



Cohere Medical Policy – Computed Tomography (CT), Spine (Cervical, Thoracic, and Lumbar)

Clinical Guidelines for Medical Necessity Review

Version: 2
Effective Date: August 29, 2024

Important Notices

Notices & Disclaimers:

GUIDELINES ARE SOLELY FOR COHERE'S USE IN PERFORMING MEDICAL NECESSITY REVIEWS AND ARE NOT INTENDED TO INFORM OR ALTER CLINICAL DECISION-MAKING OF END USERS.

Cohere Health, Inc. ("**Cohere**") has published these clinical guidelines to determine the medical necessity of services (the "**Guidelines**") for informational purposes only, and solely for use by Cohere's authorized "**End Users**". These Guidelines (and any attachments or linked third-party content) are not intended to be a substitute for medical advice, diagnosis, or treatment directed by an appropriately licensed healthcare professional. These Guidelines are not in any way intended to support clinical decision-making of any kind; their sole purpose and intended use is to summarize certain criteria Cohere may use when reviewing the medical necessity of any service requests submitted to Cohere by End Users. Always seek the advice of a qualified healthcare professional regarding any medical questions, treatment decisions, or other clinical guidance. The Guidelines, including any attachments or linked content, are subject to change at any time without notice.

©2024 Cohere Health, Inc. All Rights Reserved.

Other Notices:

HCPCS® and CPT® copyright 2024 American Medical Association. All rights reserved.

Fee schedules, relative value units, conversion factors and/or related components are not assigned by the AMA, are not part of CPT, and the AMA is not recommending their use. The AMA does not directly or indirectly practice medicine or dispense medical services. The AMA assumes no liability for data contained or not contained herein.

HCPCS and CPT are registered trademarks of the American Medical Association.

Guideline Information:

Specialty Area: Diagnostic Imaging

Guideline Name: Cohere Medical Policy - Computed Tomography (CT), Spine (Cervical, Thoracic, and Lumbar)

Date of last literature review: 8/9/2024

Document last updated: 8/29/2024

Type: Adult (18+ yo) | Pediatric (0-17yo)

Table of Contents

Important Notices	2
Table of Contents	3
Medical Necessity Criteria	4
Service: Computed Tomography (CT), Spine (Cervical, Thoracic, and Lumbar)	4
Recommended Clinical Approach	4
Medical Necessity Criteria	4
Indications	4
Non-Indications	8
Level of Care Criteria	10
Procedure Codes (CPT/HCPCS)	10
Medical Evidence	12
References	13
Clinical Guideline Revision History/Information	15

Medical Necessity Criteria

Service: Computed Tomography (CT), Spine (Cervical, Thoracic, and Lumbar)

Recommended Clinical Approach

Computed tomography (CT) utilizes ionizing radiation to create images based on the varying absorption of X-rays by different tissues. This technology provides detailed cross-sectional views and enables the generation of multidimensional 2-D and 3-D reconstructions. CT scanning is highly valuable in clinical practice, particularly for evaluating spinal structures.¹ CT scan (non-contrast) is appropriate in the setting of acute trauma or suspected fracture. CT myelogram (CT with contrast) is a two-part procedure - iodinated contrast is first injected into the spinal canal under fluoroscopic guidance before a CT scan covering the region of concern is performed.

Primary evaluation with CT is typically non-contrasted in the setting of trauma or suspected fracture. While infection and tumor can be evaluated with a contrasted exam, MR is the preferred modality when possible. CT myelogram is an alternative in patients for whom spinal canal evaluation is desired, and MR is not practical (e.g., non-compatible hardware or pacemaker device, unable to cooperate with MR imaging demands).²⁻⁴

Medical Necessity Criteria

Indications

→ **Computed tomography (CT), spine (cervical, thoracic, and lumbar)** is considered appropriate if **ANY** of the following is **TRUE**:

- ◆ Neoplastic conditions (including masses or mass-like conditions), including **ALL** of the following⁵⁻⁶:
 - Primary or metastatic lesion to the spinal cord, canal, bone, or vertebral bodies and **ANY** of the following is needed:
 - Initial diagnosis; **OR**
 - Monitor response to treatment; **OR**
 - Monitor worsening symptoms or pain; **AND**
 - Initial diagnosis of suspected tumor or malignancy as indicated by **ANY** of the following:
 - Abnormal laboratory values; **OR**

- Inconclusive or abnormal prior imaging; **OR**
- ◆ **ALL** of the following indications for infection or an infectious disorder (e.g., discitis, osteomyelitis, epidural abscess):
 - **ANY** of the following⁷⁻⁸:
 - Abnormal lab values; **OR**
 - Decubitus ulcer; **OR**
 - New cauda equina syndrome²; **OR**
 - New neurologic deficit; **OR**
 - New or worsening back or neck pain; **OR**
 - Recent intervention (e.g., hardware, pain injection, stimulator implantation); **OR**
 - Wound overlying spine; **OR**
 - **ANY** of the following “red flags”:
 - ◆ Cancer; **OR**
 - ◆ Diabetes mellitus; **OR**
 - ◆ Dialysis; **OR**
 - ◆ HIV; **OR**
 - ◆ Immunosuppression; **OR**
 - ◆ IV drug use; **OR**
 - ◆ Prior spinal infections (e.g., abscess, discitis arachnoiditis, osteomyelitis); **AND**
 - Follow-up to abnormal or indeterminate initial imaging; **OR**
- ◆ Trauma-related conditions, including **ANY** of the following⁹:
 - Following a traumatic event (e.g., accident, surgery, or intervention), and the patient has **ANY** of the following:
 - Neurological deficit (myelopathy); **OR**
 - Radiculopathy; **OR**
 - Follow-up to initial radiographs with positive or indeterminate findings and advanced imaging is needed; **OR**
 - High suspicion for fracture; **OR**
 - Persistent or worsening pain without acute findings on initial imaging and **ANY** of the following apply to the patient:
 - Chronic steroid use; **OR**
 - Elderly; **OR**
 - Osteoporotic; **OR**
 - Follow-up to initial radiographs for a known or suspected vertebral compression fracture (asymptomatic or symptomatic)¹⁰; **OR**

- ◆ Vascular conditions, known or suspected, including **ANY** of the following:
 - Spinal cord infarct; **OR**
 - Vascular malformation; **OR**
- ◆ Autoimmune, collagen vascular diseases, or inflammatory conditions (e.g., inflammatory arthritis, spondyloarthropathy, demyelinating diseases, muscular dystrophies) including **ANY** of the following^{3-4,11-13}:
 - To assist in the diagnostic work-up; **OR**
 - Initial diagnosis or follow-up to evaluate for progression of disease or response to treatment; **OR**
 - Pain or radiculopathy; **OR**
 - Suspicion of **ANY** of the following:
 - Fracture; **OR**
 - Vertebral body subluxation; **OR**
- ◆ For evaluation of **ANY** of the following uncategorized/miscellaneous symptoms when applicable:
 - Pain or radiculopathy without trauma as indicated by **ALL** of the following¹⁻⁴:
 - Neurological deficit (myelopathy) or severe radiculopathy and **ANY** of the following⁴:
 - ◆ Abnormal EMG; **OR**
 - ◆ **ANY** of the following new or worsening symptoms:
 - Bladder dysfunction; **OR**
 - Bowel dysfunction; **OR**
 - Dermatomal sensory loss; **OR**
 - Objective muscle weakness; **OR**
 - Radiculopathy (including sciatica); **OR**
 - Saddle anesthesia; **OR**
 - Sexual dysfunction; **AND**
 - Persistent pain or radiculopathy after at least six weeks of conservative treatment; **AND**
 - Suspicion of compression of **ANY** of the following:
 - ◆ Cauda equina⁴; **OR**
 - ◆ Nerve root; **AND**
 - ◆ Spinal cord; **AND**
 - **ANY** of the following:

- ◆ Back pain as evidenced by **ANY** of the following²:
 - Cauda equina syndrome, suspected; **OR**
 - History of prior lumbar surgery with new or progressing clinical findings; **OR**
 - Osteoporosis; **OR**
 - The patient is a candidate for surgery or intervention and has persistent or progressive symptoms during or following 6 weeks of optimal medical management; **OR**
 - Steroid use, chronic; **OR**
 - Suspicion of **ANY** of the following:
 - Cancer; **OR**
 - Immunosuppression; **OR**
 - Infection; **OR**
- ◆ Cervical or neck pain as evidenced by **ANY** of the following³:
 - Cervicogenic headache with new or increasing non-traumatic cervical or neck pain and no neurologic deficit; **OR**
 - Chronic cervical or neck pain with no neurologic findings and radiographs show degenerative changes; **OR**
 - Chronic cervical or neck pain without or with radiculopathy and radiographs show ossification in the posterior longitudinal ligament (OPLL); **OR**
 - Known malignancy with new or increasing non-traumatic cervical or neck pain or radiculopathy; **OR**
 - New or increasing pain or radiculopathy with no “red flags”; **OR**
 - Prior cervical spine surgery with new or increasing non-traumatic cervical or neck pain or radiculopathy; **OR**
 - Suspicion for infection with new or increasing non-traumatic cervical or neck pain or radiculopathy; **OR**

- Plexopathy (traumatic) including **ANY** of the following¹⁴:
 - Brachial; **OR**
 - Lumbosacral; **OR**
- ◆ The patient is post-operative from a spinal surgery with recurrent or worsening symptoms¹⁵; **OR**
- ◆ **ANY** of the following indications for congenital or acquired abnormalities of the spine or vertebral bodies (not including specific pediatric indications)¹⁶:
 - Arnold Chiari malformation; **OR**
 - Neurological symptoms not previously imaged; **OR**
 - Pain that does not improve and imaging previously not performed; **OR**
 - Preoperative assessment needed; **OR**
 - Scoliosis; **OR**
 - Syrinx; **OR**
 - Syringohydromyelia; **OR**
- ◆ Repeat imaging of a specific area or structure using the same imaging modality (in the absence of an existing follow-up guideline) is considered appropriate when **ALL** of the following is **TRUE**:
 - There is documented clinical necessity; **AND**
 - Prior imaging results of the specific area or structure, obtained using the same imaging modality, must be documented and available for comparison; **AND**
 - **ANY** of the following is **TRUE**:
 - A change in clinical status, such as worsening symptoms or the emergence of new symptoms, that may influence the treatment approach; **OR**
 - The requirement for interval reassessment, which may alter the treatment plan; **OR**
 - One-time follow-up of a prior indeterminate finding to assess for interval change; **OR**
 - The need for re-imaging either before or after performing an invasive procedure.

Non-Indications

→ **Computed tomography (CT), spine (cervical, thoracic, or lumbar)** is not considered appropriate if **ANY** of the following is **TRUE**:

- ◆ The patient has undergone advanced imaging of the same body

part within 3 months without undergoing treatment or developing new or worsening symptoms; **OR**

- ◆ If **ANY** of the following is **TRUE** if contrast is used¹⁷:
 - History of anaphylactic allergic reaction to iodinated contrast media; **OR**
 - Renal insufficiency and no detailed guidelines have been provided; **OR**
- ◆ Chronic neck pain³; **OR**
- ◆ Plexopathy (non-traumatic, with or without malignancy) including **ANY** of the following¹⁴:
 - Brachial; **OR**
 - Lumbosacral.

*NOTE: CT in patients with claustrophobia should be requested at the discretion of the ordering provider.

**NOTE: CT in pregnant patients should be requested at the discretion of the ordering provider and obstetric care provider.

Disclaimer on Radiation Exposure in Pediatric Population

Due to the heightened sensitivity of pediatric patients to ionizing radiation, minimizing exposure is paramount. At Cohere, we are dedicated to ensuring that every patient, including the pediatric population, has access to appropriate imaging following accepted guidelines. Radiation risk is dependent mainly on the patient's age at exposure, the organs exposed, and the patient's sex, though there are other variables. The following technical guidelines are provided to ensure safe and effective imaging practices:

Radiation Dose Optimization: Adhere to the lowest effective dose principle for pediatric imaging. Ensure that imaging protocols are specifically tailored for pediatric patients to limit radiation exposure.¹⁸⁻¹⁹

Alternative Modalities: Prioritize non-ionizing imaging options such as ultrasound or MRI when clinically feasible, as they are less likely to expose the patient to ionizing radiation. For instance, MRI or ultrasound should be considered if they are more likely to provide an accurate diagnosis than CT, fluoroscopy, or radiography.¹⁸⁻¹⁹

Cumulative Dose Monitoring: Implement systems to track cumulative radiation exposure in pediatric patients, particularly for those requiring multiple imaging studies. Regularly reassess the necessity of repeat imaging

based on clinical evaluation.¹⁸⁻¹⁹

CT Imaging Considerations: When CT is deemed the best method for achieving a correct diagnosis, use the lowest possible radiation dose that still yields reliable diagnostic images.¹⁸⁻¹⁹

Cohere Imaging Gently Guideline

The purpose of this guideline is to act as a potential override when clinically indicated to adhere to Imaging Gently and Imaging Wisely guidelines and As Low As Reasonably Possible (ALARA) principles.

Level of Care Criteria

Inpatient or Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
72125	Computed tomography (CT), cervical spine; without contrast material
72126	Computed tomography (CT), cervical spine; with contrast material
72127	Computed tomography (CT), cervical spine; without contrast material, followed by contrast material(s) and further sections
72128	Computed tomography (CT), thoracic spine; without contrast material
72129	Computed tomography (CT), thoracic spine; with contrast material
72130	Computed tomography (CT), thoracic spine; without contrast material, followed by contrast material(s) and further sections
72131	Computed tomography (CT), lumbar spine; without contrast material
72132	Computed tomography (CT), lumbar spine; with contrast material
72133	Computed tomography (CT), lumbar spine; without

	contrast material, followed by contrast material(s) and further sections
76380	Computed tomography, limited or localized follow-up study

Medical Evidence

Ahmad et al. (2023) conducted a systematic review on the use of computed tomography (CT) and magnetic resonance imaging (MRI) with respect to the correlations between bone mineral density (BMD) derived from scans and Dual-Energy X-ray Absorptiometry (DEXA). A comprehensive analysis of 25 studies was included (15 utilizing CT and 10 utilizing MRI) with a total of 2745 patients. Articles published from 2011 to 2021 were included investigating the associations between CT or MRI measurements such as CT-derived Hounsfield units (CT-HU) values or MRI parameters, and DEXA-derived BMD, specifically focusing on lumbar spine or hip regions. CT-HU exhibits stronger correlations with DEXA measurements than MRI parameters however, both CT and MRI demonstrate moderate correlations with DEXA. Additional research is needed within spine surgery cohorts, including inferior correlations in populations with degenerative spine conditions.²⁰

Bäcker et al. (2021) performed a systematic literature review and meta-analysis to assess the sensitivity, specificity, and accuracy of dual-energy computed tomography (DE-CT) in detecting bone marrow edema and disc edema in spinal injuries. Early diagnosis of vertebral injuries is crucial to prevent treatment delays. Imaging modalities such as MRI or DE-CT are necessary to identify bone marrow or disc edemas. The analysis encompassed 13 studies involving 515 patients, 3335 vertebrae, and 926 acute fractures confirmed by MRI, which was used for comparison in 12 publications. DE-CT demonstrated an overall sensitivity of 86.2%, specificity of 91.2%, and accuracy of 89.3%. In addition, five studies reported the accuracy of conventional CT, yielding an overall sensitivity of 81.3%, specificity of 80.7%, and accuracy of 80.9%. Overall, DE-CT shows promise as a diagnostic tool for detecting bone marrow and disc edemas, potentially offering an alternative to MRI, the current gold standard.²¹

Ghudasara et al. (2019) review the use of postoperative CT following spine surgery. Scans are useful to identify implant locations and integrity, evaluate the efficacy of decompression and intervertebral arthrodesis procedures, and identify associated complications. While metallic implant artifacts may limit postoperative spinal CT scans, advancements in parameter optimization and metal artifact reduction techniques (e.g., iterative reconstruction and monoenergetic extrapolation methods) offer significant improvements in image quality. Furthermore, they are valuable in detecting and characterizing any postoperative irregularities. Complications following spinal surgery and intervertebral arthroplasty range from issues with implant position and integrity to adjacent segment degeneration, collections, fistulas, pseudo meningoceles, cerebrospinal fluid leaks, and surgical site infections.¹⁵

References

1. American College of Radiology (ACR), American Society of Neuroradiology (ASNR), American Society of Spine Radiology (ASSR), Society for Pediatric Radiology (SPR). ACR-ASNR-ASSR-SPR practice parameter for the performance of computed tomography (CT) of the spine - resolution 23. Updated 2022. Accessed August 28, 2024. <https://www.acr.org/-/media/ACR/Files/Practice-Parameters/CT-Spine.pdf>.
2. Expert Panel on Neurological Imaging, Hutchins TA, Peckham M, et al. ACR appropriateness criteria - low back pain: 2021 update. *J Am Coll Radiol*. 2021 Nov;18(11S):S361-S379. doi: 10.1016/j.jacr.2021.08.002. PMID: 34794594.
3. Expert Panel on Neurological Imaging, McDonald MA, Kirsch CFE, et al. ACR appropriateness criteria - cervical neck pain or cervical radiculopathy. *J Am Coll Radiol*. 2019 May;16(5S):S57-S76. doi: 10.1016/j.jacr.2019.02.023. PMID: 31054759.
4. Expert Panel on Neurological Imaging, Agarwal V, Shah LM, et al. ACR appropriateness criteria - myelopathy: 2021 update. *J Am Coll Radiol*. 2021 May;18(5S):S73-S82. doi: 10.1016/j.jacr.2021.01.020. PMID: 33958120.
5. Expert Panel on Musculoskeletal Imaging, Bestic JM, Wessell DE, et al. ACR appropriateness criteria - primary bone tumors. *J Am Coll Radiol*. 2020 May;17(5S):S226-S238. doi: 10.1016/j.jacr.2020.01.038. PMID: 32370967.
6. Pinter NK, Pfiffner TJ, Mechtler LL. Neuroimaging of spine tumors. *Handb Clin Neurol*. 2016;136:689-706. doi: 10.1016/B978-0-444-53486-6.00033-8. PMID: 27430436.
7. Talbott JF, Shah VN, Uzelac A, et al. Imaging-based approach to extradural infections of the spine. *Semin Ultrasound CT MR*. 2018 Dec;39(6):570-586. doi: 10.1053/j.sult.2018.09.003. PMID: 30527522; PMCID: PMC6291848.
8. Expert Panel on Neurological Imaging, Ortiz AO, Levitt A, et al. ACR appropriateness criteria - suspected spine infection. *J Am Coll Radiol*. 2021 Nov;18(11S):S488-S501. doi: 10.1016/j.jacr.2021.09.001. PMID: 34794603.
9. Expert Panel on Neurological Imaging and Musculoskeletal Imaging, Beckmann NM, West OC, et al. ACR appropriateness criteria - suspected spine trauma. *J Am Coll Radiol*. 2019 May;16(5S):S264-S285. doi: 10.1016/j.jacr.2019.02.002. PMID: 31054754.
10. Expert Panels on Neurological Imaging, Interventional Radiology, and Musculoskeletal Imaging; Khan MA, Jennings JW, et al. ACR appropriateness criteria - management of vertebral compression

- fractures: 2022 update. *J Am Coll Radiol*. 2023 May;20(5S):S102-S124. doi: 10.1016/j.jacr.2023.02.015. PMID: 37236738.
11. Expert Panel on Musculoskeletal Imaging, Czuczman GJ, Mandell JC, et al. ACR appropriateness criteria – inflammatory back pain, known or suspected axial spondyloarthritis: 2021 update. *J Am Coll Radiol*. 2021 Nov;18(11S):S340-S360. doi: 10.1016/j.jacr.2021.08.003. PMID: 34794593.
 12. Tan S, Ward MM. Computed tomography in axial spondyloarthritis. *Curr Opin Rheumatol*. 2018 Jul;30(4):334-339. doi: 10.1097/BOR.0000000000000507. PMID: 29538011.
 13. Kucybała I, Urbanik A, Wojciechowski W. Radiologic approach to axial spondyloarthritis: Where are we now and where are we heading? *Rheumatol Int*. 2018 Oct;38(10):1753-1762. doi: 10.1007/s00296-018-4130-1. PMID: 30132215; PMCID: PMC6132717.
 14. Expert Panel on Neurological and Musculoskeletal Imaging, Boulter DJ, Job J, et al. ACR appropriateness criteria – plexopathy: 2021 update. *J Am Coll Radiol*. 2021 Nov;18(11S):S423-S441. doi: 10.1016/j.jacr.2021.08.014. PMID: 34794598.
 15. Ghodasara N, Yi PH, Clark K, et al. Postoperative spinal CT: What the radiologist needs to know. *Radiographics*. 2019 Oct;39(6):1840-1861. doi: 10.1148/rg.2019190050. PMID: 31589573.
 16. Holly LT, Batzdorf U. Chiari malformation and syringomyelia. *J Neurosurg Spine*. 2019 Nov 1;31(5):619-628. doi: 10.3171/2019.7.SPINE181139. PMID: 31675698.
 17. Davenport MS, Perazella MA, Yee J, et al. Use of intravenous iodinated contrast media in patients with kidney disease: Consensus statements from the American College of Radiology and the National Kidney Foundation. *Kidney Med*. 2020 Jan 22;2(1):85-93. doi: 10.1016/j.xkme.2020.01.001. PMID: 33015613; PMCID: PMC7525144.
 18. The Image Gently Alliance. Procedures – image gentle and CT scans. Updated 2014. Accessed June 26, 2024. <https://www.imagegently.org/Procedures/Computed-Tomography>.
 19. National Cancer Institute. Radiation risks and pediatric computed tomography (CT): A guide for health care. Updated September 4, 2018. Accessed August 28, 2024. <https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/pediatric-ct-scans>.
 20. Ahmad A, Crawford 3rd CH, Glassman SD, et al. Correlation between bone density measurements on CT or MRI versus DEXA scan: A systematic review. *N Am Spine Soc J*. 2023 Mar 1;14:100204. doi: 10.1016/j.xnsj.2023.100204. PMID: 37090222; PMCID: PMC10119682.
 21. Bäcker HC, Wu CH, Perka C, et al. Dual-energy computed tomography in spine fractures: A systematic review and meta-analysis. *Int J Spine Surg*. 2021 Jun;15(3):525-535. doi: 10.14444/8074. PMID: 33963025 PMCID: PMC8176828.

Clinical Guideline Revision History/Information

Original Date: April 29, 2022		
Review History		
Version 2	8/29/2024	Annual review and policy restructure.