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2024 Magnetic Resonance Imaging (MRI) Lumbar Spine

Diagnostic Imaging

MRI-LSpine-HH

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MRI Lumbar Spine Overview

Low back pain (LBP) is a common issue, affecting up to 84% of adults at some point in their lives. For example, a survey in 2002 found that 26% of people reported having back pain lasting at least one day in the last three months. It's important to know that serious medical conditions are rarely the cause of back pain.

Serious conditions that can cause back pain, such as cauda equina syndrome, cancer that has spread to the spine or spinal infections, are rare and affect less than 1% of people with LBP. If you have symptoms or risk factors for these serious conditions, further investigation including advanced imaging is warranted.

The initial evaluation of your back pain typically starts with a detailed history and physical examination. For most cases of acute pain lasting less than four weeks, imaging tests and blood work are not usually needed right away. If there are signs suggesting a serious underlying issue—like a history of cancer, significant weight loss, pain that persists beyond one month, or pain that worsens at night—further tests may be necessary.

Imaging tests like MRI or CT scans are generally not required for most people with acute LBP. A 2009 review showed that early imaging often does not improve outcomes and can lead to unnecessary procedures and higher costs. MRI results can sometimes show abnormalities even when there is no significant clinical problem. Therefore, imaging is typically reserved for cases with severe or progressive symptoms, or if there is a strong suspicion of a serious condition.

For most patients, imaging is only necessary if there's no improvement after four to six weeks of conservative treatment, or if there are specific symptoms that suggest more serious issues. If you have persistent symptoms, advanced imaging to explore further treatment options may be considered.

In summary, while back pain is very common, serious underlying conditions are rare. Most cases of acute back pain improve on their own with time and conservative treatment. Imaging is usually reserved for cases where there are concerning symptoms or when initial treatments have not been effective.

Magnetic Resonance Imaging (MRI) Lumbar Spine

NCD 220.2
See also, **NCD 220.2**: Magnetic Resonance Imaging at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

MRI General Contraindications

MRI may be contraindicated for **ANY** of the following:

- Safety, related to clinical status (body mass index exceeds MRI capability, intravascular stents within recent 6 weeks)
- Safety, related to implanted devices (aneurysm clips, cochlear implant, insulin pump, spinal cord stimulator)[1]

References: [27] [11] [18]

Preamble: Pediatric Diagnostic Imaging

HealthHelp's clinical guidelines for the Diagnostic Imaging program, are intended to apply to both adults and pediatrics (21 years of age or younger), unless otherwise specified within the criteria.

Low Back Pain Including Symptoms of Radiculopathy and Sciatica

Magnetic resonance imaging (MRI) of the lumbar spine is considered medically appropriate when there is pain in the back, with active conservative management (eg, chiropractic treatments, physical therapy) when the documentation demonstrates **EITHER** of the following:

1. Attempted within the last 6 months, for at least 6 weeks **AND** symptoms persist or worsen.
2. Symptoms progress or worsen during current course of conservative management

MRI Lumbar Spine Guideline

Magnetic resonance imaging (MRI) of the lumbar spine is considered medically appropriate when the documentation demonstrates **ANY** of the following:

1. Lumbar radiculopathy is demonstrated on nerve conduction study or electromyography (EMG) (*__NOTE:__ *An EMG is __NOT__ recommended to determine the cause of axial lumbar, cervical or thoracic spine pain*.)
   References: [7] [20]
2. Pain in the back and **ANY** of the following:
   a. Back pain, in a pediatric individual and **EITHER** of the following:
      i. Chronic **AND** inflammation, infection or malignancy is suspected.
      ii. Isolated back pain, X-ray is completed and **ANY** of the following: (**NOTE**: *Conservative management is __NOT__ required if any of these "red flags" exist*.)
         A. Age is 5 years or younger.
         B. Fever
         C. Limp or refusal to walk
         D. Malaise

[1]Some implanted devices that were once absolute contraindications to a MRI may now be accepted, including if the specific MRI is able to accommodate the device or the device itself is deemed safe for MRI.

E. Pain at night that disrupts sleep.

F. Pain is constant.

G. Pain lasts more than 4 weeks.

H. Pediatric demyelinating disease (acute disseminated encephalomyelitis [ADEM], multiple sclerosis [MS]) is suspected or known.

I. Postural changes (kyphosis or scoliosis)

J. Radicular pain

K. Stiffness or gelling in the early morning.

L. Weight loss (more than 5% in 2 months or 10% in 6 months)

b. Conservative management, active (eg, chiropractic treatments, physical therapy), and **EITHER** of the following:

i. Attempted within the last 6 months, for at least 6 weeks **AND** symptoms persist or worsen.

ii. Symptoms progress or worsen during current course of conservative management

References: [23] [20] [7] [9]

3. Arnold-Chiari malformation is known. (*__NOTE__: *Any combination of cervical/thoracic/ lumbar MRI may be appropriate for initial imaging and pre-operatively, see below for combination study indications.*)
References: [38] [35] [32]

4. Cancer, tumor, recurrence or metastasis evaluation for **ANY** of the following:

a. Prior imaging for bone metastasis is abnormal, non-diagnostic or indeterminate.

b. Spinal tumor is known **AND** symptoms are new or progressing (eg, non-traumatic pain is new or increasing).

c. Surveillance following the **National Comprehensive Cancer Network (NCCN) Guideline's** surveillance recommendations (*see **Surveillance** section*).

References: [8] [24]

5. Cauda equina syndrome is suspected or known, symptomatic with severe back pain/ sciatica **AND** neurological symptoms (eg, bowel/bladder dysfunction, leg and foot numbness, saddle anesthesia) are present.
References: [26] [14]

6. Cerebrospinal fluid (CSF) leak is suspected (eg, cerebrospinal-venous fistula, CSF rhinorrhea, orthostatic headache, otorrhea, post lumbar puncture headache, post spinal surgery headache, spontaneous idiopathic intracranial hypotension [SIH]).
***References*:** [15]

7. Compression fracture(s) evaluation and **ANY** of the following:
    a. Compression fractures are known and treated **AND** back pain is new.
    b. New, demonstrated on X-ray, and **EITHER** of the following:
        i. **NO** known malignancy **AND** back pain is worsening
        ii. Cancer is known, with or **WITHOUT** worsening back pain, for differentiation of benign osteoporotic fractures from metastatic disease. (*__NOTE__: *a follow-up MRI, 6 to 8 weeks after initial MRI, when imaging is non-diagnostic or indeterminate, is appropriate*.)

    References: [24]

8. Infection (eg, abscess, discitis, osteomyelitis) is suspected or known and **ANY** of the following:
    a. Active treatment, to assess response
    b. Immune system suppression-related (eg, cancer, diabetes, dialysis, human immunodeficiency virus [HIV], intravenous drug use) spinal infection is suspected, from signs (eg, abnormal white blood cell count, erythrocyte sedimentation rate [ESR], back pain).
    c. Prior imaging is abnormal, non-diagnostic or indeterminate.
    d. Symptoms are present (eg, abnormal complete blood count [CBC], c-reactive protein [CRP] or ESR, chills, fever, pain)

    References: [31]

9. Inflammatory disease (non-infectious) is suspected or known, **AFTER** rheumatology evaluation (eg, CRP, ESR) is completed and **ANY** of the following:
    a. Axial spondyloarthritis is suspected **AND** X-ray(s) are abnormal, non-diagnostic or indeterminate.
    b. Neuroinflammatory conditions (sarcoidosis) are suspected when neurological exam is completed.

    References: [7] [13] [10]

10. Neurological deficits (eg, abnormal reflexes, foot drop, loss of sensation, numbness/ tingling) are new and demonstrated on physical exam (eg, ankle jerk, knee jerk, straight leg raise test)

11. Peri-procedural care to guide spinal procedure for pre-procedure, invasive procedure planning or post-procedural follow-up

12. Prior MRI lumbar imaging is non-diagnostic or indeterminate. (*__NOTE__: *One follow-up is appropriate to evaluate for changes, since preceding imaging finding[s]. Further surveillance is appropriate when lesion is specified as highly suspicious or there is a change since last exam.*)

13. Sacral dimple, in a pediatric individual, is suspicious (eg, deep, larger than 0.5 cm, located within the superior portion of the gluteal crease or above the gluteal crease, multiple dimples or associated with cutaneous markers) **OR** duplicated or deviated gluteal cleft is known (*__NOTE__: *In ages 3 months old or younger, ultrasound should be done*).
References: [4]

14. Spondylolysis (Pars defect) or spondylolisthesis, in adults, **AND** extension/flexion X-rays demonstrate instability. (*__NOTE__: *Initial imaging bone scan with single photon emission computed tomography [SPECT] is superior to MRI and CT in the detection of pars intrarticularis pathology, including spondylolysis*.)
References: [12] [25]

15. Spondylolysis (Pars defect), in a pediatric individual, is suspected **AND** X-ray is negative.

16. Toe walking, in a pediatric individual, with signs/symptoms of upper motor neuron abnormalities (eg, hyperreflexia, orthopedic deformity with concern for spinal cord pathology, spasticity)

17. Trauma or acute injury evaluation, X-ray or CT is abnormal, non-diagnostic or indeterminate, neurological deficits are new or progressing and **ANY** of the following:

    a. Nerve root injury is suspected.

    b. Spinal abnormalities (eg, ankylosing spondylitis, diffuse idiopathic skeletal hyperostosis) are known. (*__NOTE__: *Both a MRI and CT are appropriate.*)

    c. Unexaminable condition (eg, distracting injury, Glasgow coma scale is less than 15).

    References: [19] [6] [22] [19]

Combination CT and MRI for Metastases Evaluation Guideline

Combination CT/MRI studies (5 or less concurrent studies, with a CT or MRI appropriate for cancer location: abdomen, brain, cervical spine, chest, lumbar spine, neck, pelvis and/or thoracic spine) for **ANY** of the following situations:

1. Cancer recurrence or metastasis is suspected.

2. Staging evaluation, for baseline pre-therapy
3. Surveillance following the **NCCN Guidelines** recommended schedule (see *Surveillance* section)

Combination CT Lumbar Spine and MRI Lumbar Spine Guideline

Computed tomography (CT) lumbar spine combined with magnetic resonance imaging (MRI) lumbar spine is considered medically appropriate when the documentation demonstrates **ANY** of the following:

1. Bony and soft tissue abnormality is known **AND** imaging may change the treatment plan.
2. Fractures are complex or pathologic.
3. Malignant process of spine evaluation with both bony and soft tissue involvement

Combination MRI Brain/MRI Cervical Spine/MRI Lumbar Spine/MRI Thoracic Spine (any combination) Guideline

A magnetic resonance imaging (MRI) of the brain **combined** with MRI cervical spine, MRI lumbar spine **AND/OR** MRI thoracic spine, in **ANY** combination, is considered medically appropriate when the documentation demonstrates **ANY** of the following:

1. Arnold Chiari malformation is suspected, for initial evaluation.
2. Arnold Chiari is known.
   References: [38] [35] [32]
3. Cerebrospinal fluid (CSF) leak is suspected (eg, cerebrospinal-venous fistula, orthostatic headache, otorrhea, post lumbar puncture headache, post spinal surgery headache, rhinorrhea, spontaneous idiopathic intracranial hypotension [SIH]).
   References: [15]
4. Drop metastasis from the brain or spine
5. Leptomeningial carcinomatosis is suspected.
   References: [34]
6. Neurocutaneous syndrome tumor evaluation and monitoring
   References: [39]

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Combination CT or MRI Cervical, Thoracic, Lumbar Spine, ANY Combination Guideline

Combination imaging with computed tomography (CT) or magnetic resonance imaging (MRI) of **ANY** combination of the cervical, thoracic, and/or lumbar spine is considered medically appropriate when the documentation demonstrates **ALL** of the following:

1. CT only is ordered and MRI is **contraindicated or unavailable OR** MRI is ordered.
2. Condition includes **ANY** of the following:
    a. Age is less than 8 years old **AND** will require anesthesia for procedure, for any of the indications below.
    b. Arnold Chiari syndrome is known.
    c. Cancer is known and **ANY** of the following:
        i. Drop metastasis from brain or spine
        ii. Leptomeningeal carcinomatosis is suspected.
        iii. Neurocutaneous syndrome tumor, for evaluation and monitoring.
        iv. Spinal survey with metastases
    d. Cerebrospinal fluid (CSF) leak is suspected, based on history or physical exam (eg, cerebrospinal-venous fistula, orthostatic headache, otorrhea, post lumbar puncture headache, post spinal surgery headache, rhinorrhea, spontaneous idiopathic intracranial hypotension [SIH].
    e. Neurologic deficits (eg, abnormal gait or reflexes, bowel/bladder dysfunction, extremity weakness) are known.
    f. Peri-procedural planning for spinal procedure including **ANY** of the following:
        i. CT myelogram, (when myelogram indications are met), for procedural planning and MRI is **contraindicated or unavailable**.
        ii. Post-procedure CT discogram
        iii. Pre-procedural planning
    g. Scoliosis with **ANY** of the following:
        i. Age of onset is early (before age 10 years).
        ii. Atypical curve (eg, Kyphosis more than 30 degrees, left thoracic curve, short segment)
        iii. Congenital scoliosis or juvenile idiopathic scoliosis and age is less than 10, for initial assessment.

iv. Neurological deficit is new or unexplained.

v. Pre-operative planning

vi. Spinal deformity is progressive.

vii. Treatment planning depends on imaging

h. Spinal deformity is progressing and symptomatic.

i. Tethered cord or spinal dysraphism is suspected or known, based on prior imaging, neurological exam findings and/or high risk cutaneous stigmata, **AND** anesthesia is required for imaging.

j. Vertebral anomalies, in a pediatric individual, are known (eg, agenesis, bars, butterfly, congenital wedging, hemivertebrae, hypoplasia, segmentation defect) from prior imaging **AND** back pain is present.

References: [35] [38] [32] [39] [15] [15] [1] [40] [29] [21] [4]

LCD 34220
See also, **LCD 34220**: Lumbar MRI at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

LCD 37281
See also, **LCD 37281**: Lumbar MRI at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

LCD 35391
See also, **LCD 35391**: Multiple Imaging in Oncology at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

Central Nervous System Surveillance section

Surveillance imaging (after cancer treatment) of the central nervous system is considered medically appropriate when the documentation demonstrates **ANY** of the following:

Central Nervous System (CNS) Cancer Surveillance

NCCN Central Nervous System Cancer Version 3.2024

Central nervous system (CNS) cancer surveillance includes **ANY** of the following:

1. Brain metastasis, limited **OR** extensive, image with brain magnetic resonance imaging (MRI) every 2 to 3 months for 1-2 years, then every 4 to 6 months indefinitely
2. Glioma and **ANY** of the following:
    a. Low-grade glioma, image with brain MRI every 3 to 6 months for years 3 through 5, then at least annually as clinically indicated
    b. High grade glioma, image with brain MRI 2 to 8 weeks after radiation therapy, then every 2 to 4 months for 3 years, then every 3 to 6 months indefinitely
3. Medulloblastoma, image with brain MRI every 3 months for 2 years, then every 6 to 12 months for years 5 through 10, then every 1 to 2 years as clinically indicated. (*__NOTE__: *For patients with previous spine disease, concurrent spine imaging as clinically indicated.*)
4. Meningiomas, WHO Grade 1 or 2 **OR** unresectable, image with brain MRI at months 3, 6 and 12, then every 6 to 12 months for 5 years, then every 1 to 3 years as clinically indicated. WHO grade 3 meningiomas: Brain MRI, every 2–4 months for 3 years, then every 3–6 months.
5. Primary CNS lymphoma, image with brain MRI every 3 months for 2 years, then every 6 months until year 5, then annually indefinitely (*__NOTE__: *for individuals with previous spine disease, concurrent spine imaging and cerebrospinal fluid (CSF) sampling as clinically indicated*)
6. Primary spinal cord tumors and **ANY** of the following:
    a. Low-grade tumors, image with spine MRI every 3 to 6 months until year 5, then at least annually indefinitely
    b. High-grade tumors, image with spine MRI every 2 to 6 weeks after treatment, then every 2 to 4 months until year 2-3, then every 3 to 6 months until year 5, then every 6 to 12 months indefinitely
7. Spine metastasis, image with spine MRI or computed tomography (CT) 1 to 3 months after treatment, then every 3 to 4 months for 1 year, then clinically as indicated

Neuroendocrine and Adrenal Tumors Surveillance

NCCN Neuroendocrine and Adrenal Tumors Version 2.2024

Neuroendocrine and adrenal cancer surveillance includes **ANY** of the following:[2]

1. Adrenal gland tumors surveillance imaging includes **ANY** of the following:

a. Localized disease: chest computed tomography (CT) (± contrast) and abdominal CT or magnetic resonance imaging (MRI) (+ contrast) every 12 weeks to 12 months up to 5 years, then clinically as indicated

b. Locoregional unresectable or metastatic disease; chest CT (± contrast) and abdominal/pelvic CT or MRI (+ contrast) or FDG positron emission tomography (PET)/CT every 12 weeks to 12 months up to 5 years, then clinically as indicated

2. Carcinoid syndrome surveillance imaging includes **BOTH** of the following:

   a. Abdominal/pelvic multiphasic CT or MRI every 12 weeks to 12 months and chest CT (± contrast) as clinically indicated

   b. Echocardiogram every 1 to 3 years or as clinically indicated **without** known carcinoid heart disease (CHD) and at least annually for patients with established CHD.

3. Gastrointestinal (GI) tract (jejunum/ileum/colon, duodenum, rectum), lung and/or thymus neuroendocrine tumor (NET) surveillance includes imaging post-resection with **ANY** of the following:

   a. Jejunum/ilium/colon, duodenum, rectum and thymus, surveillance imaging with abdominal ± pelvic multiphasic CT or MRI according to **ONE** of the following levels of frequency:[3]

      i. Within 12 weeks to 12 months post-operatively

      ii. After 12 months, image every 12 to 24 months for 10 years

      iii. After 10 years as clinically indicated

   b. Lung/thymus tumors surveillance chest CT (± contrast) for primary tumors, (as clinically indicated for primary GI tumors) according to **ONE** of the following levels of frequency:

      i. Within 12 weeks to 12 months post-operatively

      ii. After 12 months, image every 12 to 24 months for 10 years

      iii. After 10 years as clinically indicated

4. Grade 3, well-differentiated neuroendocrine surveillance includes chest CT (± contrast) as clinically indicated for **ANY** of the following:

   a. Locally advanced/metastatic disease with favorable biology (low Ki-67 [eg, less than 55%], positive somastatin receptor [SSTR] based PET imaging) includes

[2]No surveillance is indicated for appendiceal tumors 2 cm or smaller without aggressive features.

[3]High-grade tumors may be appropriate for more frequent monitoring.

abdominal/pelvic MRI (+ contrast) or abdominal/pelvic multiphasic CT for surveillance with **ANY** of the following:

i. Resectable disease surveillance every 12 weeks to 24 weeks for 2 years, then every 6 to 12 months for up to 10 years and chest CT as clinically indicated

ii. Unresectable disease surveillance every 12 weeks to 24 weeks (depending on tumor biology) **AND** chest CT (± contrast); as clinically indicated.

b. Locally advanced/metastatic disease with unfavorable biology (high Ki-67 [eg 55% or higher], rapid growth rate, FDG avid tumors, negative SSTR-based PET imaging), includes surveillance imaging, every 8 weeks to 12 weeks (depending on tumor biology) with **ALL** of the following:

i. Abdominal/pelvic MRI (+ contrast) or abdominal/pelvic multiphasic CT and FDG PET/CT as clinically indicated

ii. Chest CT (± contrast) as clinically indicated

iii. FDG-PET/CT as clinically indicated

c. Locoregional disease (resectable) abdominal/pelvic MRI (+ contrast) or abdominal/pelvic multiphasic CT with frequency of **ONE** of the following:

i. Every 12 weeks to 24 weeks for 2 years (depending on tumor biology, Ki-67) and chest CT as clinically indicated

ii. Every 6 months to 12 months for up to 10 years (depending on tumor biology, Ki-67) and chest CT as clinically indicated

d. Multiple endocrine neoplasia, type 1 (MEN1) screening surveillance for **ANY** of the following tumor types: (*__NOTE__: *For prolonged surveillance, imaging studies without radiation are preferred.*)

i. Lung/thymic NETs: chest CT or MRI (+ contrast) every 1 to 3 years

ii. PanNET: abdominal/pelvic CT or MRI (+ contrast) every 1 to 3 years and consider serial endoscopic ultrasound (EUS)

iii. Parathyroid: if calcium rises, re-image with neck ultrasound and/or parathyroid sestamibi with single-photon emission computed tomography (SPECT) scan (SPECT-CT preferred) or 4D-CT

iv. Pituitary: pituitary or sella MRI (+ contrast) of the pituitary every 3 to 5 years

e. Poorly differentiated large or small cell carcinoma and/or mixed neuroendocrine/non-neuroendocrine neoplasm or unknown primary, imaging surveillance includes **ALL** of the following:

i. Locoregional unresectable or metastatic disease surveillance imaging includes **EITHER** chest CT (± contrast) with abdominal/pelvic MRI (+ contrast) **OR** chest/abdominal/pelvic multiphasic CT; every 6 weeks to 16 weeks

ii. Resectable surveillance imaging includes **EITHER** chest CT (± contrast) with abdominal/pelvic MRI (+ contrast) **OR** chest/abdominal/pelvic multiphasic CT; every 12 weeks for the 1st year, and every 6 months thereafter

f. Post-operative from potentially curative surgery surveillance for at least 10 years (longer if high-risk)

5. Pancreatic neuroendocrine tumor surveillance imaging, post-resection, includes chest CT (± contrast) as clinically indicated and abdominal multiphasic CT or MRI with imaging frequency of **ONE** of the following:[3]

a. Within 3 to 12 months post-operatively

b. After 12 months, image every 6 to 12 months for 10 years

c. After 10 years as clinically indicated

6. Pheochromocytoma/Paranganglioma surveillance imaging and **ANY** of the following:

a. Locally unresectable disease or distant metastases includes **ANY** of the following:

i. Chest/abdominal/pelvic CT with contrast

ii. Chest CT (± contrast) and abdominal/pelvic MRI without contrast (if risk for hypertensive episode)

iii. FDG-PET/CT for bone dominant disease

iv. Meta-iodobenzylguanidine (MIBG) with single-photon emission computerized tomography/CT (SPECT) (if previous MIBG-positive or concern for disease progression) prior to considering radionuclide therapy

v. SSTR-PET/CT or SSTR-PET/MRI (if previous SSTR-positive or concern for disease progression) prior to considering radionuclide therapy

b. Resectable disease, post-resection includes chest CT (± contrast) and abdominal/pelvic CT or MRI (+contrast), if clinically indicated with imaging frequency of **ONE** of the following:

i. 12 weeks to 12 months after resection

ii. Every 6 to 12 months for the 1st 3 years

iii. Annually from year 4 up to 10.

iv. Annually up to 10 years, then as clinically indicated

TIP

NCCN recommends following the surveillance protocols from designated guidelines for the following hereditary endocrine neoplasia syndromes :

- Thyroid cancer guideline, use for: Multiple endocrine neoplasia, type 2 (MEN2) with genetic evaluation of inherited syndromes
- Kidney cancer, use for:
  - Hereditary paraganglioma/pheochromocytoma syndrome
  - Tuberous sclerosis complex (TSC1 and TSC2)
  - von Hippel Lindau syndrome (VHL)
- Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic, use for:
  - Neurofibromatosis type 1 (NF1)
  - Li-Fraumeni syndrome (TP53)
  - Lynch syndrome (MLH1, EPCAM/MSH2, MSH6, PMS2)
- Genetic/Familial High-Risk Assessment: Colorectal, use for:
  - Lynch syndrome (MLH1, EPCAM/MSH2, MSH6, PMS2)
  - Familial adenomatous polyposis (APC)

Central Nervous System (CNS) Cancer Surveillance

NCCN Central Nervous System Cancer Version 3.2024

Central nervous system (CNS) cancer surveillance includes **ANY** of the following:

1. Brain metastasis, limited **OR** extensive, image with brain magnetic resonance imaging (MRI) every 2 to 3 months for 1-2 years, then every 4 to 6 months indefinitely
2. Glioma and **ANY** of the following:
   a. Low-grade glioma, image with brain MRI every 3 to 6 months for years 3 through 5, then at least annually as clinically indicated
   b. High grade glioma, image with brain MRI 2 to 8 weeks after radiation therapy, then every 2 to 4 months for 3 years, then every 3 to 6 months indefinitely

3. Medulloblastoma, image with brain MRI every 3 months for 2 years, then every 6 to 12 months for years 5 through 10, then every 1 to 2 years as clinically indicated. (*__NOTE__: *For patients with previous spine disease, concurrent spine imaging as clinically indicated.*)
4. Meningiomas, WHO Grade 1 or 2 **OR** unresectable, image with brain MRI at months 3, 6 and 12, then every 6 to 12 months for 5 years, then every 1 to 3 years as clinically indicated. WHO grade 3 meningiomas: Brain MRI, every 2–4 months for 3 years, then every 3–6 months.
5. Primary CNS lymphoma, image with brain MRI every 3 months for 2 years, then every 6 months until year 5, then annually indefinitely (*__NOTE__: *for individuals with previous spine disease, concurrent spine imaging and cerebrospinal fluid (CSF) sampling as clinically indicated*)
6. Primary spinal cord tumors and **ANY** of the following:
    a. Low-grade tumors, image with spine MRI every 3 to 6 months until year 5, then at least annually indefinitely
    b. High-grade tumors, image with spine MRI every 2 to 6 weeks after treatment, then every 2 to 4 months until year 2-3, then every 3 to 6 months until year 5, then every 6 to 12 months indefinitely
7. Spine metastasis, image with spine MRI or computed tomography (CT) 1 to 3 months after treatment, then every 3 to 4 months for 1 year, then clinically as indicated

Neuroendocrine and Adrenal Tumors Surveillance

NCCN Neuroendocrine and Adrenal Tumors Version 2.2024

Neuroendocrine and adrenal cancer surveillance includes **ANY** of the following:[4]

1. Adrenal gland tumors surveillance imaging includes **ANY** of the following:
    a. Localized disease: chest computed tomography (CT) (± contrast) and abdominal CT or magnetic resonance imaging (MRI) (+ contrast) every 12 weeks to 12 months up to 5 years, then clinically as indicated
    b. Locoregional unresectable or metastatic disease; chest CT (± contrast) and abdominal/pelvic CT or MRI (+ contrast) or FDG positron emission tomography (PET)/CT every 12 weeks to 12 months up to 5 years, then clinically as indicated
2. Carcinoid syndrome surveillance imaging includes **BOTH** of the following:
    a. Abdominal/pelvic multiphasic CT or MRI every 12 weeks to 12 months and chest CT (± contrast) as clinically indicated

[4]No surveillance is indicated for appendiceal tumors 2 cm or smaller without aggressive features.

b. Echocardiogram every 1 to 3 years or as clinically indicated **without** known carcinoid heart disease (CHD) and at least annually for patients with established CHD.

3. Gastrointestinal (GI) tract (jejunum/ileum/colon, duodenum, rectum), lung and/or thymus neuroendocrine tumor (NET) surveillance includes imaging post-resection with **ANY** of the following:

   a. Jejunum/ilium/colon, duodenum, rectum and thymus, surveillance imaging with abdominal ± pelvic multiphasic CT or MRI according to **ONE** of the following levels of frequency:[5]

      i. Within 12 weeks to 12 months post-operatively

      ii. After 12 months, image every 12 to 24 months for 10 years

      iii. After 10 years as clinically indicated

   b. Lung/thymus tumors surveillance chest CT (± contrast) for primary tumors, (as clinically indicated for primary GI tumors) according to **ONE** of the following levels of frequency:

      i. Within 12 weeks to 12 months post-operatively

      ii. After 12 months, image every 12 to 24 months for 10 years

      iii. After 10 years as clinically indicated

4. Grade 3, well-differentiated neuroendocrine surveillance includes chest CT (± contrast) as clinically indicated for **ANY** of the following:

   a. Locally advanced/metastatic disease with favorable biology (low Ki-67 [eg, less than 55%], positive somastatin receptor [SSTR] based PET imaging) includes abdominal/pelvic MRI (+ contrast) or abdominal/pelvic multiphasic CT for surveillance with **ANY** of the following:

      i. Resectable disease surveillance every 12 weeks to 24 weeks for 2 years, then every 6 to 12 months for up to 10 years and chest CT as clinically indicated

      ii. Unresectable disease surveillance every 12 weeks to 24 weeks (depending on tumor biology) **AND** chest CT (± contrast); as clinically indicated.

   b. Locally advanced/metastatic disease with unfavorable biology (high Ki-67 [eg 55% or higher], rapid growth rate, FDG avid tumors, negative SSTR-based PET imaging), includes surveillance imaging, every 8 weeks to 12 weeks (depending on tumor biology) with **ALL** of the following:

[5]High-grade tumors may be appropriate for more frequent monitoring.

i. Abdominal/pelvic MRI (+ contrast) or abdominal/pelvic multiphasic CT and FDG PET/CT as clinically indicated

ii. Chest CT (± contrast) as clinically indicated

iii. FDG-PET/CT as clinically indicated

c. Locoregional disease (resectable) abdominal/pelvic MRI (+ contrast) or abdominal/pelvic multiphasic CT with frequency of **ONE** of the following:

i. Every 12 weeks to 24 weeks for 2 years (depending on tumor biology, Ki-67) and chest CT as clinically indicated

ii. Every 6 months to 12 months for up to 10 years (depending on tumor biology, Ki-67) and chest CT as clinically indicated

d. Multiple endocrine neoplasia, type 1 (MEN1) screening surveillance for **ANY** of the following tumor types: (*__NOTE__: *For prolonged surveillance, imaging studies without radiation are preferred.*)

i. Lung/thymic NETs: chest CT or MRI (+ contrast) every 1 to 3 years

ii. PanNET: abdominal/pelvic CT or MRI (+ contrast) every 1 to 3 years and consider serial endoscopic ultrasound (EUS)

iii. Parathyroid: if calcium rises, re-image with neck ultrasound and/or parathyroid sestamibi with single-photon emission computed tomography (SPECT) scan (SPECT-CT preferred) or 4D-CT

iv. Pituitary: pituitary or sella MRI (+ contrast) of the pituitary every 3 to 5 years

e. Poorly differentiated large or small cell carcinoma and/or mixed neuroendocrine/non-neuroendocrine neoplasm or unknown primary, imaging surveillance includes **ALL** of the following:

i. Locoregional unresectable or metastatic disease surveillance imaging includes **EITHER** chest CT (± contrast) with abdominal/pelvic MRI (+ contrast) **OR** chest/abdominal/pelvic multiphasic CT; every 6 weeks to 16 weeks

ii. Resectable surveillance imaging includes **EITHER** chest CT (± contrast) with abdominal/pelvic MRI (+ contrast) **OR** chest/abdominal/pelvic multiphasic CT; every 12 weeks for the 1st year, and every 6 months thereafter

f. Post-operative from potentially curative surgery surveillance for at least 10 years (longer if high-risk)

5. Pancreatic neuroendocrine tumor surveillance imaging, post-resection, includes chest CT (± contrast) as clinically indicated and abdominal multiphasic CT or MRI with imaging frequency of **ONE** of the following:[5]
    a. Within 3 to 12 months post-operatively
    b. After 12 months, image every 6 to 12 months for 10 years
    c. After 10 years as clinically indicated
6. Pheochromocytoma/Paranganglioma surveillance imaging and **ANY** of the following:
    a. Locally unresectable disease or distant metastases includes **ANY** of the following:
        i. Chest/abdominal/pelvic CT with contrast
        ii. Chest CT (± contrast) and abdominal/pelvic MRI without contrast (if risk for hypertensive episode)
        iii. FDG-PET/CT for bone dominant disease
        iv. Meta-iodobenzylguanidine (MIBG) with single-photon emission computerized tomography/CT (SPECT) (if previous MIBG-positive or concern for disease progression) prior to considering radionuclide therapy
        v. SSTR-PET/CT or SSTR-PET/MRI (if previous SSTR-positive or concern for disease progression) prior to considering radionuclide therapy
    b. Resectable disease, post-resection includes chest CT (± contrast) and abdominal/ pelvic CT or MRI (+contrast), if clinically indicated with imaging frequency of **ONE** of the following:
        i. 12 weeks to 12 months after resection
        ii. Every 6 to 12 months for the 1st 3 years
        iii. Annually from year 4 up to 10.
        iv. Annually up to 10 years, then as clinically indicated

TIP

NCCN recommends following the surveillance protocols from designated guidelines for the following hereditary endocrine neoplasia syndromes :

- Thyroid cancer guideline, use for: Multiple endocrine neoplasia, type 2 (MEN2) with genetic evaluation of inherited syndromes
- Kidney cancer, use for:
  - Hereditary paraganglioma/pheochromocytoma syndrome
  - Tuberous sclerosis complex (TSC1 and TSC2)
  - von Hippel Lindau syndrome (VHL)
- Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic, use for:
  - Neurofibromatosis type 1 (NF1)
  - Li-Fraumeni syndrome (TP53)
  - Lynch syndrome (MLH1, EPCAM/MSH2, MSH6, PMS2)
- Genetic/Familial High-Risk Assessment: Colorectal, use for:
  - Lynch syndrome (MLH1, EPCAM/MSH2, MSH6, PMS2)
  - Familial adenomatous polyposis (APC)

MRI Lumbar Spine Procedure Codes

Table 1. MRI Lumbar Spine Associated Procedure Codes

CODE	DESCRIPTION
72148	Magnetic resonance (eg, proton) imaging, spinal canal and contents, lumbar; without contrast material
72149	Magnetic resonance (eg, proton) imaging, spinal canal and contents, lumbar; with contrast material(s)
72158	Magnetic resonance (eg, proton) imaging, spinal canal and contents, without contrast material, followed by contrast material(s) and further sequences; lumbar
0649T	Quantitative magnetic resonance for analysis of tissue composition (eg, fat, iron, water content), including multiparametric data acquisition, data preparation and transmission, interpretation and report, obtained with diagnostic MRI examination of the same anatomy (eg, organ, gland, tissue, target structure); single organ

MRI Lumbar Spine Summary of Changes

MRI Lumbar Spine guideline had the following version changes from 2023 to 2024:

- Added the following to keep in line with current evidence:
  - Indications under "Neurological deficit"
- Citations updated per the evidence.
- Mid-cycle review:
  - Added overview section
  - Mid-cycle update: added Pediatric Preamble and pediatric indications
  - Reconfigured "Pain" section
  - Removed indications under "Cancer"
- 10/24/2024 Mid-cycle review
  - Removed "Pre-procedural evaluation" as it was redundant

MRI Lumbar Spine Definitions

Abscess is a swollen area within body tissue, containing an accumulation of pus.
Acute disseminated encephalomyelitis (ADEM) is characterized by demyelination, which is damage to the myelin caused by inflammation. It's often triggered by a viral or bacterial infection, but can also be caused by a vaccination in rare cases.
Ankylosing spondylosis (spondylitis) is a chronic inflammatory disease that affects the spine, sacroiliac joints and often other joints (such as the shoulder), and is marked by pain and stiffness.
Behcet's disease a rare disease of unknown cause that is marked by chronic inflammation of blood vessels with symptoms including ulcerative sores especially of the mouth and genitals, inflammation of the eye, and joint swelling and pain.
Bone scan is a nuclear imaging procedure that examines the bones in the skeleton. It can help diagnose and track bone diseases, and can also be used to monitor the progress of certain treatments.
Cauda equina syndrome is a group of symptoms that are caused by compression of the cauda equina and include pain in the lower back and legs, weakness and numbness in the groin, buttocks and legs, and impaired functioning of the bladder and bowel.
Cerebrospinal fluid (CSF) is a colorless liquid that is comparable to serum, is secreted from the blood into the lateral ventricles of the brain, and serves chiefly to maintain uniform pressure within the brain and spinal cord.
Cerebrospinal fluid (CSF) leak is a leak of cerebrospinal fluid that results from a hole or tear in the dura (the outermost layer of the meninges).
Cerebrospinal fluid (CSF) rhinorrhea is a condition where the fluid that surrounds the brain leaks into the nose and sinuses.

Chiari malformation (Arnold-Chiari syndrome) is a congenital abnormality in which the lower surface of the cerebellum and the lower brain stem protrude into the spinal canal through the foramen magnum.

Compression is reducing in size, quantity or volume, as if by squeezing.

Compression fracture is a break in the vertebrae and can cause the vertebrae to collapse, making them shorter.

Computed tomography (CT) refers to a computerized X-ray imaging procedure in which a three-dimensional image of a body structure is revealed through a series of cross-sectional images or "slices."

Conservative management is an approach to treating pain utilizing non-surgical treatments that are both passive **AND** active, for a designated time (usually 4 to 6 weeks). Passive conservative management includes acupuncture, braces, ice/heat, injections, medications (NSAIDS, Tylenol). Active conservative management includes physical therapy (PT) program, supervised by a licensed physical therapist and/or osteopathic manipulative medicine (OMT) or chiropractic care.

C-reactive protein (CRP) is a pentameric protein synthesized by the liver, whose level rises in response to inflammation.

Dermatome is a skin area that receives sensory innervation from a single spinal nerve dorsal root.

Diffuse idiopathic skeletal hyperostosis (DISH) is a condition that causes ligaments to become calcified and hard. It usually affects the ligament around the spine, but it can also affect other areas of the body where ligaments join to bone.

Discitis is an infection of the discs between the vertebra of the spine.

Drop metastases are intradural extramedullary spinal metastases that arise from intracranial lesions.

Electromyogram (EMG) is a test that converts the electrical activity associated with functioning skeletal muscle into a visual record or into sound used to diagnose neuromuscular disorders and in biofeedback training.

Erythrocyte sedimentation rate (ESR) is a commonly performed hematology test that may indicate and monitor an increase in inflammatory activity within the body caused by one or more conditions such as autoimmune disease, infections or tumors.

Fistula is an abnormal connection that leads from an abscess, hollow organ or part to the body surface, or from one hollow organ or part to another, and may be surgically created to permit passage of fluids or secretions.

Glasgow Coma Scale (GCS) is a scale used to assess the severity of a brain injury. It consists of values from 3 to 15, obtained by summing the ratings that depend on whether and how the patient responds to certain standard stimuli.

Gelling, also known as the "gelling phenomenon", occurs after shorter periods of inactivity, such as sitting or resting during the day. It's caused by synovial fluid thickening and becomes gel-like

when joints aren't moving. This makes it harder for the joints to move, but the fluid returns to normal once movement is started again.

Human Immunodeficiency Virus (HIV) damages the immune system and interferes with the body's ability to fight infection and disease.

Indeterminate findings are inconclusive or insufficient for treatment planning.

Kyphosis is the exaggerated outward curvature of the thoracic region of the spine resulting in a rounded upper back.

Leptomeningeal carcinomatosis is cancer involving the pia mater and arachnoid mater. It occurs when cancer cells spread to the leptomeninges, which are the thin tissue layers that cover the brain and spinal cord.

Magnetic resonance imaging (MRI) is a non-invasive diagnostic technique that produces computerized images of internal body tissues and is based on nuclear magnetic resonance of atoms within the body induced by the application of radio waves.

Malaise is an indefinite feeling of debility or lack of health often indicative of or accompanying the onset of an illness.

Metastases is the spread of a disease-producing agency (such as cancer cells) from the initial or primary site of disease to another part of the body.

Myelogram is a radiographic visualization of the spinal cord after injection of a contrast medium into the spinal subarachnoid space.

Nerve conduction study (NCS) is a test that measures how fast an electrical impulse moves through the nerve and can identify nerve damage.

Neurocutaneous disorders are disorders that affect the brain, spinal cord, organs, skin, and bones. The diseases are lifelong conditions that can cause tumors to grow in these areas.

Non-diagnostic is a result that does not lead to a confirmed diagnosis.

Orthostatic headache is a headache while upright, that is relieved by lying down.

Osteomyelitis is an infectious, inflammatory disease of bone. It is often painful, bacterial in origin and may result in the death of bone tissue.

Otorrhea is drainage of liquid from the ear.

Pars defect is a stress fracture of the bones of the lower spine due to overuse.

Pars interarticularis is a thin bone segment that connects two vertebrae. It's also known as the pars.

Pediatric approximate ages are defined by the US Department of Health (USDH), the Food and Drug Administration (FDA), and the American Academy of Pediatrics (AAP) as the following:

- Infancy, between birth and 2 years of age
- Childhood, from 2 to 12 years of age
- Adolescence, from 12 to 21 years of age, further defined by the AAP into:
    1. Early (ages 11–14 years)

2. Middle (ages 15–17 years),
3. Late (ages 18–21 years)
4. Older ages may be appropriate for children with special healthcare needs.

Pes cavus, also known as cavus foot, is an orthopedic condition that causes the foot's arch to be abnormally high and unable to flatten.
Proprioception is the perception or awareness of the position and movement of the body.
Radiculopathy is an irritation of or injury to a spinal nerve root (as from being compressed) that typically causes pain, numbness, or muscle weakness in the part of the body which is supplied with nerves from that root.
Recurrence is a new occurrence of something that happened or appeared before.
Rheumatoid arthritis (RA) is an autoimmune disease (usually chronic) that is characterized by pain, stiffness, inflammation, swelling and sometimes destruction of the joints.
Rhinorrhea is excessive mucous drainage from the nose.
Sarcoidosis is a chronic disease of unknown cause, that is characterized by the formation of nodules, especially in the lymph nodes, lungs, bones and skin.
Sciatica is pain along the course of a sciatic nerve, especially in the back of the thigh, lower back, buttocks, hips, or adjacent parts.
Scoliosis is a sideways curvature of the spine.
Short segment is a curve in the spinal column that is less than 6 segments.
Single-photon emission computed tomography (SPECT) is a nuclear imaging test that uses a radioactive substance and a special camera to create 3D images of the body's organs, tissue, and bones. The images show how blood flows to tissues and organs.
Spinal dysraphism is a congenital abnormality that results in an abnormal structure in the spine, including the bony structure, the spinal cord, and the nerve roots.
Spondylarthropathy is an inflammatory arthritis affecting the spine.
Spondylolisthesis is the forward displacement of a vertebra on the one below it and especially of the fifth lumbar vertebra on the sacrum producing pain by compression of nerve roots.
Spondylolysis is a stress fracture of the bones of the lower spine due to overuse.
Spontaneous intracranial hypotension (SIH) is a condition in which the fluid pressure inside the skull is lower than normal.
Staging in cancer is the process of determining how much cancer is within the body (tumor size) and if it has metastasized (spread).
Stigmata is a mental or physical mark that indicates a disease or defect. It can also refer to a specific diagnostic sign of a disease.
Surveillance in cancer is the ongoing, timely and systematic collection and analysis of information on new cancer cases, extent of disease, screening tests, treatment, survival and cancer deaths.

Tethered spinal cord syndrome (TSCS) is a disorder of the nervous system caused by tissue that attaches itself to the spinal cord and limits the movement of the spinal cord.

MRI Lumbar Spine References

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Disclaimer section

Purpose

The purpose of the HealthHelp's clinical guidelines is to assist healthcare professionals in selecting the medical service that may be appropriate and supported by evidence to safely improve outcomes. Medical information is constantly evolving, and HealthHelp reserves the right to review and update these clinical guidelines periodically. HealthHelp reserves the right to include in these guidelines the clinical indications as appropriate for the organization's program objectives. Therefore the guidelines are not a list of all the clinical indications for a stated procedure, and

associated Procedure Code Tables may not represent all codes available for that state procedure or that are managed by a specific client-organization.

Clinician Review

These clinical guidelines neither preempt clinical judgment of trained professionals nor advise anyone on how to practice medicine. Healthcare professionals using these clinical guidelines are responsible for all clinical decisions based on their assessment. All Clinical Reviewers are instructed to apply clinical indications based on individual patient assessment and documentation, within the scope of their clinical license.

Payment

The use of these clinical guidelines does not provide authorization, certification, explanation of benefits, or guarantee of payment; nor do the guidelines substitute for, or constitute, medical advice. Federal and State law, as well as member benefit contract language (including definitions and specific contract provisions/exclusions) take precedence over clinical guidelines and must be considered first when determining eligibility for coverage. All final determinations on coverage and payment are the responsibility of the health plan. Nothing contained within this document can be interpreted to mean otherwise.

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National and Local Coverage Determination (NCD and LCD)

NOTICE
To ensure appropriate review occurs to the most current NCD and/or LCD, always defer to https://www.cms.gov/medicare-coverage-database/search.aspx.

Background

National Coverage Determinations (NCD) and Local Coverage Determinations (LCD) are payment policy documents outlined by the Centers for Medicare and Medicaid Services (CMS) and

the government's delegated Medicare Audit Contractors (MACs) that operate regionally in jurisdictions.

CMS introduced variation between different jurisdictions/Medicare Audit Contractors (MACs) and their associated covered code lists with the transition to ICD 10. The variation resulted in jurisdictions independently defining how codes are applied for exclusions, limitations, groupings, ranges, etc. for the medical necessity indications outlined in the NCD and LCD. Due to this variation, there is an inconsistent use/application of codes and coverage determinations across the United States between the different MACs.

In addition, **WITHOUT** notice, CMS can change the codes that indicate medical necessity and the format of the coverage determinations/associated documents (eg, Articles). This is an additional challenge for organizations to keep up with ongoing, unplanned changes in covered codes and medical necessity indications.

Medical Necessity Codes

Due to the variation in code application between jurisdictions/MACs and that updates can happen without notification, HealthHelp is not able to guarantee full accuracy of the codes listed for any Coverage Determination, and advises that prior to use, the associated Coverage Determination Articles are reviewed to ensure applicability to HealthHelp's programs and any associated NCDs and LCDs.

For Internal Use Only:

11248 11249 11253 11282 11325 11328 11333 11349 11350 11351 11352 11354 11355 11356 11358 11359 11360 11361 11362 11365 11366 11367 11368 11369 11370 11374 11375 11394 11395 11396 11565