [SP-2.5]**)
  - CT without contrast, or CT without and with contrast (even if MRI has already been performed), for preoperative evaluation to define abnormal or variant bony spinal anatomy that could influence the outcome of a potential surgical procedure (see: **Prior to Spine Surgery [SP-16.1]**)
  - CT without contrast, or CT without and with contrast, (even if MRI has already been performed), to assess spinal fusions when pseudoarthrosis is suspected (not to be used for routine post-operative assessment where x-rays are sufficient and/or there are no concordant clinical signs or symptoms)
  - CT without contrast, or CT without and with contrast (even if MRI has already been performed), for congenital, developmental or acquired spinal deformity (see: **Spinal Deformities [e.g. Scoliosis/Kyphosis] [SP-14]**)
  - CT without contrast, or CT without and with contrast, for spondylolysis when routine x-rays are negative and/or MRI is equivocal, indeterminate or non-diagnostic (see: **Lumbar Spine Spondylolysis/Spondylolisthesis [SP-8]**)
  - CT without contrast, or CT without and with contrast, to evaluate calcified lesions, (e.g., osteophytes, ossification of the posterior longitudinal ligament [OPLL])

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CT/Myelography (SP-2.4)

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- See: **Procedure Codes Associated with Spine Imaging**
- CT/Myelography is generally unnecessary as an initial study when a diagnostic quality MRI has been obtained.
- CT/Myelography indications include:
  - To clarify equivocal, indeterminate or non-diagnostic MRI findings or to further evaluate the significance of multiple spinal abnormalities
  - When an MRI is contraindicated (see: **CT of the Spine [SP-2.3]**)
  - Preoperative planning for spine surgery, (e.g., multilevel spinal stenosis or when a previous MRI is insufficient, equivocal, indeterminate or non-diagnostic) (see: **Prior to Spine Surgery (SP-16.1)**)
  - Evaluation after previous spinal surgery when an MRI without and with contrast is contraindicated or MRI results are equivocal, indeterminate or non-diagnostic
  - The guidelines allow for the approval of the post-myelogram CT (i.e., CPT® 72126, CPT® 72129, and CPT® 72132) only and not any other myelogram-related procedure codes (i.e., CPT® 72265 or CPT® 62284).

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Imaging of Intervertebral Discs (SP-2.5)

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Post-lumbar Discography CT:

- The guidelines allow for the post-lumbar discography CT procedure codes only and do not include any other discography-related procedure codes. A post-lumbar discography CT is considered medically necessary following an approved discography and ALL of the following apply:
  - A post-discography CT is coded as without contrast.
  - A CT Lumbar Spine without contrast (CPT® 72131) is indicated if verified to be performed as a post-discography CT.
  - When a post-discography CT is requested and the discography has already been approved, authorization will be issued for the post-discography CT procedure codes.

Magnetic Resonance Spectroscopy:

- Magnetic Resonance Spectroscopy (MRS) involves the analysis of the levels of certain chemicals in pre-selected voxels (small regions) on an MRI scan done at the same time.
  - MRS (CPT® 76390, 0609T, 0610T, 0611T, and 0612T) is considered not medically necessary for all spine imaging uses at this time.

Background and Supporting Information

- Provocative Discography/CT and MR Spectroscopy lumbar spine are procedures purported to diagnose (or rule-out) a discogenic “pain generator” i.e., the source of non-specific axial spinal pain. These diagnostic studies, when reported as positive, are often used as an indication for spinal fusion in individuals with non-specific axial back pain.
- The following uses of discography are considered controversial:
  - To identify a symptomatic pseudoarthrosis in a failed spinal fusion
  - To identify which of two herniated discs seen on MRI is symptomatic when not determined clinically or otherwise
  - To confirm the discogenic nature of pain in an individual with an abnormal disc seen on MRI and to rule out pain from an adjacent disc level
  - To confirm the presumptive diagnosis of “internal disc disruption”
  - Discography of the cervical and/or thoracic spine
- The following uses of MR Spectroscopy lumbar spine are considered controversial:

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- To identify which of two herniated discs seen on MRI is symptomatic when not determined clinically or otherwise
- To confirm the discogenic nature of pain in an individual with an abnormal disc seen on MRI and to rule out pain from an adjacent disc level
- To confirm the presumptive diagnosis of “internal disc disruption”

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Ultrasound of the Spinal Canal (SP-2.6)

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- Spinal canal ultrasound (CPT® 76800) describes the evaluation of the spinal cord (canal and contents) most often performed in newborns, infants, young children and intraoperatively.
- CPT® 76800 describes evaluation of the entire spine and should not be reported multiple times for imaging of different areas of the spinal canal.
- CPT® 76998, rather than CPT® 76800, should be used to report intraoperative spinal canal ultrasound (ultrasonic guidance). Intraoperative use of spinal ultrasound (CPT® 76998) would not require prior authorization.

Indications for spinal canal ultrasound (CPT® 76800):

- This study is generally limited to infants, newborns and young children because of incomplete ossification of the vertebral segments surrounding the spinal cord, including the assessment of CSF in the spinal canal and for image-guided lumbar puncture.
- When ossification of the vertebral segments is incomplete for evaluation of suspected or known tethered cord (see: **Tethered Cord [PEDSP-5]** in the Pediatric and Special Populations Spine Imaging Guidelines).
- Evaluation of suspected occult and non-occult spinal dysraphism (see: **Spinal Dysraphism [PEDSP-4]** in the Pediatric and Special Populations Spine Imaging Guidelines).
- Evaluation of spinal cord tumors, vascular malformations and cases of birth-related trauma.
- Contraindicated for use in the adult spine for the assessment of spinal pain, radiculopathy, facet inflammation, nerve root inflammation, disc herniation, and soft tissue conditions surrounding the adult spine other than for superficial masses.

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Limitations of Spinal Imaging in Degenerative Disorders (SP-2.7)

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- Non-specific axial spinal pain is ubiquitous. Advanced diagnostic imaging infrequently identifies the source of the spinal pain (pain generator).
- Incidental findings on MRI and CT, including bulging, protruding, extruding or herniated discs, are often non-concordant, asymptomatic and increase in incidence as the spine ages.
- In individuals with poorly defined clinical presentations, “abnormal” spinal advanced diagnostic imaging results are infrequently clinically concordant, significant, material or substantive and may even lead to inappropriate treatment.
- Performing advanced spinal imaging based only on the presence of spinal degenerative findings identified on x-rays is not generally indicated in individuals who are either asymptomatic or present with non-specific axial spinal pain.

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Miscellaneous Spinal Lesions (SP-2.8)

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Vertebral body hemangiomas:

- Vertebral body hemangiomas are common and are generally benign and incidental findings on plain x-rays and advanced diagnostic imaging studies.
- If the appearance of a vertebral body hemangioma is typical on plain x-ray, further spinal advanced diagnostic imaging is not usually required, unless there are associated neurologic symptoms or signs on physical examination.
- If the appearance of a vertebral body hemangioma is atypical on plain x-ray, with or without neurological signs or symptoms on physical exam, MRI without contrast or MRI without and with contrast is indicated.
- Occasionally, MRI may be equivocal, indeterminate or non-diagnostic and CT without contrast of the spinal area is indicated to help clarify the diagnosis.
- No follow-up imaging is necessary once the diagnosis of a vertebral body hemangioma is established without neurological features.

Tarlov cysts:

- Tarlov cysts are most often cystic dilatations of nerve root sleeves in the lumbar spine and sacrum.
- Controversy exists as to whether Tarlov cysts can result in neurologic signs and symptoms but they can result in erosion of the adjacent bone.
- Usually Tarlov cysts are benign, incidental findings on advanced diagnostic imaging studies. Further evaluation of a known or suspected Tarlov cyst can be performed with an MRI Lumbar Spine without and with contrast study (CPT® 72158) or CT/ Myelography Lumbar Spine (CPT® 72132).

Other spinal lesions:

- MRI without and with contrast or a CT without contrast is indicated if:
  - Other spinal lesions are seen on routine x-rays or a non-contrast MRI; ***and***
  - These additional advanced imaging studies are recommended by a spine specialist or radiologist to further characterize or diagnose the lesion; ***or***
  - Required for surgical planning.

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MRA Spinal Canal (SP-2.9)

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- MR angiography (MRA) Spine imaging is utilized infrequently.
- Cerebrospinal Fluid (CSF) flow studies using MRI are included in CPT® codes 70551, 70552, and 70553 and should not be coded or reported separately.

Indications may include:

- Suspected spinal cord arteriovenous malformation (AVM) or arteriovenous fistula (AVF):
  - MRI Spine of the relevant spine region without and with contrast should be the initial imaging study.
  - If suspicion for a spinal AVM or AVF is high based upon the results of the MRI Spine, catheter angiography is recommended (CPT® 72159 or CPT® 70496).
- Subarachnoid hemorrhage where no brain aneurysm has been previously identified
  - Catheter angiography (CPT® 70496) should be performed and is the most definitive study to define possible spinal pathology resulting in a spinal canal subarachnoid hemorrhage.
  - See: **General Guidelines – CT and MR Angiography (CTA and MRA) (HD-1.5)** in the Head Imaging Guidelines
  - See: **Intracranial Aneurysms (HD-12.1)** in the Head Imaging Guidelines
- Preoperative planning
  - MRA Spinal canal may be useful in identifying major intercostal feeder vessels to the spinal cord prior to surgical procedures that might interfere with this blood supply. However, catheter angiography (CPT® 72159) is generally a more definitive study for this purpose.

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Spine PET/CT (SP-2.10)

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- At the present time there is controversy regarding spine PET/CT due to inadequate scientific evidence to support the medical necessity of PET/CT for the routine assessment of spinal disorders, other than for neoplastic disease.
- See: **Spinal/Vertebral Metastases (ONC-31.6)** in the Oncology Imaging Guidelines
- Spine PET/CT should be considered not medically necessary.

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Cone-beam CT (SP-2.11)

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- Cone-beam CT for imaging of the cervical spine should be considered not medically necessary.

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3D Rendering (SP-2.12)

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- See: **3D Rendering (MS-3)** in the Musculoskeletal Imaging Guidelines

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Evidence Discussion (SP-2)

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- X-rays are first line imaging for suspected inflammatory spine disease, following trauma, concerns of spinal deformities, or post-operative spinal disorders. Although x-rays may not confirm a definitive diagnosis, they provide information that can better direct advanced imaging modalities.
- MRI utilizes a magnetic field and radio waves with computer processing to produce detailed images which have excellent soft tissue characterization and is the primary modality for evaluating the spinal cord, intervertebral disc disease and other soft tissue pathology of the spine. Positional MRI and MR Spectroscopy lacks sufficient scientific evidence to support its routine clinical use.
- CT is indicated as an alternative to MRI when MRI is contraindicated or equivocal. CT is also indicated for evaluation of bony pathology including but not limited to fractures, bony neoplastic disease, calcified lesions, post traumatic and perioperative bony processes. Following lumbar discography CT may be approved to evaluate disc anatomy.
- CT/Myelography provides indirect visualization of the thecal sack in the spinal canal. MRI is the primary indicated advanced imaging for these indications as the cord, thecal sac, and spinal canal can be directly visualized. CT/Myelography may be indicated when MRI is indeterminate or contraindicated.
- Ultrasound can be used to visualize the spinal canal in young children before the posterior elements ossify. Ultrasound will not penetrate ossified bone.
- MRA has limited indications in spine imaging but may be appropriate for evaluating spinal vascular malformations.
- There is inadequate scientific evidence to support the medical necessity of PET/CT for the routine assessment of spinal disorders, other than for neoplastic disease.
- There is inadequate scientific evidence to support the medical necessity of cone beam CT for the routine assessment of spinal disorders outside of the operative setting which is outside the coverage of these guidelines.

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Neck (Cervical Spine) Pain Without/With Neurological Features (Including Stenosis) and Trauma (SP-3)

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Neck (Cervical Spine) Pain without and with Neurological Features (Including Stenosis) (SP-3.1)

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***All* of the following are required prior to advanced imaging:**
• An in-person clinical evaluation for the current episode of the condition is required to have been performed before advanced imaging is considered. This may have been either the initial clinical evaluation or a clinical re-evaluation (see also: **General Guidelines (SP-1.0)**). • Failure of recent (within 12 weeks) 6-week trial of provider-directed treatment (unless presence of a red flag as defined in **Red Flag Indications (SP-1.2)**) • Clinical re-evaluation after treatment period (may consist of an in-person evaluation or other meaningful contact (see also: **General Guidelines (SP-1.0)**)

Advanced Diagnostic Imaging:	MRI Cervical Spine, without contrast (CPT® 72141)
Comments:	CT Cervical Spine without contrast (CPT® 72125) **OR** CT Myelography (CPT® 72126) is indicated when MRI is contraindicated.

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Neck (Cervical Spine) Trauma (SP-3.2)

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***All* of the following are required prior to advanced imaging:**
• An in-person clinical evaluation for the current episode of the condition is required to have been performed before advanced imaging is considered. This may have been either the initial clinical evaluation or a clinical re-evaluation (see also: **General Guidelines (SP-1.0)**). • Failure of recent (within 12 weeks) 6-week trial of provider-directed treatment (unless presence of a red flag as defined in **Red Flag Indications (SP-1.2)**) • Clinical re-evaluation after treatment period (may consist of an in-person evaluation or other meaningful contact (see also: **General Guidelines (SP-1.0)**) • Results of plain x-rays of the cervical spine performed after the current episode of symptoms started or changed need to be available to the requesting provider (not required for high risk mechanisms as below**)

Advanced Diagnostic Imaging:	**MRI Cervical Spine without contrast (CPT® 72141) OR CT Cervical Spine without contrast (CPT® 72125)** **For individuals with ankylosing spondylitis or DISH (diffuse idiopathic skeletal hyperostosis), both MRI of the whole spine (CPT® 72141, 72146, and/or 72148) AND CT of the whole spine (CPT® 72125, 72128, and/or 72131) can be approved.** **For individuals with ankylosing spondylitis or DISH (diffuse idiopathic skeletal hyperostosis) plain x-rays and a 6 week trial of provider-directed treatment and clinical evaluation are NOT required.**
Comments:	Plain x-rays **ARE** required for suspected fracture in **non-high** risk injuries. Plain x-rays and a 6-week trial of provider-directed treatment and clinical re-evaluation are **NOT** required for individuals with a high risk factor(s) for suspected cervical spine injury within the last 3 months (See below**).

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**High risk factors of suspected cervical spine injury may include:

- Long term use of systemic glucocorticoids
- History of prior low energy fractures
- History of low bone mineral density
- Age ≥65 years
- Head trauma and/or maxillofacial trauma
- Pedestrian in a motor vehicle accident
- Fall from elevation ≥3 feet/5 stairs
- Diving accident
- Head-on motor vehicle collision without/with airbag deployment
- Rollover motor vehicle collision
- Ejection from the vehicle in a motor vehicle collision
- High speed of the vehicle at the time of collision
- Not wearing a seatbelt/shoulder harness in a motor vehicle collision
- Minor direct/indirect trauma to the cervical spine/maxillofacial areas in individuals with ankylosing spondylitis or DISH

Background and Supporting Information

- Pain radiation patterns from the cervical spine area into the thoracic spine area do not necessarily justify the addition of thoracic spine advanced diagnostic imaging.
- Cervical radiculopathy is often confused with shoulder disorders, brachial plexopathy, peripheral nerve entrapment and/or motor/sensory neuropathies. Electrodiagnostic testing (EMGs/NCVs) is generally used to confirm, not establish, a diagnosis of peripheral nerve entrapment and/or a motor/sensory neuropathy based upon history and physical examination findings. Electrodiagnostic testing is often considered when advanced imaging of the spine does not reveal neurocompressive pathology and/or after 6 weeks of unimproved symptoms of extremity pain, weakness, numbness and/or tingling.
- Individuals with ankylosing spondylitis or DISH are at high risk of cervical spine fractures even with minor direct/indirect trauma to the cervical spine which can result in quadriparesis/quadriplegia

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Evidence Discussion (SP-3)

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X-rays provide critical information that cannot be obtained with advanced imaging modalities and remain central to providing optimal care for spine patients. Unnecessary CT scans increase patients' radiation exposure, however, is the initial imaging for patients involved in trauma with a high-risk factor for cervical spine injury. Additionally, for patients with diffuse idiopathic skeletal hyperostosis (DISH) or ankylosing spondylitis with a history of low-energy trauma, whole spine MRI or CT imaging is mandatory due to the high prevalence of acute fractures and the low specificity for fracture detection on radiographs. The American College of Radiology (ACR) Appropriateness Criteria for Cervical Neck Pain or Cervical Radiculopathy (revised 2018) indicates that in the absence of red flag symptoms, early advanced imaging may not be required as abnormal findings are not uncommon in asymptomatic patients and correlate poorly with the presence of neck pain.

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Upper Back (Thoracic Spine) Pain Without/With Neurological Features (Including Stenosis) and Trauma (SP-4)

Guideline Page

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Upper Back (Thoracic Spine) Pain without and with Neurological Features (Including Stenosis) (SP-4.1)

SP.TS.0004.1.A
v1.0.2025

***All* of the following are required prior to advanced imaging:**
• An in-person clinical evaluation for the current episode of the condition is required to have been performed before advanced imaging is considered. This may have been either the initial clinical evaluation or a clinical re-evaluation (see also: **General Guidelines (SP-1.0)**). • Failure of recent (within 12 weeks) 6-week trial of provider-directed treatment (unless presence of a red flag as defined in **Red Flag Indications (SP-1.2)**). • Clinical re-evaluation after treatment period (may consist of an in-person evaluation or other meaningful contact (see also: **General Guidelines (SP-1.0)**).

Advanced Diagnostic Imaging:	**MRI Thoracic Spine without contrast (CPT® 72146)**
Comments:	A CT Thoracic spine without contrast (CPT® 72128) **OR** CT Myelography (CPT® 72129) is indicated when MRI is contraindicated.

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Upper Back (Thoracic Spine) Trauma (SP-4.2)

SP.TS.0004.2.A
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***All* of the following are required prior to advanced imaging:**
• An in-person clinical evaluation for the current episode of the condition is required to have been performed before advanced imaging is considered. This may have been either the initial clinical evaluation or a clinical re-evaluation (see also: **General Guidelines (SP-1.0)**). • Failure of recent (within 12 weeks) 6-week trial of provider-directed treatment (unless presence of a red flag as defined in **Red Flag Indications (SP-1.2)**). • Clinical re-evaluation after treatment period (may consist of an in-person evaluation or other meaningful contact (see also: **General Guidelines (SP-1.0)**). • Results of plain x-rays of thoracic spine performed after the current episode of symptoms started or changed need to be available to the requesting provider

Advanced Diagnostic Imaging:	**MRI Thoracic Spine without contrast (CPT® 72146) OR CT Thoracic Spine without contrast (CPT® 72128)**
Comments:	For individuals with ankylosing spondylitis or DISH (diffuse idiopathic skeletal hyperostosis), both MRI of the whole spine (CPT® 72141, 72146, and/or 72148) **AND** CT of the whole spine (CPT® 72125, 72128, and/or 72131) can be approved. For individuals with ankylosing spondylitis or DISH (diffuse idiopathic skeletal hyperostosis) plain x-rays and a 6 week trial of provider-directed treatment and clinical evaluation are **NOT** required

Background and Supporting Information

- Thoracic radiculopathy presents with pain radiation from the thoracic spine around the trunk. At upper thoracic spine levels, the pain radiation is from the thoracic spine around the rib cage following the sensory distribution of an intercostal nerve.
- Advanced diagnostic imaging is generally not indicated in evaluation of axial low back pain with radiation toward the thoracic region unless there are documented clinical features indicating a thoracic spine disorder.

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Evidence Discussion (SP-4)

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The precision in identifying thoracic spine diseases is dependent on a meticulous association with the patient's clinical examination and medical history, because the usual observations from imaging studies are frequently ambiguous and non-conclusive. Wood et al. demonstrated that asymptomatic patients may exhibit positive findings on thoracic spine MRI at a rate as high as 70%. For patients with atraumatic thoracic back pain, data from Linna et al. supports initial conservative management followed by evaluation by a surgical specialist before ordering a thoracic spine MRI. Red flag indications, however, obviate the need for conservative care. Regarding the value of x-rays, Goodwin et al. stated that plain films provide critical information that cannot be obtained with other imaging modalities, and they remain central to providing optimal care for spine patients. When there is a history of blunt trauma and a high-risk factor for thoracic spine injury, however, CT imaging is appropriate for initial imaging. Additionally, for patients with diffuse idiopathic skeletal hyperostosis (DISH) or ankylosing spondylitis with a history of low-energy trauma, whole spine MRI or CT imaging is mandatory due to the high prevalence of acute fractures and the low specificity for fracture detection on radiographs.

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Low Back (Lumbar Spine) Pain/Coccydynia without Neurological Features (SP-5)

Guideline Page

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Low Back (Lumbar Spine) Pain without Neurological Features (SP-5.1)

SP.LB.0005.1.A
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***All* of the following are required prior to advanced imaging:**
• An in-person clinical evaluation for the current episode of the condition is required to have been performed before advanced imaging is considered. This may have been either the initial clinical evaluation or a clinical re-evaluation (see also: **General Guidelines (SP-1.0)**. • Failure of recent (within 12 weeks) 6-week trial of provider-directed treatment (unless presence of a red flag as defined in **Red Flag Indications (SP-1.2)**). • Clinical re-evaluation after treatment period (may consist of an in-person evaluation or other meaningful contact (see also: **General Guidelines (SP-1.0)**)

Advanced Diagnostic Imaging:	**MRI Lumbar Spine without contrast (CPT® 72148)**
Comments:	A CT Lumbar spine without contrast (CPT® 72131) **OR** CT Myelography (CPT® 72132) is indicated when MRI is contraindicated

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Coccydynia without Neurological Features (SP-5.2)

SP.LB.0005.2.A
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***All* of the following are required prior to advanced imaging:**
• An in-person clinical evaluation for the current episode of the condition is required to have been performed before advanced imaging is considered. This may have been either the initial clinical evaluation or a clinical re-evaluation (see also: **General Guidelines (SP-1.0)**). • Failure of recent (within 12 weeks) 6-week trial of provider-directed treatment (unless presence of a red flag as defined in **Red Flag Indications (SP-1.2)**). • Clinical re-evaluation after treatment period (may consist of an in-person evaluation or other meaningful contact (see also: **General Guidelines (SP-1.0)**) • Plain x-rays of the sacrum/coccyx are negative for fracture.

Advanced Diagnostic Imaging:	**MRI Pelvis without contrast (CPT® 72195)**
Comments:	A CT Pelvis without contrast (CPT® 72192) when MRI is contraindicated.

Background and Supporting Information

Coccydynia is often reported by individuals as “tailbone” pain that is usually idiopathic or post-traumatic and generally follows a benign course.

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Evidence Discussion (SP-5)

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Acute low back pain is usually a self limited condition and improves with conservative treatment in 6 weeks. The American College of Radiology Appropriateness Criteria for low back pain (revised 2021) states that imaging may be considered in those patients who have had up to 6 weeks of medical management and physical therapy that resulted in little or no improvement in their back pain. A meta-analysis by Chou et al found no clinically significant difference in patient outcomes between those who had immediate lumbar imaging versus usual care. It should also be noted that there are risks associated with imaging including but not limited to radiation exposure and contrast complications. Studies have also linked the increase rate of imaging with the increase rate of surgery and also found early magnetic resonance imaging (MRI) had an eightfold increased risk of surgery.

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Lower Extremity Pain with Neurological Features (Radiculopathy, Radiculitis, or Plexopathy and Neuropathy) With or Without Low Back (Lumbar Spine) Pain (SP-6)

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Lower Extremity Pain with Neurological Features (Radiculopathy, Radiculitis, or Plexopathy and Neuropathy) with or without Low Back (Lumbar Spine) Pain (SP-6.1)..... 57
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Lower Extremity Pain with Neurological Features (Radiculopathy, Radiculitis, or Plexopathy and Neuropathy) with or without Low Back (Lumbar Spine) Pain (SP-6.1)

SP.LE.0006.1.A
v1.0.2025

***All* of the following are required prior to advanced imaging:**
• An in-person clinical evaluation for the current episode of the condition is required to have been performed before advanced imaging is considered. This may have been either the initial clinical evaluation or a clinical re-evaluation (see also: **General Guidelines (SP-1.0)**). • Failure of recent (within 12 weeks) 6-week trial of provider-directed treatment (unless presence of a red flag as defined in **Red Flag Indications (SP-1.2)**). • Clinical re-evaluation after treatment period (may consist of an in-person evaluation or other meaningful contact (see also: **General Guidelines (SP-1.0)**).

Advanced Diagnostic Imaging:	**MRI Lumbar Spine without contrast (CPT® 72148)**
Comments:	A CT Lumbar spine without contrast (CPT® 72131) **OR** CT Myelography (CPT® 72132) is indicated when MRI is contraindicated. See also: **Lumbar Spinal Stenosis (SP-9.1)**

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Low Back (Lumbar Spine) Trauma (SP-6.2)

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***All* of the following are required prior to advanced imaging:**
• An in-person clinical evaluation for the current episode of the condition is required to have been performed before advanced imaging is considered. This may have been either the initial clinical evaluation or a clinical re-evaluation (see also: **General Guidelines (SP-1.0)**). • Failure of recent (within 12 weeks) 6-week trial of provider-directed treatment (unless presence of a red flag as defined in **Red Flag Indications (SP-1.2)**). • Clinical re-evaluation after treatment period (may consist of an in-person evaluation or other meaningful contact (see also: **General Guidelines (SP-1.0)**). • Results of plain x-rays of the lumbar spine performed after the current episode of symptoms started or changed need to be available to the requesting provider

Advanced Diagnostic Imaging:	**MRI Lumbar Spine without contrast (CPT® 72148) OR MRI Lumbar Spine without and with contrast (CPT® 72158) OR CT Lumbar Spine without contrast (CPT® 72131) OR CT myelogram (CPT® 72132)**
Comments:	For individuals with ankylosing spondylitis or DISH (diffuse idiopathic skeletal hyperostosis), both MRI of the whole spine (CPT® 72141, 72146, and/or 72148) **AND** CT of the whole spine (CPT® 72125, 72128, and/or 72131) can be approved. For individuals with ankylosing spondylitis or DISH (diffuse idiopathic skeletal hyperostosis), plain x-rays and a 6 week trial of provider-directed treatment and clinical evaluation are **NOT** required.

- Definitions of radiculopathy, radiculitis and radicular pain: See **Definitions (SP-1.3)**
- Sciatic Neuropathy, Femoral Neuropathy, Peroneal Neuropathy and Meralgia Paresthetica: See **Focal Neuropathy (PN-2)**in the Peripheral Nerve and Neuromuscular Disorders Imaging Guidelines

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- Lumbar and/or Lumbosacral Plexopathy: See **Lumbar and Lumbosacral Plexus (PN-5)** in the Peripheral Nerve and Neuromuscular Disorders Imaging Guidelines
- Advanced imaging of the hip or pelvis is not generally required in the evaluation of apparent lumbar radiculopathy unless a separate recognized indication for such studies is documented. See: **Hip (MS-24)** in the Musculoskeletal Imaging Guidelines.

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Evidence Discussion (SP-6)

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Acute low back pain is usually a self-limited condition and improves with conservative treatment in 6 weeks. The American College of Radiology Appropriateness Criteria for low back pain (revised 2021) states that imaging may be considered in those patients who have had up to 6 weeks of medical management and physical therapy that resulted in little or no improvement in their back pain. A meta-analysis by Chou et al found no clinically significant difference in patient outcomes between those who had immediate lumbar imaging versus usual care. It should also be noted that there are risks associated with imaging including but not limited to radiation exposure and contrast complications. Studies have also linked the increase rate of imaging with the increase rate of surgery and also found early magnetic resonance imaging (MRI) had an eightfold increased risk of surgery. In typical patients with low back pain or radiculopathy, MR imaging does not appear to have measurable value in terms of planning conservative care, that patient knowledge of imaging findings does not alter outcome, and that patient knowledge of imaging findings is associated with a lesser sense of well-being.

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Myelopathy (SP-7)

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Myelopathy (SP-7.1)

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- Myelopathy is the development of abnormal spinal cord function with long tract signs usually secondary to spinal cord compression, but also inflammation (transverse myelitis, MS, etc.), neoplastic disease or spinal cord infarction.
  - For imaging of transverse myelitis, see: **Transverse Myelitis (HD-16.4)** in the Head Imaging Guidelines
- Examination findings may include loss of manual dexterity, spastic legs, ataxia, hyperreflexia, upgoing toes (positive Babinski), Hoffmann's sign, sustained clonus, Lhermitte's sign, crossed radial reflex, inverted radial reflex, and/or finger escape sign. Sensory level and urinary incontinence/retention may be seen.
  - Advanced imaging is generally indicated in the initial evaluation of documented or reasonably suspected myelopathy.
- X-rays are not required for advanced imaging in individuals with potential myelopathy regardless of any history of spine surgery, trauma, or other reasons which may otherwise require x-rays (e.g., **Neck (Cervical Spine) Trauma (SP-3.2)**, **Upper Back (Thoracic Spine) Trauma (SP-4.2)**, **Post-Operative Spinal Disorders (SP-15)**).
- Conservative treatment is not a requirement for advanced imaging in individuals with potential myelopathy.
- MRI Cervical and Thoracic Spine without contrast, or without and with contrast, are indicated for:
  - Evaluation of reasonably suspected myelopathy
  - Post-traumatic syrinx with increased spinal pain or a worsening neurological symptoms
  - Sustained, prominent, and unexplained Lhermitte's sign
  - Unexplained Babinski's or Hoffmann's signs
  - Unexplained hyperreflexia
  - Unexplained bilateral motor weakness
- MRI Cervical, Thoracic, and Lumbar Spine without contrast, or without and with contrast, are indicated for:
  - Suspected tethered cord and/or low lying conus medullaris.
- CT without contrast, or CT with contrast (myelography), can also be considered for either of the following:
  - An alternative to MRI, when MRI is contraindicated
  - In addition to MRI, for surgical planning

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Background and Supporting Information

Lhermitte's sign – With the individual in the long leg sitting position on the examination table, the examiner passively flexes the individual's head and one hip simultaneously with the leg kept straight. A positive test occurs if there is sharp pain down the spine and into the upper or lower extremities.

Babinski's sign – The examiner runs a sharp instrument along the plantar surface of the foot from the calcaneus along the lateral border to the forefoot. A positive test occurs with extension of the great toe with flexion and splaying of the other toes. A negative test occurs with no movement of the toes at all or uniform bunching up of the toes.

Hoffman's sign – The examiner holds the individual's middle finger and briskly flicks the distal phalanx. A positive test is noted if the interphalangeal joint of the thumb of the same hand flexes.

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Evidence Discussion (SP-7)

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- MRI is the preferred imaging modality for evaluation of myelopathy. It provides superior soft tissue definition to other options and allows direct visualization of intramedullary cord signal changes which can effect prognosis and management.
- CT Myelogram may be appropriate when MRI is contraindicated or for surgical planning. It may allow better visualization of bony neuroforaminal narrowing and may provide additional anatomic information when the MRI is ambiguous.
- CT Can be useful in demonstrating bony encroachment on the cord, but MRI is superior in demonstrating bone marrow changes and intramedullary cord signal. It is of limited value in evaluation of non-compressive causes of myelopathy

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Lumbar Spine Spondylolysis/ Spondylolisthesis (SP-8)

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Spondylolysis (SP-8.1)

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Results of plain x-rays performed after the current episode of symptoms started or changed need to be available to the requesting provider, unless otherwise specified below.

Indication	Imaging Study
• Clinical suspicion of spondylolysis is high	• X-ray is not required[5,12,13] • Tomographic SPECT Planar (CPT® 78803 or 78831)[5,12,13] • SPECT/CT Hybrid (CPT® 78830 or 78832)[5,12,13]
• Negative SPECT bone scan	MRI Lumbar Spine without contrast (CPT® 72148) **OR** CT Lumbar Spine without contrast (CPT®72131)
• Evaluation of a lesion seen on SPECT bone scan	CT Lumbar Spine without contrast (CPT® 72131)[5]
• Documented need for preoperative planning	MRI Lumbar Spine without contrast (CPT® 72148) **AND/OR** CT Lumbar Spine without contrast (CPT®72131)
• Failure of 6 weeks of provider-directed conservative treatment (which may include immobilization with a spinal orthosis) with clinical re-evaluation	MRI Lumbar Spine without contrast (CPT® 72148) **OR** CT Lumbar Spine without contrast (CPT®72131)
• Evaluation for stress reaction in bone, to visualize nerve roots	MRI Lumbar Spine without contrast (CPT® 72148)
• When an MRI is medically necessary, however, it is contraindicated	CT Lumbar Spine without contrast (CPT®72131)
• Evaluation of bony anatomy	CT Lumbar Spine without contrast (CPT®72131)

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Indication	Imaging Study
• Monitor healing of a pars interarticularis fracture that was determined to have healing potential on a prior CT (i.e., non-sclerotic lesion)	CT Lumbar Spine without contrast (CPT® 72131) of the symptomatic spinal level

- For pediatric spondylolysis, see: **Spondylolysis (PEDSP-2.4)** in the Pediatric and Special Populations Spine Imaging Guidelines
- Bony healing cannot be achieved non-surgically in an established well defined isthmic pars interarticularis defect whether it is developmental or the result of a pars interarticularis fracture non-union. Repeat advanced diagnostic imaging is not medically necessary in this setting.

Background and Supporting Information

- Spondylolysis is most often an incidental finding on plain x-rays, and advanced imaging is generally not indicated.
- MRI is not indicated in the early diagnosis of spondylolysis due to the potential for false negative results.

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Spondylolisthesis (SP-8.2)

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- CT Lumbar Spine without contrast (CPT® 72131) or MRI Lumbar Spine without contrast (CPT® 72148) can be considered after plain x-ray (results of plain x-rays performed after the current episode of symptoms started or changed need to be available to the requesting provider) for the following:
  - Failure of 6 week trial of provider-directed treatment and clinical re-evaluation (see also: **General Guidelines [SP-1.0]**); ***or***
  - Preoperative evaluation; ***or***
  - See: **Red Flag Indications (SP-1.2)**

Background and Supporting Information

- Stress reactions and stress fractures of the pars interarticularis are most common in athletes and others whose activities involve repetitive flexion/extension loading of the lumbar spine and may be acute or chronic and unilateral or bilateral. Pars interarticularis defects can be an incidental finding on plain x-rays and is frequently asymptomatic.
- Spondylolisthesis is the forward (anterolisthesis) or backward (retrolisthesis, usually not clinically significant) displacement of one vertebra in relation to an adjacent vertebra, most commonly at L4-5 and L5-S1, although other levels of the spine may be involved. Spondylolisthesis is often an incidental finding on plain x-ray and is frequently asymptomatic.

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Evidence Discussion (SP-8)

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Spondylolysis is a very common incidental finding on radiographs in the general population but majority will be asymptomatic. Spondylolysis is one of the potential cause of back pain in gymnasts. Symptomatic pars lesions are particularly a clinical problem in adolescent athletes. Spondylolysis and spondylolisthesis are a common cause of low back pain especially in young athletes but is a less common cause of neurologic compromise. Plain radiographs with particular views display the majority of defects. MRI has sensitivity of 78% for detecting L4-L5 lumbar degenerative spondylolisthesis compared with 98% for lateral standing films. MRI is less sensitive than CT for detecting pars defects but it is useful for evaluating bone marrow edema and nerve root compressions and stress reactions.

Lumbar spondylolysis can heal with conservative treatment depending on the spinal level affected and stage of the defects. The site of defects in the pars, condition of contralateral pars, presence of spondylolisthesis, the degree of lumbar lordosis are among other factors significantly affecting union.

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Lumbar Spinal Stenosis (SP-9)

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Lumbar Spinal Stenosis (SP-9.1)

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- MRI Lumbar Spine without contrast (CPT® 72148) or CT Lumbar Spine without contrast (CPT® 72131) is indicated for those individuals with clinical suspicion of lumbar spinal stenosis if:
  - Failure of 6 week trial of provider-directed treatment and clinical re-evaluation (see also: **General Guidelines (SP-1.0)**); ***or***
  - Red Flag Indications (see: **Red Flag Indications (SP-1.2)**); ***or***
  - Severe symptoms of neurogenic claudication restricting normal activity or requiring the frequent use of narcotic analgesics
- A CT/Myelogram Lumbar Spine (CPT® 72132) may also be considered for individuals who have failed 6-weeks of provider-directed treatment if requested by the operating surgeon for surgical planning, especially for multi-level lumbar spinal stenosis.

Background and Supporting Information

Lumbar spinal stenosis refers to a decrease in the space available for the neural elements within the spinal canal that include spinal nerve roots and the cauda equina. It is usually a degenerative condition of the aging spine which can be asymptomatic or a common cause of buttock/low back and/or leg pain (neurogenic claudication) in this population. Neurogenic claudication is a common symptom of lumbar spinal stenosis that is aggravated by walking, especially down hills or stairs, with prolonged standing and is often relieved by sitting and bending forward. Neurogenic claudication should be differentiated from vascular claudication (leg/calf pain) that is often aggravated by walking and relieved fairly rapidly by stopping and rest. The differential diagnosis for lumbar spinal stenosis should include peripheral vascular disease, hip disorders and peripheral neuropathy.

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Evidence Discussion (SP-9)

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A presumptive diagnosis of symptomatic lumbar stenosis can be made with the history and physical examination. Imaging can help differentiate neurogenic claudication from vascular claudication. MRI or CT may confirm the presence of spinal stenosis. The American College of Radiology Appropriateness Criteria for low back pain (revised 2021) states MRI may be helpful when there is low back pain with radiculopathy or signs of spinal stenosis. Bony findings can be seen better on CT and soft-tissue lesions are more detectable on MRI. In patients with subacute or chronic low back pain with or without radiculopathy that is a surgical or intervention candidate with persisting symptoms after six weeks of conservative treatment, CT lumbar spine without IV contrast can also be used to assess facets and neural foramina and is equal to MRI for predicting significant spinal stenosis. For those not responsive to conservative treatment surgery should be considered. A prospective cohort study evaluating patient outcomes two years after spine surgery for spinal stenosis showed patients had better outcomes than patients who did not have surgery.

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Sacro-Iliac (SI) Joint Pain, Inflammatory Spondylitis/Sacroiliitis and Fibromyalgia (SP-10)

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Sacro-Iliac (SI) Joint Pain/Sacroiliitis (SP-10.1)

SP.SI.0010.1.A
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- CT Pelvis without contrast (CPT® 72192) or MRI Pelvis without contrast (CPT® 72195) is indicated if:
  - Initial plain x-rays are equivocal or not diagnostic; ***and***
  - Failure of 6 weeks of provider-directed treatment and clinical re-evaluation (see also: **General Guidelines (SP-1.0)**); ***or***
  - Any ONE of the following:
    - Fractures of the sacrum or sacroiliac joint(s); ***or***
    - See: **Red Flag Indications (SP-1.2)**; ***or***
    - Preoperative planning
- MRI Pelvis without and with contrast as indicated for pediatric individuals with juvenile idiopathic arthritis.
- Suspicion of neoplastic, inflammatory, or infectious disease:
  - MRI Pelvis without and with contrast (CPT® 72197) or MRI Pelvis without contrast (CPT® 72195)
  - CT Pelvis without contrast (CPT® 72192) if MRI is contraindicated
- See: **Rheumatoid Arthritis (RA) and Inflammatory Arthritis (MS-15.1)** in the Musculoskeletal Imaging Guidelines

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Inflammatory Spondylitis (SP-10.2)

SP.SI.0010.2.A
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- Initial plain x-rays are equivocal or not diagnostic:
  - MRI without and with contrast or MRI without contrast of the affected spinal region
    - CT without contrast of the affected spinal region if MRI is contraindicated
- Follow up imaging for treatment response or disease progression:
  - Repeat plain x-rays show no progression of disease of the SI joints, or SI joints and spine area of interest then,[10]
    - MRI sacroiliac joints (MRI pelvis) without and with contrast (CPT® 72197) AND MRI Spine area of interest without and with contrast) **OR**
    - MRI sacroiliac joints (MRI pelvis) without contrast (CPT® 72195) AND MRI Spine area of interest without contrast **OR**
    - MRI sacroiliac joints (MRI pelvis) without and with contrast (CPT® 72197) **OR**
    - MRI sacroiliac joints (MRI pelvis) without contrast (CPT® 72195)[10]
- For those with documented ankylosing spondylitis or DISH (diffuse idiopathic skeletal hyperostosis) and spine pain following trauma, plain x-rays are not required prior to advanced imaging.
  - See: **Neck Trauma (SP-3.2)**, **Upper Back Trauma (SP-4.2)**, **Low Back Trauma (SP-6.2)**

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Fibromyalgia (SP-10.3)

SP.DI.0010.3.A
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- Advanced diagnostic imaging is not supported by the scientific evidence for the evaluation and treatment of fibromyalgia.

Background and Supporting Information

- Sacroiliitis can present with pain localized to the SI joint or referred pain to the buttock and/or posterior thigh without neurologic signs or symptoms. Affected individuals can often point to the SI joint as the pain source. Provocative and/or therapeutic SI joint anesthetic/corticosteroid injections can have diagnostic value.
- There is no evidence demonstrating that advanced diagnostic imaging substantiates changes to individual management decisions in individuals with proven SI joint disorders when visible on routine plain x-rays.
- MRI has shown inflammatory changes in the SI joints prior to visible x-ray changes in several studies. However, the ability of MRI to characterize inflammation in early ankylosing spondylitis, the ability of MRI to predict erosive changes, and the value of monitoring treatment effects using serial MRI studies remains controversial in adults.

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Evidence Discussion (SP-10)

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For individuals with proven sacro-iliac joint disorders visible on routine plain x-rays, there is no evidence that advanced diagnostic imaging substantiates changes to individual management decisions.

X-rays are first line imaging for suspected inflammatory sacroiliitis but have a low sensitivity for detecting abnormalities in early disease, and x-ray findings may not be visible until several years after onset of symptoms. SI Joint MRI is appropriate when X-ray is equivocal or nondiagnostic. There is increase the diagnostic accuracy of MRI in sacroiliitis with use of contrast. Contrast use benefits must be weighed against potential disadvantages of need for IV access, potential risk for nephrogenic systemic fibrosis or contrast reaction, and increased cost. If a patient is unable to undergo MRI, a noncontrast CT may be helpful as it has improved sensitivity over conventional radiography for detection of subtle erosions, although it lacks sensitivity for inflammatory changes of inflammatory sacroiliitis.

In juvenile idiopathic arthritis, x-ray findings such as bone erosions tend to occur late in the disease, and early signs of inflammation such as synovitis are undetectable on x-rays. MRI is useful to detect synovitis and bone marrow edema to direct treatment with disease-modifying medications to prevent long-term disability. MRI can also detect extraarticular inflammatory lesions such as tenosynovitis and enthesitis, which are not seen on x-ray. However, MRI exams are lengthy, require IV contrast for increased sensitivity, and may require sedation in younger pediatric patients.

With suspected inflammatory spondylitis, x-rays are useful to assess for structural changes of syndesmophytes, erosions, vertebral body squaring, and ankylosis. When x-rays are nondiagnostic, MRI (with or with contrast) can demonstrate active inflammatory changes. The value of monitoring treatment response using serial MRIs remains controversial and investigational in adults.

Plain x-rays are not required prior to advanced imaging in individuals with documented ankylosing spondylitis or DISH (diffuse idiopathic skeletal hyperostosis) and spine pain following trauma, due to high risk of spinal fractures even with low-energy trauma and the low specificity for fracture detection on x-ray in these individuals.

Advanced diagnostic imaging is not supported by scientific evidence for the evaluation and treatment of fibromyalgia.

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Spinal Compression Fractures (SP-11)

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Spinal Compression Fractures (SP-11.1)

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Individuals with no history of malignancy

- MRI without contrast, CT without contrast, or whole body bone scan (CPT® 78306), SPECT (CPT® 78803), or SPECT/CT (CPT® 78830) of the affected spinal region is indicated after plain x-ray evaluation ***and*** the location of the individual's spinal pain is concordant with the spinal x-rays for any ONE of the following:
  - X-rays reveal a new spinal compression fracture; ***or***
  - X-rays are non-diagnostic and severe spinal pain persists for more than one week in an individual already predisposed to low energy/insufficiency fractures; ***or***
  - The acuity of the spinal compression fracture deformity on plain x-ray is indeterminate, ***or***
  - Surgical planning following known insufficiency spinal compression fractures in individuals who are candidates for kyphoplasty, vertebroplasty or other spine surgical procedures

Individuals with a history of malignancy

- For individuals with new symptomatic or asymptomatic vertebral compression fractures on radiographs, please refer to the cancer-specific guidelines within the General Oncology Imaging Guidelines for appropriate imaging studies.
- See also: **Red Flag Indications (SP-1.2)**

Background and Supporting Information

Insufficiency/low energy spinal compression fractures of the spine occur due to the lack of structural integrity to withstand physiologic loads and minor spinal trauma. Low bone mineral density is the primary etiology for most of these fractures but could also occur in the setting of other bone disease and medical conditions, in addition to neoplastic disease and infection. Sudden localized back pain, with or without trauma, is a typical presentation of insufficiency/low energy spinal compression fractures and can often be an incidental finding on plain x-rays and can be asymptomatic.

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Evidence Discussion (SP-11)

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The diagnosis of a spinal compression fracture may be suspected based on history and physical examination. Plain anteroposterior and lateral radiographs should be the initial imaging study obtained for a suspected compression fracture.

For patients (without a known malignancy) with a new symptomatic vertebral compression fracture identified on radiographs, MRI without contrast, CT without contrast, whole body bone scan, SPECT or SPECT/CT is supported by the American College of Radiology Appropriateness Criteria for Management of Vertebral Compression Fractures (revised 2022). Advanced imaging can also be helpful for identifying a fracture that is not well visualized on plain films.

It has been shown that bone marrow signal on MRI can help identify an acute fracture and distinguish ages of compression fractures. Additionally, the benefits of advanced imaging prior to vertebral augmentation have been reported.

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Spinal Pain related to Cancer (SP-12)

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Spine Imaging Guidelines

Spinal Pain related to Cancer (SP-12)

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- For guidelines regarding advanced diagnostic imaging in this clinical setting, See **Spinal/Vertebral Metastases (ONC-31.6)**

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Spinal Canal/Cord Disorders (e.g. Syringomyelia) (SP-13)

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Initial Imaging Pathway (SP-13.1)

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- MRI Cervical Spine without contrast or without and with contrast (CPT® 72141 or CPT® 72156) and MRI Thoracic Spine without contrast or without and with contrast (CPT® 72146 or CPT® 72157) is indicated when syringomyelia is suspected.
- Once a syrinx is identified by prior imaging, the following are indicated:
  - MRI Brain without contrast (CPT® 70551) to evaluate for syringobulbia **AND**
  - MRI Cervical Spine without contrast or without and with contrast (CPT® 72141 or CPT® 72156) if not already performed **AND**
  - MRI Thoracic Spine without contrast or without and with contrast (CPT® 72146 or CPT® 72157) and MRI Lumbar Spine without contrast or without and with contrast (CPT® 72148 or CPT® 72158) to define the lower most extent of the syrinx or to identify a skip lesion.

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Follow-up Imaging (SP-13.2)

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- MRI Cervical Spine without contrast (CPT® 72141) and MRI Brain without contrast (CPT® 70551) and/or MRI Thoracic Spine without contrast (CPT® 72146) when involved
  - If there is a concern for malignancy, imaging can be performed without and with contrast
  - Annual imaging until non-progression of the syringomyelia is established
  - Following surgical treatment (including posterior fossa decompression)
  - Advanced diagnostic imaging every three years for life can be performed once non-progression of the syringomyelia is established
  - Repeat advanced diagnostic imaging is indicated when there is evidence of neurologic deterioration

Background and Supporting Information

Syringomyelia may begin to form in childhood but rarely becomes symptomatic before the adult years.

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Evidence Discussion (SP-13)

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- MRI of the spinal cord is the modality of choice to characterize the size and extent of a syrinx both at time of original discovery and on follow up imaging.
- MRI of the brain is the modality of choice to characterize syingobubia in the hindbrain.

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Spinal Deformities (e.g. Scoliosis/ Kyphosis) (SP-14)

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Spinal Deformities (e.g. Scoliosis/ Kyphosis) (SP-14.1)

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- MRI without contrast, MRI without and with contrast, or CT/Myelography if MRI is contraindicated of the affected spinal regions is indicated after plain x-rays (e.g., Cobb radiographs) of the affected spinal regions have been performed and results are available to the requesting provider:
  - For preoperative evaluation; ***or***
  - For cases of congenital scoliosis and other atypical curves that may be associated with spinal canal/cord pathology such as tethered cord, syringomyelia, diastematomyelia, or tumors; ***or***
  - For cases of scoliosis and/or kyphosis when there are associated neurologic signs and symptoms on physical examination; ***or***
  - Scoliosis with a convex left thoracic curve due to a high association of a convex left thoracic curve with underlying spinal canal/cord pathology
- CT of the affected spinal regions (contrast as requested) is indicated in cases with a complex osseous deformity for preoperative evaluation
- CT Angiography (CTA) or MR Angiography (MRA) is not medically necessary for preoperative planning for initial anterior spinal surgery for surgical correction of spinal deformities

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Revision Anterior Spinal Deformity Surgery (SP-14.2)

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- If requested by the operating surgeon, the following studies can be performed for preoperative planning for revision of anterior thoracic or lumbar spinal surgery:
  - CTA Pelvis (CPT® 72191) and/or CTA Abdomen (CPT® 74175); **or**
  - MRA Pelvis (CPT® 72198) and/or MRA Abdomen (CPT® 74185)

Background and Supporting Information

- Scoliosis is defined as a curvature of the spine in the coronal plane. Scoliosis can involve any or all levels of the spine but generally involves the thoracic and/or lumbar spine. Scoliosis initially occurs in the pediatric and adolescent population and persists throughout life. If scoliosis begins in adulthood, it is usually secondary to neurologic disorders (e.g., posttraumatic paralysis) or degenerative spondylosis. Sagittal plane spinal deformity (e.g., kyphosis, hyperlordosis) may be associated with scoliosis.

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Evidence Discussion (SP-14)

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Plain radiography continues to be the primary imaging modality for the initial diagnosis of spinal deformity and for follow up of deformity progression. Plain x-rays allow the easy measurement of Cobb angles which remains essential in the evaluation of scoliosis.

Patients with congenital scoliosis, atypical curves (for example, left thoracic) or abnormal neurological findings will benefit from MRI to help identify spinal cord abnormalities. CT is considered the gold standard for the evaluation of osseous structures and can be useful in the evaluation of complex bony deformity. Additionally, MRI and CT can be valuable for preoperative evaluation.

For revision anterior spinal deformity surgery, CT angiography or MR angiography may be indicated, however, concerns associated with these modalities are radiation exposure (CT), availability of the imaging modalities in close proximity to patients, potential out of pocket costs to patients and sensitivity to patient movement (MRI).

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Post-Operative Spinal Disorders (SP-15)

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Greater than Six Months Post-Operative (SP-15.1)

SP.OP.0015.1.C
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- Following plain x-rays of the affected spinal regions post-surgical with results available to the requesting provider, MRI without and with contrast, MRI without contrast, or CT without contrast of the affected spinal region(s) is indicated when:
  - Individual is more than six months post-operative; ***and***
  - No significant improvement after a recent (within 12 weeks) six week trial of provider-directed treatment with clinical re-evaluation; ***or***
  - See: **Red Flag Indications (SP-1.2)**

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Routine Post-Fusion Imaging (SP-15.2)

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- Following a clinically successful spinal fusion, advanced diagnostic imaging is generally not indicated.
- **PET** is not currently indicated for the routine assessment of spinal fusions or unsuccessful spine surgery (see also: **Spine PET (SP-2.10)**).

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Prolonged Intractable Pain Following Spinal Surgery Within Six Months (SP-15.3)

SP.OP.0015.3.A

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- Following plain x-rays of the affected spinal regions post-surgical with results available to the requesting provider, MRI without and with contrast of the affected spinal region(s) is indicated if there are residual, new, recurrent, or worsening symptoms related to the surgical site.
  - CT without contrast, or CT with contrast (Myelography) of the affected spinal region(s) if MRI is contraindicated.

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Revision Anterior Fusion Surgery (SP-15.4)

SP.OP.0015.4.A

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- If requested by the operating surgeon, the following studies for preoperative planning prior to surgical revision of a thoracic or lumbar anterior spinal arthrodesis:
  - CTA Pelvis (CPT® 72191) and/or CTA Abdomen (CPT® 74175); *or*
  - MRA Pelvis (CPT® 72198) and/or MRA Abdomen (CPT® 74185)

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Evidence Discussion (SP-15)

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Despite advances made in high-resolution spinal imaging, plain films remain integral in providing optimal care for spine patients and continue to provide critical information that cannot be obtained with other imaging modalities. X-ray imaging with anteroposterior, lateral, oblique and flexion-extension views is considered the primary imaging modality for postoperative evaluation and can provide complementary information to advanced imaging. X-rays can provide information as to whether a concomitant instability is present which would further assist with pre-operative planning. Also, when prior surgery is a concern, x-ray provides additional clinical information as to the details of the hardware for which this detail can many times be obscured with advanced imaging techniques (MRI/CT). An x-ray often has a larger field-of-view than an MRI or CT and has the potential to identify more proximal or distal pathology in the spine that could ultimately assist in determining the patient's diagnosis. X-rays can also determine whether an advanced diagnostic imaging study is actually needed, what specific advanced diagnostic imaging study is warranted and if contrast is required.

There are risks associated with advanced imaging including but not limited to radiation exposure, implanted device complications, metallic foreign body complications and contrast complications. Studies have also linked the increase rate of imaging with the increase rate of surgery and also found early magnetic resonance imaging (MRI) had an eightfold increased risk of surgery.

Although most patients with acute neck or back pain will improve with 6 weeks of conservative care, conservative care would not be necessary for patients with prolonged intractable pain present within 6 months of surgery or if a red flag indication was present. In general, initial plain x-rays and an initial course of conservative care can provide a significant clinical benefit that would outweigh the clinical harm from perhaps briefly delaying advanced imaging if needed. A course of conservative care or plain x-ray findings many times may obviate the need for advanced imaging which possess their own set of significant risks.

For revision thoracic or lumbar anterior spinal arthrodesis, CT angiography or MR angiography may be indicated, however, risks are present with these modalities including radiation exposure (CT), availability of the imaging modalities in close proximity to patients, potential out-of-pocket costs to patients, and sensitivity to patient movement (MRI).

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Other Imaging Studies and Procedures Related to the Spine Imaging Guidelines (SP-16)

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Prior to Spine Surgery (SP-16.1)

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- Advanced imaging needed for surgical planning (e.g., MRI and/or CT) should be performed within the past six (6) months for preoperative planning prior to spine surgery when the criteria for advanced imaging studies of the spine are met as otherwise stated in the Spine Imaging Guidelines. (See: **MRI of the Spine [SP-2.2]**, **CT of the Spine [SP-2.3]**, **CT/Myelography [SP-2.4]**)
- MR Angiography (MRA) and CT Angiography (CTA) are generally not indicated for preoperative planning of initial anterior spinal surgery unless abnormal vasculature is known or reasonably anticipated.

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Prior to Interventional Spinal Injections (SP-16.2)

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- Advanced diagnostic imaging studies of the spine are not required prior to facet joint injections, medial branch blocks or radiofrequency ablations unless the criteria for advanced imaging studies of the spine are met as otherwise stated in the Spine Imaging Guidelines.
- Advanced diagnostic imaging studies of the cervical spine and/or thoracic spine are indicated within twenty-four (24) months prior to interlaminar or transforaminal epidural steroid injections of the cervical and/or thoracic spine when the criteria for advanced imaging studies of the spine are met as otherwise stated in the Spine Imaging Guidelines.
- Advanced diagnostic imaging studies of the lumbar spine are indicated prior to transforaminal epidural steroid injections of the lumbar spine when the criteria for advanced imaging studies of the spine are met as otherwise stated in the Spine Imaging Guidelines.
- Advanced diagnostic imaging studies of the lumbar spine are not required prior to lumbar spine interlaminar or caudal epidural steroid injections unless the criteria for advanced imaging studies of the spine are met as otherwise stated in the Spine Imaging Guidelines.
- For an individual with evidence of symptomatic spinal stenosis, MRI or CT with or without myelography demonstrating severe spinal stenosis at the level to be treated within the past twenty-four (24) months is required for an initial trial of a transforaminal, interlaminar or caudal epidural steroid injection when ALL of the following criteria are met:
  - Diagnostic evaluation has ruled out other potential causes of pain
  - Significant functional limitations resulting in diminished quality of life and impaired age-appropriate activities of daily living (ADLs)
  - Failure of at least four (4) weeks of conservative treatment (e.g., exercise, physical methods including physical therapy and/or chiropractic care, NSAIDs, and/or muscle relaxants)
- See: **Red Flag Indications (SP-1.2)** for severe radicular pain

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Prior to Spinal Cord Stimulator (SCS) Placement/Removal (SP-16.3)

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- MRI Thoracic Spine without contrast (CPT® 72146) is generally the study of choice prior to SCS placement. CT Thoracic Spine without contrast (CPT® 72128) **OR** CT/ Myelography Thoracic Spine (CPT® 72129) are acceptable alternatives.
- Imaging of the lumbar spine is not indicated for placement nor removal of spinal cord stimulators.

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Following Vertebral Augmentation Procedures (SP-16.4)

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- CT without contrast of the affected spinal region(s) within 24 hours post-procedure to evaluate neurologic sequelae resulting from cement extravasation

Background and Supporting Information

- MRI has not been shown to change the outcome of interventional pain procedures in recent scientific evidence-based studies and without substantial change in the clinical picture or intervening surgery. Repeat advanced diagnostic imaging studies are not necessary with each spinal injection or series of spinal injections.

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Evidence Discussion (SP-16)

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- Advanced imaging needed for surgical planning (e.g., MRI and/or CT) should be performed for preoperative planning prior to spine surgery. MRA and CTA are generally not indicated for preoperative planning of initial anterior spinal surgery unless abnormal vasculature is known or reasonably anticipated.
- Advanced diagnostic imaging studies of the spine are not required prior to facet joint injections, medial branch blocks or radiofrequency ablations unless the criteria for advanced imaging studies of the spine are met as otherwise stated in the Spine Imaging Guidelines.
- MRI Thoracic Spine without contrast is generally the study of choice prior to SCS placement, however, CT Thoracic Spine without contrast or CT/ Myelography Thoracic Spine are acceptable alternatives. Imaging of the lumbar spine is not indicated for placement nor removal of spinal cord stimulators.
- CT without contrast of the affected spinal region(s) within 24 hours post-procedure to evaluate neurologic sequelae resulting from cement extravasation.

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Spine Imaging Guidelines