

SPINE GUIDELINE



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Canadian Association of Radiologists
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ABBREVIATIONS

ACR	American College of Radiology
AGREE-II	Appraisal of Guidelines for Research & Evaluation Instrument
AI	Artificial Intelligence
CAR	Canadian Association of Radiologists
CT	Computed Tomography
EP	Expert Panel
EtD	Evidence to Decision
GRADE	Grading of Recommendations Assessment, Development and Evaluation
MRI	Magnetic Resonance Imaging
NICE	National Institute for Health and Care Excellence
NM	Nuclear Medicine
SPECT	Single-photon emission computed tomography
US	Ultrasound
XR	Radiograph



INTRODUCTION

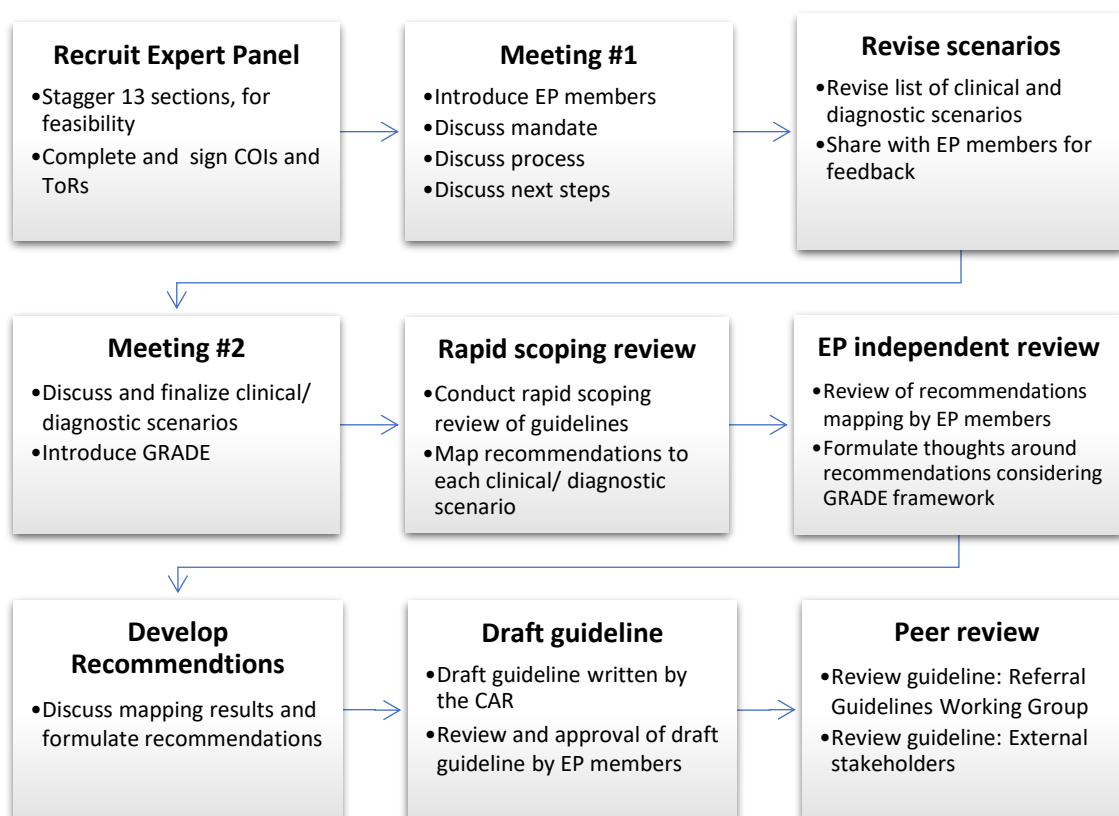
The diagnostic imaging referral recommendations from the Canadian Association of Radiologists (CAR) were published in 2012 (<https://car.ca/patient-care/referral-guidelines/>) and are considered out of date. These recommendations were made up of 13 sections, of which one was Spine. In 2020, the CAR, funded by the Canadian Medical Association (CMA), developed a plan to update the CAR diagnostic imaging referral recommendations. The project mandate is to develop a comprehensive set of evidenced-based diagnostic imaging referral guidelines suited for integration into Clinical Decision Support (CDS) systems.

An Expert Panel (EP) made up of physicians from the disciplines of radiology, emergency medicine, surgery, neurology, psychiatry, a

patient advisor, and an evidence review/guideline methodologist from across Canada met over a series of three meetings from January to May 2024.

The 6 clinical/diagnostic scenarios in the 2012 CAR recommendations were used as the starting point for discussions. After a review and update of these scenarios, a list of 14 clinical/diagnostic scenarios and subscenarios was created (one scenario pointing to the CAR Musculoskeletal guideline [1] and one scenario pointing to the CAR Trauma guideline [2]), which informed the systematic search strategy and rapid scoping review. This list was further refined to 10 scenarios.

The general process of the guideline development is presented in **Figure 1**.



Abbreviations: CAR = Canadian Association of Radiologists; COI = Conflict of Interest; EP = Expert Panel; GRADE = Grading of Recommendations Assessment, Development and Evaluation; ToR = Terms of Reference

Figure 1 - Guideline Development Process

WHO ARE THESE RECOMMENDATIONS FOR?

These recommendations are primarily for referring clinicians (e.g., physicians, nurse practitioners); however, they may also be used by radiologists, patients, and/or patient representatives.

The primary objective of the recommendations is to promote the most appropriate diagnostic imaging procedure(s), so that patients receive these procedure(s) at the right time, resulting in better health outcomes.

Scope

The guideline recommendations are to assist the choice of imaging modality in situations where it is felt clinically necessary to obtain imaging. Imaging should not delay definitive management. We did not cover serial imaging, and time intervals for follow-up of known disease and/or treatment monitoring.

DISCLAIMER

These recommendations are not intended to stand alone. Medical care should be based on evidence, a clinician's expert judgment, the patient's circumstances, values, and preferences, and resource availability.

We recognize that not all imaging modalities are available in all locations, particularly in rural or remote areas of Canada. Decisions about whether to recommend that a patient travel for recommended imaging or perform alternate imaging locally can be difficult, and should consider the expected benefits of recommended imaging, risks of travel, patient preference, and other factors. This guideline is based on evidence related to diagnostic imaging tests only, not the clinical management of a patient.

METHODS OF THE RAPID SCOPING REVIEW

The conduct of the systematic rapid scoping review was guided by empirical review guidance: the Joanna Briggs Institute scoping review guidance [3], the Cochrane Handbook [4], and the rapid review interim guidance from the Cochrane Rapid Review Methods Group [5].

Inclusion Criteria

Publications were included if they met the following criteria:

Guidelines: Providing diagnostic imaging recommendations for one or more of the clinical/diagnostic scenarios identified by the Spine Expert Panel.

Study design: Guidelines that were produced using three criteria in the AGREE-II assessment tool [6]:

- (1) Systematic methods were used to search for evidence: Searched and named at least 1 electronic database using an electronic search strategy (e.g., Medline, Embase, PubMed, CENTRAL);
- (2) The criteria for selecting the evidence are clearly described: Described a formal process for study selection; AND reported the inclusion and exclusion criteria; OR if it is based on a systematic review even if it does not provide explicit methods; and
- (3) The strengths and limitations of the body of evidence are clearly described: Performed critical appraisal on the included studies (e.g., risk of bias, describe study limitations); OR if it is based on a systematic review and GRADE is performed.

Interventions: Any diagnostic imaging modality (e.g., radiograph [XR], magnetic resonance imaging [MRI], computed tomography [CT], ultrasound [US], nuclear medicine [NM]) were included.

Date of publication: To identify the most recent guidelines, which would contain the most recently published primary studies, and for feasibility, we included guidelines that were published or updated in 2019 onward.

Language of publication: English, for feasibility.

Search

A systematic search strategy was developed by an experienced information specialist (**Appendix 1**) using the list of clinical/diagnostic scenarios identified by the Spine Expert Panel members. The search was run in Medline and Embase on February 20, 2024. The search was limited to publications from 2019 onward to capture the most recent guidelines, and for feasibility. There was no language restriction in the search. Supplemental searching included searching the following national radiology and/or guideline groups: the American College of Radiology (ACR), the National Institute for Health and Care Excellence (NICE).

Title/abstract screening

Using a standardized form in DistillerSR, an online systematic review software [7], one reviewer screened the records in prioritized order, using the artificial intelligence (AI) re-ranking tool in DistillerSR. A stop-screening approach was implemented once 95% of the predicted included studies were identified [8,9]. The AI reviewer tool in DistillerSR excluded the remaining records. The AI audit tool was run to identify any records that were excluded that had high score for inclusion (i.e., a prediction score of 0.85 and above). These records were rescreened to ensure that they should have been excluded. A second reviewer verified a random sample of 10% of the included records and 20% of the excluded records, without knowledge of the inclusion or exclusion decision by the first reviewer. Any disagreements were resolved through discussion. The AI audit tool was rerun,

and any records with a prediction score of ≥ 0.85 were rescreened.

Full text screening

Using a standardized form in DistillerSR, one reviewer evaluated the full texts of the guidelines against the eligibility criteria described above in the Inclusion Criteria.

Mapping

Recommendations were extracted from all included guidelines by one reviewer and presented in tabular form for each clinical/diagnostic scenario. A synopsis (i.e., a condensed version of the evidence table) for each clinical/diagnostic scenario was created based on the information in the evidence tables. These synopses highlighted the main recommendations across guidelines, with a focus on guidelines that used GRADE, and highlighted any discordant recommendations. These synopses were produced by the guideline methodologist and distributed to the EP members to help guide discussion when formulating the recommendations.

Critical appraisal

Each guideline was assessed for the level of quality using the AGREE-II instrument [6]. This was performed by one reviewer with a quality control check on a random sample of 10% of the guidelines.

FORMULATING RECOMMENDATIONS

A one-day virtual meeting was held on May 31, 2024. The Expert Panel members discussed each of the clinical scenarios using the information in the synopses as a guide. When required, the full evidence tables (**Appendix 2**) were consulted for additional information. During these discussions, there were modifications to the list of clinical/diagnostic scenarios by merging one with another. This resulted in a final list of 10 clinical/diagnostic scenarios.

NOTE: Details have been removed from Appendix 2 to comply with copyright protection. For additional information on these recommendations, please access the full publications.

The focus of these recommendations was to provide the recommendation for the initial imaging modality, and in some cases the next imaging modality or an alternative to the initial modality, in situations where the initial modality is negative, indeterminate, may not be available, or if additional imaging is required.

Specifying contrast protocols

Unless the panel agreed a specific protocol is required to optimize patient care/diagnosis, the recommendations do not specify when contrast should or should not be used, as this decision may vary based on clinical presentation, regional practice preferences, preference of the referring clinician, radiologist and the patient, and resource availability.

Grading of Recommendations Assessment, Development and Evaluation

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) for Guidelines framework [10,11] was used as a guide to determine the strength (i.e., strong, conditional) and direction (i.e., for, against) of the recommendation. As the GRADE methodology requires an Evidence to Decision (EtD) framework for each recommendation, this would not have been feasible as:

(i) We used recommendations from existing guidelines as our evidence base, thereby not allowing for full assessment of each outcome within the primary studies, including the five GRADE domains to evaluate the certainty of the evidence: risk of bias, indirectness, imprecision, inconsistency, and publication bias [12]. Therefore, this information was inferred by the level and strength of the

evidence provided in the included guidelines.

(ii) We covered 10 clinical/diagnostic scenarios in the Head and Neck section, which could have included several diagnostic imaging modality comparisons. This would have resulted in a minimum of 10 EtD frameworks, but realistically many more, as we would have had to create an EtD for each comparison (e.g., MRI vs CT, US vs CT, CT vs NM) within each clinical/diagnostic scenario.

Therefore, in addition to the diagnostic imaging recommendations presented by each included guideline, and the clinical expertise of the EP members, additional criteria were considered specific to the Canadian healthcare context:

- Certainty of the evidence (as presented in the included guidelines)
- Consideration of benefits and harms (e.g., ionizing radiation exposure)
- Values and preferences
- Equity, accessibility, and feasibility
- Resource use and costs

The strength and direction of the recommendations are represented by arrow directions and colours. Using GRADE as a guide [10], these can be interpreted as:

- **Strong recommendation (“recommend”), for (↑↑):** All or almost all informed people would want/recommend this intervention and only a small proportion would not. If this intervention is not offered, the patient or patient representative should request a discussion.
- **Conditional recommendation (“suggest”), for (↑):** Most informed people would choose/recommend this intervention, but a substantial number would not. This may be conditional upon patient values and preferences, the resources available or the

setting in which the intervention will be implemented.

- **Conditional recommendation (“suggest”), against (↓):** Most informed people would not choose/recommend this intervention, but a substantial number would. This may be conditional upon patient values and preferences, the resources available or the setting in which the intervention will be implemented.
- **Strong recommendation (“recommend”), against (↓↓):** All or almost all informed people would not want/recommend this intervention, but a small proportion would.

When there were no guidelines to support recommendations, the EP formulated recommendations based on their clinical expertise while considering values and preferences, resources, cost, equity, and accessibility. These recommendations are denoted with (EP consensus).

The recommendations for each clinical/diagnostic scenario are presented below, with reference to the guidelines that were included for that scenario. Recommendations are also summarized in tabular form in **Appendix 3**.

INCLUDED GUIDELINES

A total of 2654 unique records were identified through the electronic database. After reviewing 847 records, the AI reviewer excluded the remaining records (n=1807), as 95% of the predicted included records had been identified and the likelihood for inclusion of the remaining records was low (highest remaining prediction score of 4.2%). A second reviewer screened a set of randomly selected records (n=520) for verification (~10% of included and 20% of excluded records). Among these, there were three conflicts. These conflicts were resolved through discussion. An additional five records were added from the supplemental searching.

The full text for two records was not retrievable, and eight records were non-English publications (**Appendix 4**). Among the remaining 64 full texts that were screened for eligibility, 24 were not guidelines providing recommendations for spine imaging, 14 did not use systematic methods or sufficiently describe the methods used in the formulation of the guideline, and three were excluded for ‘other’ reasons. A list of excluded records with reasons is available upon request. Recommendations from 23 guidelines were included (**Figure 2 - PRISMA flow diagram**).

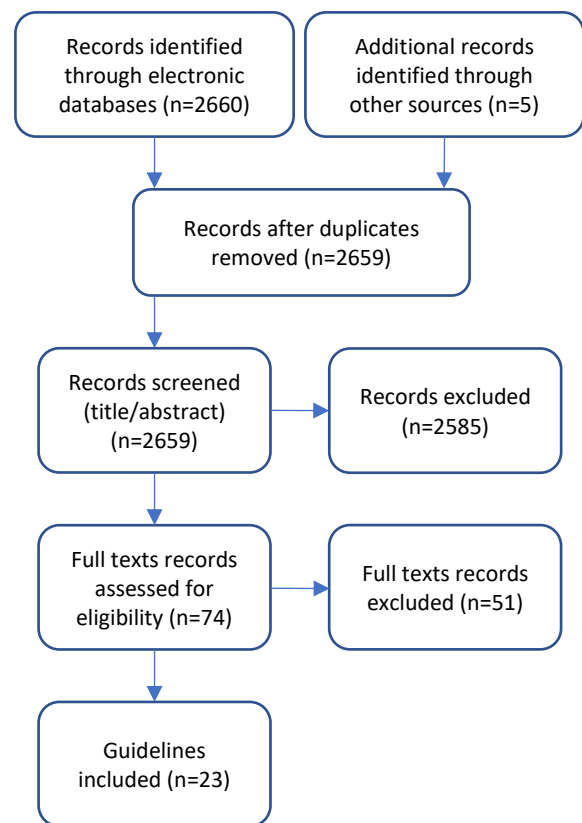


Figure 2 - PRISMA flow diagram

The number of guidelines included per clinical/diagnostic scenario ranged from one to 12 (**Appendix 2**).

Most guidelines were rated as moderate or high quality, using the AGREE-II tool (**Appendix 5**). Often, reasons for rating an item down were due to a lack of reporting.

LIMITATIONS OF THE RAPID SCOPING REVIEW

As the unit of inclusion for the rapid scoping review was guidelines, the recommendations were extracted as presented in the guidelines. We also extracted the level/certainty of the evidence based on the criteria presented in the completed guidelines. There were several tools/methods used to assess the level/certainty of the evidence, for example GRADE [12], the Oxford Centre for Evidence-based Medicine 2009 and 2011 [13,14], Level of Appropriateness (American College of Radiologists), consensus, or an adaptation/ modification of one or more methods. For feasibility, primary studies were not reviewed, and the level/certainty of the evidence was taken at face value from the guideline.

IONIZING RADIATION EXPOSURE

We have elected to not include any effective dose values (mSv), related metrics, or qualitative descriptors of radiation risk (e.g., symbol, risk level, approximate equivalent background radiation, lifetime additional risk of cancer induction/exam) for several reasons:

- 1) The Expert Panel members have considered the risks of ionizing radiation (i.e., GRADE for Guidelines benefits and harms) when formulating the recommendations.
- 2) The levels of ionizing radiation in modern medical imaging equipment should not unduly influence patient decision-making. The anticipated benefits of imaging to the patient, if a test is clinically indicated are likely to outweigh any potential small risks [15].
- 3) Per the following points, effective dose values and related metrics such as equivalent background radiation have very

large uncertainties, and their utility is thus limited:

- There is uncertainty in the relative values of the effective dose for a reference patient with variation in the standard error [16];
- Effective doses are measured using reference phantoms with population, age and sex-averaged tissue weighting factors [16], therefore these should not be considered as the doses received by specific individuals;
- The publications providing data used to estimate the effective dose per scan (e.g., International Commission on Radiological Protection (ICRP) 1990 [17], 2007 [18]) are occasionally updated and may impact the effective dose values;
- There is variation in the average dose from natural background radiation by geographic location. For example, in Canada, the average is 1.8 mSv/year, which ranges from 1.3 mSv/year in Vancouver to 4.1 mSv/year in Winnipeg [19]; and
- There are variables around the equipment (e.g., age) and facility (e.g., protocol) that may impact the actual amount of ionizing radiation exposure used for any particular exam.

EXTERNAL REVIEW

This guideline and its recommendations have been externally reviewed by members of the CAR Diagnostic Imaging Referral Guidelines Working Group (**Box 1**).

FUTURE RESEARCH IN THIS AREA

This guideline will be updated upon the emergence of new evidence that may change the validity of the recommendations.

We plan on developing Patient Friendly Summaries for some of the clinical/diagnostic

scenarios covered in this guideline. The selection of scenarios will be dependent on a prioritization exercise, as well as funding. These summaries will be made available on the CAR website (www.car.ca).

Box 1. CAR Diagnostic Imaging Referral Guideline Working Group Members

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Italicized name is a WG member who was also a member of the Spine Expert Panel.

SPINE CLINICAL/DIAGNOSTIC SCENARIOS

[SP01. Myelopathy](#)

[SP02. Suspected spinal infection](#)

[SP03. Possible atlanto-axial instability \(non-traumatic\)](#)

[SP04. Axial pain \(non-traumatic\)](#)

[SP05. Radicular pain \(non-traumatic\)](#)

[SP06. Cauda equina syndrome](#)

[SP07. Suspected spinal tumour](#)

[SP08. Suspected compression fracture \(non-traumatic\)](#)

[SP09. Spondyloarthropathies](#)

[SP10. Spine trauma](#)

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RECOMMENDATIONS

SP01. Myelopathy

Recommendations

1. In patients with non-traumatic acute onset myelopathy, we recommend **MRI** (↑↑).
 - ↳ **1.1** If MRI is unavailable or contraindicated, we suggest **CT** as an interim investigation until MRI is available (↑).
2. In patients with chronic or progressive myelopathy, we recommend **MRI** (↑↑).
 - ↳ **2.1** If MRI is unavailable or contraindicated, we suggest **CT** as an interim investigation until MRI is available (↑).
3. In patients with known malignancy or suspected secondary malignancy, refer to [SP07. Suspected spinal tumour](#).

For patients with traumatic injury, see CAR Trauma guideline [2], scenarios T05. Suspected cervical spine trauma in adults and T08. Suspected thoracolumbar fracture.

The 2024 CAR discussions to formulate these recommendations were informed by 5 guidelines: the 2012 CAR Spine section recommendations [20], the 2020 American College of Radiology Appropriateness Criteria® Myelopathy recommendations [21], the 2023 European Academy of Neurology/Peripheral Nerve Society Guideline Guillain-Barré syndrome recommendations [22], the 2021 European Academy of Neurology/Peripheral Nerve Society Guideline chronic inflammatory demyelinating polyradiculoneuropathy recommendations [23], and the 2020 National Institute for Health and Care Excellence multiple sclerosis recommendations [24] (**Appendix 2: Table SP01**).

SP02. Suspected spinal infection

Recommendations

1. In patients with suspected spinal infection, we recommend **MRI** (↑↑).
 - ↳ **1.1** If MRI is unavailable or contraindicated, we suggest **CT with contrast** as an interim investigation until MRI is available (↑).

The 2024 CAR discussions to formulate these recommendations were informed by 5 guidelines: the 2012 CAR Spine section recommendations [20], the 2019 American College of Radiology Appropriateness Criteria® Cervical neck pain or cervical radiculopathy recommendations [25], the 2021 American College of Radiology Appropriateness Criteria® Suspected spine infection recommendations [26], the 2023 Australia Guideline on Neurosyphilis [27], the 2019 European Association of Nuclear Medicine/ European Society of Neuroradiology and European Society of Clinical Microbiology and Infectious Diseases guideline on Spine infection (spondylodiscitis) [28] (**Appendix 2: Table SP02**).

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SP03. Possible atlanto-axial instability (non-traumatic)

Recommendations

1. In patients with non-traumatic possible atlanto-axial instability, we recommend **XR (flexion, extension)** as the initial imaging modality (↑↑).

For patients with traumatic injury, see CAR Trauma guideline [2], scenario T05. Suspected cervical spine trauma in adults.

The 2024 CAR discussions to formulate these recommendations were informed by 1 guideline: the 2012 CAR Spine section recommendations [20] (**Appendix 2: Table SP03**).

SP04. Axial pain (non-traumatic)

Recommendations

1. In patients with non-traumatic axial spine pain with no red flags[◇], we suggest **no routine imaging** (↓).
2. In patients with non-traumatic axial spine pain with no red flags[◇] when pain has not resolved after conservative treatment, we recommend **XR** as the initial imaging modality (↑↑).
3. In patients with non-traumatic axial spine with red flags[◇], refer to [SP01](#) for Myelopathy, [SP02](#) for Suspected spinal infection, [SP05](#) for Radicular pain, or [SP07](#) for Suspected spinal tumour (in patients with known malignancy or suspected secondary malignancy).
4. If concern for occult metastatic lesions, we recommend **MRI or NM** (bone scan)[†] (↑↑).

The choice of MRI or NM may differ based on the primary neoplasm or patient history.

[◇] Severe or progressive neurologic deficits (e.g., bowel or bladder function, saddle parasthesia), Fever, Sudden back pain with spinal tenderness (especially with history of osteoporosis, cancer, steroid use), Trauma, Serious underlying medical condition (e.g., cancer) [29]

[†] If vertebral body tumour or occult metastases are suspected, see *Musculoskeletal guideline* [1], scenarios M04. Bone tumour – Primary and M05. Bone tumour – Metastases.

For patients with traumatic injury, see CAR Trauma guideline [2], T05. Suspected cervical spine trauma in adults, T08. Suspected thoracolumbar fracture.

The 2024 CAR discussions to formulate these recommendations were informed by 12 guidelines: the 2012 CAR Spine section recommendations [20], the 2019 American College of Radiology Appropriateness Criteria® Cervical neck pain or cervical radiculopathy recommendations [25], the 2021 American College of Radiology Appropriateness Criteria® Low back pain guideline [30], the 2020 American Society of Interventional Pain Physicians guideline on chronic spinal pain [31], the 2021 Cervical Joint Working Group guideline on Cervical spine (facet) joint pain [32], the 2021 Japanese Orthopaedic Association guideline on lumbar disc herniation [33], the 2021 Japanese Orthopaedic Association guideline on lumbar spinal stenosis [34], the 2019 Japanese Orthopaedic Association guideline on low back pain [35], the 2020 Lumbar Facet Intervention Guidelines Committee on lumbar facet joint pain [36], the NICE guideline on low back pain and sciatica [37], the 2020 North American Spine Society guideline on

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low back pain [38], and the 2019 Veterans Affairs and U.S. Department of Defense 2019 [39] guideline on low back pain (**Appendix 2: Table SP04**).

SP05. Radicular pain (non-traumatic)

Recommendations

1. In patients with non-traumatic radicular spine pain with no red flags[◇], we suggest **no routine imaging** (↓).
2. In patients with non-traumatic radicular spine pain with red flags[◇] when pain has not resolved after conservative treatment, we recommend **MRI** as the initial imaging modality (↑↑).
 - ↳ **2.1** If MRI is unavailable or contraindicated, we suggest **CT** as an interim investigation for lumbar radiculopathy until MRI is available (↑).
 - ↳ **2.2** For cervical or thoracic radiculopathy, we do not suggest **CT** (EP consensus).
3. In patients with known malignancy or suspected secondary malignancy, refer to [SP07. Suspected spinal tumour](#).

[◇] Severe or progressive neurologic deficits (e.g., bowel or bladder function, saddle paresthesia), Fever, Sudden back pain with spinal tenderness (especially with history of osteoporosis, cancer, steroid use), Trauma, Serious underlying medical condition (e.g., cancer) [29]

For patients with traumatic injury, see CAR Trauma guideline [2], T05. Suspected cervical spine trauma in adults, T08. Suspected thoracolumbar fracture.

The 2024 CAR discussions to formulate these recommendations were informed by 3 guidelines: the 2012 CAR Spine section recommendations [20], the 2021 American College of Radiology Appropriateness Criteria® Cervical neck pain or cervical radiculopathy [25], and the 2021 American College of Radiology Appropriateness Criteria® Low back pain guideline [30] (**Appendix 2: Table SP05**).

SP06. Cauda equina syndrome

Recommendations

1. In patients with cauda equina syndrome, we recommend **MRI** in an urgent/expedited manner (↑↑).
 - ↳ **1.1** If MRI is unavailable or contraindicated, we suggest **CT** as an interim investigation until MRI is available (↑).

CT has a high negative predictive value.

The 2024 CAR discussions to formulate these recommendations were informed by 3 guidelines: the 2012 CAR Spine section recommendations [20], the 2021 American College of Radiology Appropriateness Criteria® Low back pain guideline [30], the 2021 American College of Radiology Appropriateness Criteria® Suspected spine infection recommendations [26], (**Appendix 2: Table SP06**).

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SP07. Suspected spinal tumour

Recommendations

1. In patients with suspected spinal tumour (intradural/extramedullary and intramedullary), we recommend **MRI** as the initial imaging modality (↑↑).
 - ↳ **1.1** If MRI is unavailable or contraindicated, we recommend **CT or CT myelography** as an alternative (↑↑).

For vertebral body tumour, see Musculoskeletal guideline [1], scenarios M04. Bone tumour – Primary and M05. Bone tumour – Metastases.

The 2024 CAR discussions to formulate these recommendations were informed by 3 guidelines: the 2021 American College of Radiology Appropriateness Criteria® Primary bone tumors guideline [40], the 2021 ESMO-EURACAN-GENTURIS-ERN PaedCan guideline on Bone sarcomas [41], and the 2023 Polish Society of Spine Surgery, the Polish Society of Oncology, the Polish Society of Neurosurgeons, the Polish Society of Oncologic Surgery, the Polish Society of Oncologic Radiotherapy, and the Polish Society of Orthopaedics guideline on Spinal tumours [42] (**Appendix 2: Table SP07**).

SP08. Suspected compression fracture (non-traumatic)

Recommendations

1. In patients with non-traumatic suspected compression fracture, we recommend **XR or CT** as the initial imaging modality (↑↑).

Recommendation for XR or CT may be based on patient presentation (e.g., severity, clinical factors such as inability to position patient).

For patients with traumatic injury, see CAR Trauma guideline [2], T05. Suspected cervical spine trauma in adults and T08. Suspected thoracolumbar fracture.

The 2024 CAR discussions to formulate these recommendations were informed by 1 guideline: the 2022 American College of Radiology Appropriateness Criteria® Vertebral compression fractures guideline [43] (**Appendix 2: Table SP08**).

SP09. Spondyloarthropathies

For Spondyloarthropathy, see the 2023 CAR Musculoskeletal guideline [1].

SP10. Spine trauma

For suspected cervical spine trauma and suspected thoracolumbar fracture, see the 2023 CAR Trauma guideline [2].

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APPENDIX 1. SEARCH STRATEGIES

Spinal Conditions – Imaging

2024 Feb 20

Ovid Multifile

Database: Embase Classic+Embase <1947 to 2024 February 19>, Ovid MEDLINE(R) ALL <1946 to February 19, 2024>
Search Strategy:

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1 exp Spinal Diseases/ (470906)
2 exp Spinal Cord Diseases/ (511781)
3 ((spinal or spine?) adj3 (disease? or disorder? or dysfunction? or syndrome?)).tw,kw,kf. (47046)
4 exp Leukoencephalopathies/ (46167)
5 (leukoencephalopath* or leuko-encephalopath* or leuko-encephalo-path* or leukoencephalo-path*).tw,kw,kf. (23154)
6 (ataxia? adj3 ((CNS or central nervous system) adj2 (hypomyelinat* or hypo-myelinat*))).tw,kw,kf. (103)
7 ((CACH or CACH VWM) adj3 (disease? or disorder? or dysfunction? or syndrome?)).tw,kw,kf. (55)
8 ((white matter or VWM) adj3 (disease? or disorder? or dysfunction? or syndrome?)).tw,kw,kf. (7917)
9 ((white matter or VWM) adj3 (leukodystroph* or leuko-dystroph*)).tw,kw,kf. (262)
10 vanishing white matter?.tw,kw,kf. (793)
11 myelinosis centralis diffusa.tw,kw,kf. (0)
12 ((spinal cord? or spinal nerve?) adj3 (disease? or disorder? or dysfunction? or neuropath* or neuro-path* or syndrome?)).tw,kw,kf. (17279)
13 (myelopath* or myelo-path* or neuromyelopath or neuro-myelopath or neuro-myelo-path* or neuromyelo-path*).tw,kw,kf. (40731)
14 ((spine? or spinal) adj (neuropath* or neuro-path*)).tw,kw,kf. (164)
15 ((noninfectious or non-infectious) adj3 myelitis).tw,kw,kf. (26)
16 exp Demyelinating Diseases/ (360186)
17 (demyelinati* or de-myelinati*).tw,kw,kf. (99814)
18 clinically isolated syndrome?.tw,kw,kf. (6297)
19 ((spine? or spinal) adj3 schistosomia*).tw,kw,kf. (208)
20 Tabes Dorsalis/ (1708)
21 (tabes adj (dorsalis or spinalis)).tw,kw,kf. (1307)
22 ((meningomyelitis* or meningo-myelitis* or spine? or spinal) adj3 syphili*).tw,kw,kf. (222)
23 (myelosityphili* or myelo-syphili* or neurosyphili* or neuro-syphili*).tw,kw,kf. (7194)
24 (locomotor ataxia* or loco-motor ataxia*).tw,kw,kf. (152)
25 exp Central Nervous System Infections/ and (exp Spine/ or Spinal Cord/) (8267)
26 (Bone Diseases, Infectious/ or Osteomyelitis/) and exp Spine/ (4074)
27 ((disc or discs or disk or disks or vertebr* or spinal or spine?) adj3 (infection? or inflam* or osteomyelit#s or osteo-myelit#s)).tw,kw,kf. (20599)

28 Discitis/ (5244)
29 (dis#itis or spondylodis#itis or spondylo-dis#itis).tw,kw,kf. (9465)
30 Epidural Abscess/ (6147)
31 ((epidura* or extradura* or extra-dura* or spinal or spine? or subdura* or sub-dura*) adj3 (abscess* or empty?ema* or infection* or inflam*)).tw,kw,kf. (23890)
32 exp Myelitis/ (122890)
33 (myelitis or poliomyelitis or polio-myelitis or postpoliomyelitis or post-poliomyelitis or post-polio-myelitis or postpolio-myelitis or polio encephalitis or infantile paraly#s).tw,kw,kf. (57286)
34 Atlanto-Axial Joint/ab [abnormalities] (248)
35 (atlantoaxial instabilit* or atlanto-axial instabilit* or atlantoaxial subluxation? or atlanto-axial subluxation?).tw,kw,kf. (4567)
36 (AAI and atlanto*).tw,kw,kf. (230)
37 ((misalign* or mis-align*) adj3 (cervical spine? or cervical vertebra*)).tw,kw,kf. (17)
38 exp Back Pain/ (190238)
39 ((back or cervical or neck? or radicular* or radiculo* or spinal or spine? or thora* or vertebr*) adj3 (ache? or aching or pain*)).tw,kw,kf. (233802)
40 (backache? or neckache?).tw,kw,kf. (8573)
41 (cervicalgi* or cervicodyn*).tw,kw,kf. (656)
42 (radiculopath* or radiculit#s).tw,kw,kf. (22780)
43 Cauda Equina Syndrome/ (3617)
44 Cauda Equina/ and (disease? or disorder? or dysfunction? or myelopath* or myeloneuropath* or myeloneuro-path* or myelo-neuropath* or myelo-neuro-path* or pain or syndrome?).ti,kw,kf. (1882)
45 ((cauda or caudal) adj2 syndrome).tw,kw,kf. (5738)
46 (Pain/ or Acute Pain/ or Chronic Pain/) and (exp Spine/ or Spinal Cord/) (29150)
47 ((spinal or spine?) adj3 pain*).tw,kw,kf. (22125)
48 Polyradiculopathy/ (12210)
49 (polyradiculopath* or polyradiculopath* or polyradiculit#s or poly-radiculit#s).tw,kw,kf. (2368)
50 Spinal Neoplasms/ (19250)
51 exp Spinal Cord Neoplasms/ (30948)
52 ((spinal or spine? or epidural*) adj3 (adenocarcinoma* or adeno-carcinoma* or cancer* or carcinoma* or malignan* or mass\$2 or neoplas* or tumor*r*)).tw,kw,kf. (33175)
53 Astrocytoma/ (42316)
54 Ependymoma/ (18433)
55 Lipoma/ (32634)
56 Meningioma/ (62502)
57 exp Neurofibroma/ (50521)
58 Syringomyelia/ (11426)
59 (astrocytom* or astro-cytom* or ependymom* or ependy-mom* or lipoma* or meningiom* or neurofibrom* or neuro-fibrom* or hydrosyringomyeli* or hydro-syringomyeli* or hydro-syringo-myeli* or hydrosyringo-myeli* or syringomyelia* or syringo-myelia* or syringomyelus or syringo-myelus).tw,kw,kf. (208198)

Appendix 1. Search Strategies

- 60 Pneumorrhachis/ (312)
61 pneumor?hachis.tw,kw,kf. (506)
62 Spinal Cord Compression/ (32185)
63 ((spinal or spine?) adj3 compress*).tw,kw,kf. (27271)
64 (myelopath* adj3 compress*).tw,kw,kf. (2587)
65 (Conus Medullaris adj (disease? or disorder? or syndrome?)).tw,kw,kf. (229)
66 Spinal Fractures/ (34238)
67 ((spinal or spine?) adj3 (break* or broke? or fractur*).tw,kw,kf. (22140)
68 compress* fracture?.tw,kw,kf. (14516)
69 exp Spinal Cord Vascular Diseases/ (14511)
70 ((spinal or spine?) adj3 isch?emi*).tw,kw,kf. (8987)
71 (hematomyelia? or hemato-myelia? or spinal artery dissection? or spinal artery syndrome?).tw,kw,kf. (1038)
72 exp Muscular Atrophy, Spinal/ (80351)
73 ((spinal or spine? or progressive) adj3 (muscular atroph* or amyotroph* or amyotroph*).tw,kw,kf. (21810)
74 ((bulbospatial or bulbo-spinal or hereditary motor) adj3 (neuronopath* or neuronopath*).tw,kw,kf. (203)
75 exp Spinocerebellar Degenerations/ (17846)
76 ((spine or spinal or spino* or cerebellar or cerebellar or cerebello-lental) adj degeneration?).tw,kw,kf. (7594)
77 ((cerebellar or cerebellar or hereditary or Marinesco-Garland) adj3 ataxia?).tw,kw,kf. (21529)
78 ((Garland-Moorhouse or Marinesco-Garland or Marinesco-Sjogren or Marinesco-Sjogren-Garland) adj (disease? or disorder? or syndrome?)).tw,kw,kf. (444)
79 Stiff-Person Syndrome/ (2166)
80 (stiff adj (baby or limb or limbs or man or person or trunk)).tw,kw,kf. (3156)
81 stiffman.tw,kw,kf. (43)
82 ((familial or family or hereditary or inherited) adj (hyperekplexia? or hyper-ekplexia?)).tw,kw,kf. (158)
83 ((Moersch-Woltmann or Startle) adj (disease? or disorder? or syndrome?)).tw,kw,kf. (424)
84 Subacute Combined Degeneration/ (703)
85 ((subacute or sub-acute) adj2 combined adj2 degenerati*).tw,kw,kf. (1581)
86 Amyotrophic Lateral Sclerosis/ (74989)
87 amyotrophic lateral sclero*.tw,kw,kf. (74094)
88 (ALS and (amyotrophic or lateral or sclero*).tw,kw,kf. (51825)
89 (charcot adj (disease? or disorder? or syndrome?)).tw,kw,kf. (95)
90 (Gehrig* adj (disease? or disorder? or syndrome?)).tw,kw,kf. (528)
91 Guam Disease.tw,kw,kf. (13)
92 ((spine or spinal or disc? or disk?) adj3 (degenerat* or degrad* or displac* or hernia* or protrud* or protrusi* or prolaps* or slipped)).tw,kw,kf. (87142)
93 Ossification of Posterior Longitudinal Ligament/ (2885)
94 (posterior longitudinal ligament? adj3 (calcif* or calcinos* or ossif*).tw,kw,kf. (4737)
95 Platybasia/ (1867)
96 (platybasia* or platy-basia* or basilar impression?).tw,kw,kf. (1443)
97 Posterior Cervical Sympathetic Syndrome/ (71)
98 (posterior cervical sympathetic adj (disease? or disorder? or syndrome?)).tw,kw,kf. (121)
99 (Barre-Lieou adj3 (disease? or disorder? or syndrome?)).tw,kw,kf. (275)
100 exp Spinal Curvatures/ (357210)
101 ((spinal or spine?) adj3 (curvature? or deform*).tw,kw,kf. (28962)
102 (hyperkyphos#s or hyper-kyphos#s or kyphos#s or lordos#s or scolios#s).tw,kw,kf. (97024)
103 (Scheuermann* adj (disease? or disorder? or syndrome?)).tw,kw,kf. (1223)
104 exp Spinal Osteochondrosis/ (2587)
105 ((spinal or spine?) adj3 (osteochondro* or osteochondro*).tw,kw,kf. (908)
106 exp Spinal Osteophytosis/ (4250)
107 ((spinal or spine?) adj3 (osteophytos#s or osteophytos#s).tw,kw,kf. (140)
108 Spinal Stenosis/ (14984)
109 ((spinal or spine?) adj3 stenosis#s).tw,kw,kf. (20444)
110 exp Spondylitis/ (129975)
111 spondylit#s.tw,kw,kf. (57372)
112 exp Spondylosis/ (20218)
113 (spondylos#s or spondylolys#s or spondylolisthes#s or spondylolisthes#s or spondylo-listhes#s or olisthes#s).tw,kw,kf. (28389)
114 or/1-113 [SPINAL CONDITIONS OF INTEREST] (1959459)
115 Diagnostic Imaging/ (302152)
116 dg.fs. [diagnostic imaging] (1481052)
117 (diagnos* adj3 (image? or imaging)).tw,kw,kf. (148257)
118 (x-ray* or xray*).tw,kw,kf. (1013646)
119 Image Interpretation, Computer-Assisted/ (92275)
120 exp Imaging, Three-Dimensional/ (224450)
121 ((3D or 3-D or 3-dimension* or three dimension*) adj (image? or imaging)).tw,kw,kf. (52047)
122 exp Ultrasonography/ (1532653)
123 (ultrasound* or ultrasonograph* or ultrasonograph* or ultrasonic* or ultra-sonic*).tw,kw,kf. (1189680)
124 (echograph* or echo-graph* or echotomograph* or echo-tomograph* or echosonograph* or echosonograph*).tw,kw,kf. (26765)
125 exp Radiography/ (2736590)
126 (radiograph* or radiographic imag* or roentgenograph* or roentgeno-graph*).tw,kw,kf. (657740)
127 (fluoroscop* or fluoro-scop*).tw,kw,kf. (95356)
128 exp Radionuclide Imaging/ (458991)
129 ((radionuclide* adj2 imag*) or (radio-nuclide* adj2 imag*) or (radionuclide* adj2 scan*) or (radio-nuclide* adj2 scan*) or (radioisotope* adj2 imag*) or (radioisotope* adj2 scan*) or (radio-isotope* adj2 scan*) or scintigra* or scinti-gra* or scintiphotograph* or scinti-photograph* or scintiscan* or

Appendix 1. Search Strategies

- scinti-scan* or scanograph* or lymphoscintigra* or lympho-scintigra*).tw,kw,kf. (160590)
- 130 exp Tomography/ (3578100)
- 131 (tomograph* or tomo-graph*).tw,kw,kf. (1262144)
- 132 (CAT scan* or CT scan* or PET scan* or PET imag* or PT scan* or PT imag*).tw,kw,kf. (428568)
- 133 (SPECTCT or SPECT CT or "SPECT/CT").tw,kw,kf. (19601)
- 134 (magnetic resonance imag* or MRI or MRIs or fMRI or fMRIs or NMR imag* or chemical shift imag* or magnetization transfer contrast imag* or spin echo imag* or zeugmatograph* or zeugmato-graph*).tw,kw,kf. (1369490)
- 135 (cineradiograph* or cine-radiograph* or cinefluorograph* or cine-fluorograph* or radiocinematograph* or radio-cinematograph*).tw,kw,kf. (4250)
- 136 Nuclear Medicine/ (46433)
- 137 ((nuclear or atomic) adj1 medicine?).tw,kw,kf. (50609)
- 138 (nuclear adj1 radiolog*).tw,kw,kf. (1424)
- 139 (sialogra* or salivogra* or sialoscintigra* or sialoscintigra*).tw,kw,kf. (3406)
- 140 (enteroclys* or enterogra*).tw,kw,kf. (6696)
- 141 (esophagra* or oesophagra* or esophagogra* or oesophagogra*).tw,kw,kf. (7594)
- 142 ((CT or virtual) adj colonoscop*).tw,kw,kf. (1972)
- 143 (contrast adj (study or studies or medium)).tw,kw,kf. (48124)
- 144 (cholangiopancreatogra* or cholangio-pancreatogra* or ERCP or MRCP).tw,kw,kf. (60699)
- 145 cholecystogra*.tw,kw,kf. (5503)
- 146 (angiograph* or angio-graph* or angiogram* or angio-gram*).tw,kw,kf. (602023)
- 147 (perfusion adj3 (image? or imaging)).tw,kw,kf. (45039)
- 148 or/115-147 [IMAGING] (8857475)
- 149 114 and 148 [SPINAL CONDITIONS OF INTEREST AND IMAGING] (602236)
- 150 exp Animals/ not Humans/ (17735021)
- 151 149 not 150 [ANIMAL-ONLY REMOVED] (488775)
- 152 (case reports or address or autobiography or bibliography or biography or comment or dictionary or directory or editorial or "expression of concern" or festschrift or historical article or interactive tutorial or lecture or legal case or legislation or news or newspaper article or patient education handout or personal narrative or portrait or video-audio media or webcast or (letter not (letter and randomized controlled trial))).pt. (7137060)
- 153 151 not 152 [IRRELEVANT PUBLICATION TYPES REMOVED] (396221)
- 154 exp Guidelines as Topic/ (909768)
- 155 exp Clinical Protocols/ (317129)
- 156 Guideline.pt. (16379)
- 157 Practice Guideline.pt. (31142)
- 158 standards.fs. (767752)
- 159 Consensus Development Conference.pt. (12377)
- 160 Consensus Development Conference, NIH.pt. (801)
- 161 (consensus or guideline* or guidance? or standards or recommendation*).ti,kw,kf. (575876)
- 162 (expert consensus or consensus statement* or consensus conference* or clinical guideline? or practice guideline? or treatment guideline? or practice parameter* or position statement* or policy statement* or CPG or CPGs).tw,kw,kf. (328280)
- 163 or/154-162 [GUIDELINE FILTER] (2333576)
- 164 153 and 163 [GUIDELINES] (10192)
- 165 limit 164 to yr="2019-current" [DATE LIMIT APPLIED] (4228)
- 166 165 use medall [MEDLINE RECORDS] (820)
- 167 exp spine disease/ (327413)
- 168 exp spinal cord disease/ (511781)
- 169 ((spinal or spine?) adj3 (disease? or disorder? or dysfunction? or syndrome?)).tw,kw,kf. (47046)
- 170 leukodystrophy/ (3388)
- 171 leukoencephalopathy/ (11615)
- 172 vanishing white matter disease/ (2813)
- 173 (leukoencephalopath* or leuko-encephalopath* or leuko-encephalo-path* or leukoencephalo-path*).tw,kw,kf. (23154)
- 174 (ataxia? adj3 ((CNS or central nervous system) adj2 (hypomyelinat* or hypo-myelinat*))).tw,kw,kf. (103)
- 175 ((CACH or CACH VWM) adj3 (disease? or disorder? or dysfunction? or syndrome?)).tw,kw,kf. (55)
- 176 ((white matter or VWM) adj3 (disease? or disorder? or dysfunction? or syndrome?)).tw,kw,kf. (7917)
- 177 ((white matter or VWM) adj3 (leukodystroph* or leuko-dystroph*)).tw,kw,kf. (262)
- 178 vanishing white matter?.tw,kw,kf. (793)
- 179 myelinosis centralis diffusa.tw,kw,kf. (0)
- 180 ((spinal cord? or spinal nerve?) adj3 (disease? or disorder? or dysfunction? or neuropath* or neuro-path* or syndrome?)).tw,kw,kf. (17279)
- 181 (myelopath* or myelo-path* or neuromyelopath or neuro-myelopath or neuro-myelo-path* or neuromyelo-path*).tw,kw,kf. (40731)
- 182 ((spine? or spinal) adj (neuropath* or neuro-path*)).tw,kw,kf. (164)
- 183 ((noninfectious or non-infectious) adj3 myelitis).tw,kw,kf. (26)
- 184 exp demyelinating disease/ (360186)
- 185 (demyelinati* or de-myelinati*).tw,kw,kf. (99814)
- 186 clinically isolated syndrome?.tw,kw,kf. (6297)
- 187 ((spine? or spinal) adj3 schistosomia*).tw,kw,kf. (208)
- 188 tabes dorsalis/ (1708)
- 189 (tabes adj (dorsalis or spinalis)).tw,kw,kf. (1307)
- 190 ((meningomyelitis* or meningo-myelitis* or spine? or spinal) adj3 syphili*).tw,kw,kf. (222)
- 191 (myelosyphili* or myelo-syphili* or neurosyphili* or neuro-syphili*).tw,kw,kf. (7194)
- 192 (locomotor ataxia* or loco-motor ataxia*).tw,kw,kf. (152)
- 193 exp central nervous system infection/ and (exp spine/ or exp spinal cord/) (9046)

Appendix 1. Search Strategies

- 194 (bone infection/ or exp osteomyelitis/) and exp spine/ (4916)
- 195 exp spinal cord infection/ (2102)
- 196 ((disc or discs or disk or disks or vertebr* or spinal or spine?) adj3 (infection? or inflam* or osteomyelit#s or osteo-myelit#s)).tw,kw,kf. (20599)
- 197 diskitis/ (6223)
- 198 (dis#itis or spondylodis#itis or spondylo-dis#itis).tw,kw,kf. (9465)
- 199 exp epidural abscess/ (6284)
- 200 ((epidura* or extradura* or extra-dura* or spinal or spine? or subdura* or sub-dura*) adj3 (abscess* or empy?ema* or infection* or inflam*)).tw,kw,kf. (23890)
- 201 exp myelitis/ (122890)
- 202 (myelitis or poliomyelitis or polio-myelitis or postpoliomyelitis or post-poliomyelitis or post-polio-myelitis or postpolio-myelitis or polio encephalitis or infantile paraly#s).tw,kw,kf. (57286)
- 203 (atlantoaxial instabilit* or atlanto-axial instabilit* or atlantoaxial subluxation? or atlanto-axial subluxation?).tw,kw,kf. (4567)
- 204 (AAI and atlanto*).tw,kw,kf. (230)
- 205 ((misalign* or mis-align*) adj3 (cervical spine? or cervical vertebra*)).tw,kw,kf. (17)
- 206 exp backache/ (144301)
- 207 ((back or cervical or neck? or radicular* or radiculo* or spinal or spine? or thora* or vertebr*) adj3 (ache? or aching or pain*)).tw,kw,kf. (233802)
- 208 (backache? or neckache?).tw,kw,kf. (8573)
- 209 (cervicalgi* or cervicodini*).tw,kw,kf. (656)
- 210 cauda equina syndrome/ (3617)
- 211 cauda equina/ and (disease? or disorder? or dysfunction? or myelopath* or myeloneuropath* or myeloneuro-path* or myelo-neuropath* or myelo-neuro-path* or pain or syndrome?).ti,kw,kf. (1882)
- 212 ((cauda or caudal) adj2 syndrome).tw,kw,kf. (5738)
- 213 (pain/ or exp chronic pain/) and (exp spine/ or exp spinal cord/) (33107)
- 214 spinal pain/ (4480)
- 215 ((spinal or spine?) adj3 pain*).tw,kw,kf. (22125)
- 216 radiculopathy/ (19104)
- 217 radicular pain/ (5576)
- 218 exp polyradiculoneuropathy/ (37754)
- 219 (polyradiculopath* or polyradiculopath* or polyradiculit#s or poly-radiculit#s).tw,kw,kf. (2368)
- 220 (radiculopath* or radiculit#s).tw,kw,kf. (22780)
- 221 spine tumor/ (6200)
- 222 exp spinal cord tumor/ (30948)
- 223 ((spinal or spine? or epidural*) adj3 (adenocarcinoma* or adeno-carcinoma* or cancer* or carcinoma* or malignan* or mass\$2 or neoplas* or tumo?r*)).tw,kw,kf. (33175)
- 224 exp astrocytoma/ (161821)
- 225 exp ependymoma/ (19566)
- 226 exp lipoma/ (46321)
- 227 exp meningioma/ (63800)
- 228 exp neurofibroma/ (50521)
- 229 exp syringomyelia/ (11473)
- 230 (astrocytom* or astro-cytom* or ependymom* or ependy-mom* or lipoma* or meningiom* or neurofibrom* or neuro-fibrom* or hydrosyringomyeli* or hydro-syringomyeli* or hydro-syringo-myeli* or hydrosyringo-myeli* or syringomyelia* or syringo-myelia* or syringomyelus or syringo-myelus).tw,kw,kf. (208198)
- 231 pneumorachis/ (251)
- 232 pneumor?hachis.tw,kw,kf. (506)
- 233 spinal cord compression/ (32185)
- 234 ((spinal or spine?) adj3 compress*).tw,kw,kf. (27271)
- 235 (myelopath* adj3 compress*).tw,kw,kf. (2587)
- 236 (Conus Medullaris adj (disease? or disorder? or syndrome?)).tw,kw,kf. (229)
- 237 exp spine fracture/ (40293)
- 238 ((spinal or spine?) adj3 (break* or broke? or fractur*)).tw,kw,kf. (22140)
- 239 compress* fracture?.tw,kw,kf. (14516)
- 240 exp spinal cord vascular disease/ (14511)
- 241 ((spinal or spine?) adj3 isch?emi*).tw,kw,kf. (8987)
- 242 (hematomyelia? or hemato-myelia? or spinal artery dissection? or spinal artery syndrome?).tw,kw,kf. (1038)
- 243 exp spinal muscular atrophy/ (80351)
- 244 ((spinal or spine? or progressive) adj3 (muscular atroph* or amyotroph* or amyo-troph*)).tw,kw,kf. (21810)
- 245 ((bulbospinal or bulbo-spinal or hereditary motor) adj3 (neuronopath* or neurono-path*)).tw,kw,kf. (203)
- 246 spinocerebellar degeneration/ (8472)
- 247 ((spine or spinal or spino* or cerebellar or cerebellar or cerebello-lental) adj degeneration?).tw,kw,kf. (7594)
- 248 ((cerebellar or cere-bellar or hereditary or Marinesco-Garland) adj3 ataxia?).tw,kw,kf. (21529)
- 249 ((Garland-Moorhouse or Marinesco-Garland or Marinesco-Sjogren or Marinesco-Sjogren-Garland) adj (disease? or disorder? or syndrome?)).tw,kw,kf. (444)
- 250 stiff man syndrome/ (2740)
- 251 (stiff adj (baby or limb or limbs or man or person or trunk)).tw,kw,kf. (3156)
- 252 stiffman.tw,kw,kf. (43)
- 253 ((familial or family or hereditary or inherited) adj (hyperekplexia? or hyper-ekplexia?)).tw,kw,kf. (158)
- 254 ((Moersch-Woltmann or Startle) adj (disease? or disorder? or syndrome?)).tw,kw,kf. (424)
- 255 subacute combined degeneration/ (703)
- 256 ((subacute or sub-acute) adj2 combined adj2 degenerati*).tw,kw,kf. (1581)
- 257 amyotrophic lateral sclerosis/ (74989)
- 258 amyotrophic lateral sclero*.tw,kw,kf. (74094)
- 259 (ALS and (amyotrophic or lateral or sclero*)).tw,kw,kf. (51825)
- 260 neuropathic joint disease/ (3095)
- 261 (charcot adj (disease? or disorder? or syndrome?)).tw,kw,kf. (95)
- 262 (Gehrig* adj (disease? or disorder? or syndrome?)).tw,kw,kf. (528)
- 263 Guam Disease.tw,kw,kf. (13)

Appendix 1. Search Strategies

- 264 exp intervertebral disk hernia/ (31342)
- 265 ((spine or spinal or disc? or disk?) adj3 (degenerat* or degrad* or displac* or hernia* or protrud* or protrusi* or prolaps* or slipped)).tw,kw,kf. (87142)
- 266 ligament calcinosis/ (2338)
- 267 (posterior longitudinal ligament? adj3 (calcif* or calcinos* or ossif*)).tw,kw,kf. (4737)
- 268 basilar impression/ (1907)
- 269 (platybasia* or platy-basia* or basilar impression?).tw,kw,kf. (1443)
- 270 posterior cervical sympathetic syndrome/ (71)
- 271 (posterior cervical sympathetic adj (disease? or disorder? or syndrome?)).tw,kw,kf. (121)
- 272 (Barre-Lieou adj3 (disease? or disorder? or syndrome?)).tw,kw,kf. (275)
- 273 exp spine malformation/ (20051)
- 274 ((spinal or spine?) adj3 (curvature? or deform*)).tw,kw,kf. (28962)
- 275 (hyperkyphos#s or hyper-kyphos#s or kyphos#s or lordos#s or scolios#s).tw,kw,kf. (97024)
- 276 Scheuermann disease/ (2538)
- 277 (Scheuermann* adj (disease? or disorder? or syndrome?)).tw,kw,kf. (1223)
- 278 ((spinal or spine?) adj3 (osteochondro* or osteo-chondro*)).tw,kw,kf. (908)
- 279 spinal osteophytosis/ (3469)
- 280 ((spinal or spine?) adj3 (osteophytos#s or osteo-phytos#s)).tw,kw,kf. (140)
- 281 exp vertebral canal stenosis/ (17082)
- 282 ((spinal or spine?) adj3 stenosis).tw,kw,kf. (20444)
- 283 exp spondylitis/ (129975)
- 284 spondylit#s.tw,kw,kf. (57372)
- 285 exp spondylosis/ (20218)
- 286 (spondylos#s or spondylolys#s or spondylithes#s or spondylolisthes#s or spondylo-listhes#s or olisthes#s).tw,kw,kf. (28389)
- 287 or/167-286 [SPINAL CONDITIONS OF INTEREST] (2047647)
- 288 diagnostic imaging/ (302152)
- 289 (diagnos* adj3 (image? or imaging)).tw,kw,kf. (148257)
- 290 (x-ray* or xray*).tw,kw,kf. (1013646)
- 291 computer assisted tomography/ (929833)
- 292 computer assisted diagnosis/ (68654)
- 293 exp three-dimensional imaging/ (224450)
- 294 ((3D or 3-D or 3-dimension* or three dimension*) adj (image? or imaging)).tw,kw,kf. (52047)
- 295 exp echography/ (1532653)
- 296 (ultrasound* or ultrasonograph* or ultra-sonograph* or ultrasonic* or ultra-sonic*).tw,kw,kf. (1189680)
- 297 (echograph* or echo-graph* or echotomograph* or echo-tomograph* or echosonograph* or echo sonograph*).tw,kw,kf. (26765)
- 298 exp radiography/ (2736590)
- 299 (radiograph* or radiographic imag* or roentgenograph* or roentgeno-graph*).tw,kw,kf. (657740)
- 300 (fluoroscop* or fluoro-scop*).tw,kw,kf. (95356)
- 301 exp scintiscanning/ (219525)
- 302 ((radionuclide* adj2 imag*) or (radio-nuclide* adj2 imag*) or (radionuclide* adj2 scan*) or (radio-nuclide* adj2 scan*) or (radioisotope* adj2 imag*) or (radio-isotope* adj2 scan*) or (radioisotope* adj2 scan*) or (radio-isotope* adj2 scan*) or scintigra* or scinti-gra* or scintiphotograph* or scinti-photograph* or scintiscan* or scinti-scan* or scanograph* or lymphoscintigra* or lympho-scintigra*).tw,kw,kf. (160590)
- 303 exp tomography/ (3578100)
- 304 (tomograph* or tomo-graph*).tw,kw,kf. (1262144)
- 305 (CAT scan* or CT scan* or PET scan* or PET imag* or PT scan* or PT imag*).tw,kw,kf. (428568)
- 306 (SPECTCT or SPECT CT or "SPECT/CT").tw,kw,kf. (19601)
- 307 (magnetic resonance imag* or MRI or MRIs or fMRI or fMRIs or NMR imag* or chemical shift imag* or magneti#ation transfer contrast imag* or spin echo imag* or zeugmatograph* or zeugmato-graph*).tw,kw,kf. (1369490)
- 308 (cineradiograph* or cine-radiograph* or cinefluorograph* or cine-fluorograph* or radiocinematograph* or radio-cinematograph*).tw,kw,kf. (4250)
- 309 nuclear medicine/ (46433)
- 310 ((nuclear or atomic) adj1 medicine?).tw,kw,kf. (50609)
- 311 (nuclear adj1 radiolog*).tw,kw,kf. (1424)
- 312 (sialogra* or salivogra* or sialoscintigra* or sialo-scintigra*).tw,kw,kf. (3406)
- 313 (enteroclys* or enterogra*).tw,kw,kf. (6696)
- 314 (esophagra* or oesophagra* or esophagogra* or oesophagogra*).tw,kw,kf. (7594)
- 315 ((CT or virtual) adj colonoscop*).tw,kw,kf. (1972)
- 316 (contrast adj (study or studies or medium)).tw,kw,kf. (48124)
- 317 (cholangiopancreatogra* or cholangio-pancreatogra* or ERCP or MRCP).tw,kw,kf. (60699)
- 318 cholecystogra*.tw,kw,kf. (5503)
- 319 (angiograph* or angio-graph* or angiogram* or angio-gram*).tw,kw,kf. (602023)
- 320 (perfusion adj3 (image? or imaging)).tw,kw,kf. (45039)
- 321 or/288-320 [IMAGING] (8712948)
- 322 287 and 321 [SPINAL CONDITIONS OF INTEREST AND IMAGING] (605359)
- 323 (exp animal/ or exp animal model/ or exp animal experiment/ or nonhuman/ or exp vertebrate/) not (exp human/ or exp human experiment/) (13363091)
- 324 322 not 323 [ANIMAL-ONLY REMOVED] (588598)
- 325 (conference abstract or editorial or letter).pt. (9083649)
- 326 case report/ or exp case study/ or directory/ (5553898)
- 327 324 not (325 or 326) [OPINION PIECES, IRRELEVANT PUBLICATION TYPES REMOVED] (298032)
- 328 exp practice guideline/ (767786)

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329 (consensus or guideline* or guidance? or standards or recommendation*).ti,kw,kf. (575876)
330 (expert consensus or consensus statement* or consensus conference* or clinical guideline? or practice guideline? or treatment guideline? or practice parameter* or position statement* or policy statement* or CPG or CPGs).tw,kw,kf. (328280)
331 or/328-330 [GUIDELINE FILTER] (1375120)
332 327 and 331 [SPINAL CONDITIONS OF INTEREST AND IMAGING - GUIDELINES] (7560)
333 limit 332 to yr="2019-current" [DATE LIMIT APPLIED] (2792)
334 333 use emczd [EMBASE RECORDS] (2307)
335 166 or 334 [BOTH DATABASES] (3127)
336 remove duplicates from 335 (2660) [TOTAL UNIQUE RECORDS]
337 336 use medall [MEDLINE UNIQUE RECORDS] (815)
338 336 use emczd [EMBASE UNIQUE RECORDS] (1845)

APPENDIX 2. EVIDENCE TABLES

Table SP01. Myelopathy

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
CT: computed tomography; IV: intravenous; MRI: magnetic resonance imaging; US: ultrasound	
CAR 2012 [20]	C01. MYELOPATHY <ul style="list-style-type: none"> - MRI: Indicated [B]: MRI is the best imaging modality for evaluating suspected spinal cord lesions and possible cord compression. - CT: Specialized investigation [B]: CT is usually indicated only if better bony detail is required. - CT myelography: Specialized investigation [C]: CT myelography may be required if MRI is contraindicated or a diagnostic dilemma remains after CT or MRI.
ACR 2020 [21] (Agarwal et al)	MYELOPATHY <ul style="list-style-type: none"> ▪ Variant 1. Acute onset myelopathy. Initial imaging. ▪ Variant 2. Chronic or progressive myelopathy. Initial imaging.
European Academy of Neurology/Peripheral Nerve Society Guideline 2023 [22] (van Doorn et al)	GUILLAIN–BARRÉ SYNDROME <ul style="list-style-type: none"> - Nerve MRI or US - MRI nerve root enhancement - US or MRI - Whole spine MRI with contrast
European Academy of Neurology/Peripheral Nerve Society Guideline 2021 [23] (van der Bergh et al)	CHRONIC INFLAMMATORY DEMYELINATING POLYRADICULONEUROPATHY <ul style="list-style-type: none"> - US - MRI
NICE 2020 (NG220) [24]	MULTIPLE SCLEROSIS <ul style="list-style-type: none"> - MRI - 2017 revised McDonald criteria

Abbreviations: ACR: American College of Radiologists; CAR: Canadian Association of Radiologists; NICE: National Institute for Health and Care Excellence

Table SP02. Suspected spinal infection

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
<p>CT: computed tomography; FDG-PET: fluorodeoxyglucose-positron emission tomography; MRI: magnetic resonance imaging; NM: nuclear medicine; PET: positron emission tomography</p>	
<p>CAR 2012 [20]</p>	<p>C02. SUSPECTED DISCITIS OR VERTEBRAL OSTEOMYELITIS</p> <ul style="list-style-type: none"> - MRI: Indicated [B]: MRI is the best imaging modality for evaluating suspected discitis or osteomyelitis. - CT: Specialized investigation [B]: CT is usually indicated only if better bony detail is required. - NM: Indicated in specific circumstances: If MRI is contraindicated or the findings equivocal, a combined bone and gallium scintigraphy is helpful. The combination of bone and gallium scanning is more specific than MRI especially in the postoperative or post instrumentation setting. It can also be used to assess the presence of residual infection after therapy.
<p>ACR 2019 [25] (McDonald et al)</p>	<p>CERVICAL NECK PAIN OR CERVICAL RADICULOPATHY</p> <ul style="list-style-type: none"> ▪ Variant 4. Suspicion for infection with new or increasing nontraumatic cervical or neck pain or radiculopathy. Initial imaging.
<p>ACR 2021 [26] (Ortiz et al.)</p>	<p>SUSPECTED SPINE INFECTION</p> <ul style="list-style-type: none"> ▪ Variant 1. Suspected spine infection (such as epidural abscess or discitis osteomyelitis), with new or worsening back or neck pain, with or without fever, who may have one or more of the following red flags (diabetes mellitus, IV drug use, cancer, HIV, or dialysis) or abnormal lab values. Initial imaging. ▪ Variant 3. Suspected spine infection (such as epidural abscess or discitis osteomyelitis), with new neurologic deficit or cauda equina syndrome. Initial imaging. ▪ Variant 4. Suspected spine infection (such as epidural abscess or discitis osteomyelitis), with decubitus ulcer or wound overlying spine. Initial imaging.
<p>Australian Guideline 2023 [27] (Birrell et al)</p>	<p>NEUROSYPHYLIS</p> <ul style="list-style-type: none"> - CT - MRI
<p>EANM/ESNR and ESCMID 2019 [28] (Lazzeri et al)</p>	<p>SPINE INFECTION (SPONDYLODISCITIS)</p> <ul style="list-style-type: none"> - Plain film X-ray - MRI - CT - [¹⁸F] FDG-PET/CT - Hybrid PET/MRI

Abbreviations: ACR: American College of Radiologists; CAR: Canadian Association of Radiologists; EANM: European Association of Nuclear Medicine; ESNR: European Society of Neuroradiology; ESCMID: European Society of Clinical Microbiology and Infectious Diseases

Table SP03. Possible atlanto-axial instability (non-traumatic)

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
MRI: magnetic resonance imaging; XR: radiograph	
CAR 2012 [20]	C03. POSSIBLE ATLANTO-AXIAL INSTABILITY <ul style="list-style-type: none"><li data-bbox="493 367 1898 423">- XR: Indicated [B]: Lateral cervical spine XRs in flexion and extension are the appropriate imaging to assess possible cervical spine instability in patients with rheumatoid arthritis, Down’s syndrome, etc.<li data-bbox="493 430 1898 449">- MRI: Specialized investigation [B]: MRI is valuable to show cord damage secondary to chronic atlanto-axial instability

Abbreviations: CAR: Canadian Association of Radiologists

Table SP04. Axial pain (non-traumatic)

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
<p>CT: computed tomography; MRI: magnetic resonance imaging; SPECT: single-photon emission computed tomography; XR: radiography</p>	
<p>CAR 2012 [20]</p> <p>If there is clinical concern about an epidural abscess or hematoma which may present with acute pain but no neurological symptoms, urgent imaging is required.</p> <p>Red flag indications:</p> <ul style="list-style-type: none"> - Suspected cancer - Suspected infection - Cauda equina syndrome - Severe/progressive neurological deficit - Suspected compression fracture 	<p>C04. NECK PAIN, BRACHIALGIA, DEGENERATIVE CHANGE</p> <ul style="list-style-type: none"> - MRI: Indicated [B]: Imaging is only indicated when there are neurological signs or symptoms, or if pain persists after conservative management for more than four weeks. - CT: Indicated only in specific circumstances [B]: CT is indicated only when MRI is contraindicated or not available. - XR: Not indicated [B]: Degenerative changes begin to appear on XR in early middle age and are usually unrelated to the patient’s symptoms. <p>C05. PAIN WITHOUT TRAUMA</p> <ul style="list-style-type: none"> - XR: Indicated only in specific circumstances [B]: XR may be used if a compression fracture or a metastasis is suspected. However, it does not distinguish between an acute and an old fracture and it is not as sensitive as MRI for metastases. - Nuclear medicine bone scan with SPECT (+/- CT): Indicated only in specific circumstances [B]: When malignancy is suspected or known, in osteoporotic patients especially to determine age of compression fractures, to aid in selection of vertebral levels for vertebroplasty, to evaluate patients in whom other investigations of the T-Spine are negative (assessment of chest wall, ribs etc). - MRI: Indicated only in specific circumstances [B]: If there is clinical concern about an epidural abscess or hematoma which may be present with acute pain but no neurological symptoms, urgent MRI imaging is required. Imaging is otherwise only indicated when there are neurological signs or symptoms, or if pain persists after conservative management for more than four weeks. - CT: Indicated only in specific circumstances [B]: CT is only indicated if MRI is contraindicated or unavailable, or if more bony detail is necessary. <p>C06. LOWER BACK PAIN</p> <ul style="list-style-type: none"> - MRI: Indicated only in special circumstances [B]: If imaging is indicated, MRI is the best modality. Imaging is only indicated if there are “red flag” indications. In patients with suspected uncomplicated herniated disc or spinal stenosis imaging is only indicated after an unsuccessful 4- 6 week trial of conservative management. - CT: Indicated in special circumstances [B]: Imaging is only indicated if there are “red flag” indications. In patients with suspected uncomplicated herniated disc or spinal stenosis imaging is only indicated after an unsuccessful 4- 6 week trial of conservative management. CT is only indicated if MRI is contraindicated or unavailable. CT can provide excellent imaging. In very large patients, image noise can be a problem. The radiation dose is also a consideration. - XR: Indicated only in specific circumstances [B]: XR may be used if a compression fracture or a metastasis is suspected. However, it does not distinguish between an acute and an old fracture and it is not as sensitive as MRI for metastases. - NM: Indicated in specific circumstances [B]: When malignancy is suspected or known, in osteoporotic patients especially to determine age of compression fractures, to aid in selection of vertebral levels for vertebroplasty, or to evaluate patients in whom other investigations of the L-Spine are negative. NM can be useful to localize fractures not visible on conventional XR.

Appendix 2. Evidence Tables

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
CT: computed tomography; MRI: magnetic resonance imaging; SPECT: single-photon emission computed tomography; XR: radiography	
ACR 2019 [25] (McDonald et al)	CERVICAL NECK PAIN OR CERVICAL RADICULOPATHY <ul style="list-style-type: none"> ▪ Variant 1. New or increasing nontraumatic cervical or neck pain. No “red flags.” Initial imaging. ▪ Variant 6. Cervicogenic headache and new or increasing nontraumatic cervical or neck pain. No neurologic deficit. Initial imaging. ▪ Variant 7. Chronic cervical or neck pain. Initial imaging.
ACR 2021 [30] (Hutchins et al)	LOW BACK PAIN <ul style="list-style-type: none"> ▪ Variant 1. Acute low back pain with or without radiculopathy. No red flags. No prior management. Initial imaging. ▪ Variant 2. Subacute or chronic low back pain with or without radiculopathy. No red flags. No prior management. Initial imaging. ▪ Variant 6. Low back pain with or without radiculopathy. One or more of the following: low-velocity trauma, osteoporosis, elderly individual, or chronic steroid use. Initial imaging. ▪ Variant 7. Low back pain with or without radiculopathy. One or more of the following: suspicion of cancer, infection, or immunosuppression. Initial imaging.
Cervical Joint Working Group 2021 [32] (Hurley et al)	CERVICAL SPINE (FACET) JOINT PAIN <ul style="list-style-type: none"> - Radiological imaging modalities
American Society of Interventional Pain Physicians 2020 [31] (Manchikanti et al)	CHRONIC SPINAL PAIN <ul style="list-style-type: none"> - SPECT - MRI - CT
Japanese Orthopaedic Association 2021 [33] (Haro et al)	LUMBAR DISC HERNIATION <ul style="list-style-type: none"> - MRI - Myelography - CT
Japanese Orthopaedic Association 2021 [34] (Kawakami et al)	LUMBAR SPINAL STENOSIS <ul style="list-style-type: none"> - MRI
Japanese Orthopaedic Association 2019 [35] (Shirado et al)	LOW BACK PAIN <ul style="list-style-type: none"> - XR - MRI
Lumbar Facet Intervention Guidelines Committee 2020 [36] (Cohen et al)	LUMBAR FACET JOINT PAIN <ul style="list-style-type: none"> - SPECT - Scintigraphy - MRI - CT

Appendix 2. Evidence Tables

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
CT: computed tomography; MRI: magnetic resonance imaging; SPECT: single-photon emission computed tomography; XR: radiography	
NICE 2020 (NG59) [37]	LOW BACK PAIN AND SCIATICA - Imaging
North American Spine Society 2020 [38] (Kreiner et al)	LOW BACK PAIN - Imaging
Veterans Affairs and U.S. Department of Defense 2019 [39] (Pangarkar et al)	LOW BACK PAIN - Imaging

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists; NICE: National Institute for Health and Care Excellence

Table SP05. Radicular pain (non-traumatic)

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
CT: computed tomography; MRI: magnetic resonance imaging; SPECT: single-photon emission computed tomography; XR: radiography	
<p>CAR 2012 [20]</p> <p>If there is clinical concern about an epidural abscess or hematoma which may present with acute pain but no neurological symptoms, urgent imaging is required.</p> <p>Red flag indications:</p> <ul style="list-style-type: none"> - Suspected cancer - Suspected infection - Cauda equina syndrome - Severe/progressive neurological deficit - Suspected compression fracture 	<p>C04. NECK PAIN, BRACHIALGIA, DEGENERATIVE CHANGE</p> <ul style="list-style-type: none"> - MRI: Indicated [B]: Imaging is only indicated when there are neurological signs or symptoms, or if pain persists after conservative management for more than four weeks. - CT: Indicated only in specific circumstances [B]: CT is indicated only when MRI is contraindicated or not available. - XR: Not indicated [B]: Degenerative changes begin to appear on XR in early middle age and are usually unrelated to the patient’s symptoms. <p>C05. PAIN WITHOUT TRAUMA</p> <ul style="list-style-type: none"> - XR: Indicated only in specific circumstances [B]: XR may be used if a compression fracture or a metastasis is suspected. However, it does not distinguish between an acute and an old fracture and it is not as sensitive as MRI for metastases. - Nuclear medicine bone scan with SPECT (+/- CT): Indicated only in specific circumstances [B]: When malignancy is suspected or known, in osteoporotic patients especially to determine age of compression fractures, to aid in selection of vertebral levels for vertebroplasty, to evaluate patients in whom other investigations of the T-Spine are negative (assessment of chest wall, ribs etc). - MRI: Indicated only in specific circumstances [B]: If there is clinical concern about an epidural abscess or hematoma which may be present with acute pain but no neurological symptoms, urgent MRI imaging is required. Imaging is otherwise only indicated when there are neurological signs or symptoms, or if pain persists after conservative management for more than four weeks. - CT: Indicated only in specific circumstances [B]: CT is only indicated if MRI is contraindicated or unavailable, or if more bony detail is necessary. <p>C06. LOWER BACK PAIN</p> <ul style="list-style-type: none"> - MRI: Indicated only in special circumstances [B]: If imaging is indicated, MRI is the best modality. Imaging is only indicated if there are “red flag” indications. In patients with suspected uncomplicated herniated disc or spinal stenosis imaging is only indicated after an unsuccessful 4- 6 week trial of conservative management. - CT: Indicated in special circumstances [B]: Imaging is only indicated if there are “red flag” indications. In patients with suspected uncomplicated herniated disc or spinal stenosis imaging is only indicated after an unsuccessful 4- 6 week trial of conservative management. CT is only indicated if MRI is contraindicated or unavailable. CT can provide excellent imaging. In very large patients, image noise can be a problem. The radiation dose is also a consideration. - XR: Indicated only in specific circumstances [B]: XR may be used if a compression fracture or a metastasis is suspected. However, it does not distinguish between an acute and an old fracture and it is not as sensitive as MRI for metastases. - NM: Indicated in specific circumstances [B]: When malignancy is suspected or known, in osteoporotic patients especially to determine age of compression fractures, to aid in selection of vertebral levels for vertebroplasty, or to evaluate patients in whom other investigations of the L-Spine are negative. NM can be useful to localize fractures not visible on conventional XR.

Appendix 2. Evidence Tables

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
CT: computed tomography; MRI: magnetic resonance imaging; SPECT: single-photon emission computed tomography; XR: radiography	
ACR 2019 [25] (McDonald et al)	CERVICAL NECK PAIN OR CERVICAL RADICULOPATHY <ul style="list-style-type: none">▪ Variant 2. New or increasing nontraumatic cervical radiculopathy. No “red flags.” Initial imaging.▪ Variant 9. Chronic cervical or neck pain without or with radiculopathy. Radiographs show ossification in the posterior longitudinal ligament (OPLL). Next imaging study.

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists

Table SP06. Cauda equina syndrome

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
CT: computed tomography; MRI: magnetic resonance imaging; NM: nuclear medicine; XR: radiography	
CAR 2012 [20]	This is addressed as a red flag under C06. LOWER BACK PAIN If there is clinical concern about an epidural abscess or hematoma which may present with acute pain but no neurological symptoms, urgent imaging is required. Red flag indications: Suspected cancer; Suspected infection; <u>Cauda equina syndrome</u> ; Severe/progressive neurological deficit; Suspected compression fracture C06. LOWER BACK PAIN <ul style="list-style-type: none"> - MRI: Indicated only in special circumstances [B]: If imaging is indicated, MRI is the best modality. Imaging is only indicated if there are “red flag” indications. In patients with suspected uncomplicated herniated disc or spinal stenosis imaging is only indicated after an unsuccessful 4-6 week trial of conservative management. - CT: Indicated in special circumstances [B]: Imaging is only indicated if there are “red flag” indications. In patients with suspected uncomplicated herniated disc or spinal stenosis imaging is only indicated after an unsuccessful 4-6 week trial of conservative management. CT is only indicated if MRI is contraindicated or unavailable. CT can provide excellent imaging. In very large patients, image noise can be a problem. The radiation dose is also a consideration. - XR: Indicated only in specific circumstances [B]: XR may be used if a compression fracture or a metastasis is suspected. However, it does not distinguish between an acute and an old fracture and it is not as sensitive as MRI for metastases. - NM: Indicated in specific circumstances [B]: When malignancy is suspected or known, in osteoporotic patients especially to determine age of compression fractures, to aid in selection of vertebral levels for vertebroplasty, or to evaluate patients in whom other investigations of the L-Spine are negative. NM can be useful to localize fractures not visible on conventional XR.
ACR 2021 [30] (Hutchins et al)	LOW BACK PAIN <ul style="list-style-type: none"> ▪ Variant 4. Low back pain with suspected cauda equina syndrome. Initial imaging.
ACR 2021 [26] (Ortiz et al.)	SUSPECTED SPINE INFECTION <ul style="list-style-type: none"> ▪ Variant 3. Suspected spine infection (such as epidural abscess or discitis osteomyelitis), with new neurologic deficit or cauda equina syndrome. Initial imaging.

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists

Table SP07. Suspected spinal tumour

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
CT: computed tomography; MRI: magnetic resonance imaging; PET: positron emission tomography; XR: radiograph	
CAR 2012 [20]	Not covered in 2012 guideline.
ACR 2020 [40] (Bestic et al)	PRIMARY BONE TUMORS <ul style="list-style-type: none"> ▪ Variant 1. Suspect primary bone tumor. Initial imaging. ▪ Variant 2. Suspect primary bone tumor. Radiographs negative or do not explain symptoms. Next imaging study. ▪ Variant 6. “Incidental” osseous lesion on MRI or CT scan for unrelated indication. Suspect primary bone tumor. Not clearly benign. Next imaging study.
ESMO-EURACAN- GENTURIS-ERN PaedCan 2021 [41] (Strauss et al)	BONE SARCOMAS <ul style="list-style-type: none"> - XR - MRI - CT
Polish Societies 2023 [42] (Maciejczak et al)	SPINAL TUMOURS <ul style="list-style-type: none"> - MRI - CT - Scintigraphy - PET

Abbreviations: CAR: Canadian Association of Radiologists; ESMO-EURACAN-GENTURIS-ERN PaedCan: European Society for Medical Oncology-European Reference Network for Rare Adult Solid Cancers-European Reference Network for Genetic Tumour Risk Syndromes European Reference Network for Paediatric Oncology

Table SP08. Suspected compression fracture (non-traumatic)

Guideline Group	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered
CAR 2012 [20]	Not covered in the 2012 guideline.
ACR 2022 [43] (Khan et al)	<p>VERTEBRAL COMPRESSION FRACTURES</p> <ul style="list-style-type: none"> ▪ Variant 1. New symptomatic vertebral compression fracture (VCF) identified on radiographs. No known malignancy. Next imaging study. ▪ Variant 2. New symptomatic VCF identified on radiographs. History of malignancy. Next imaging study. ▪ Variant 3. New back pain. Previously treated VCF or multiple VCFs. Initial Imaging. ▪ Variant 4. Asymptomatic VCF identified on radiographs. History of malignancy. Next imaging study.

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists

APPENDIX 3A. SPINE SUMMARY OF RECOMMENDATIONS (ENGLISH)

Clinical/ Diagnostic Scenario	Recommendations	Strength of Rec.
<p>CT: computed tomography; MRI: magnetic resonance imaging; NM: nuclear medicine; US: ultrasound; XR: radiography Strength of Recommendation: ↑↑: strong for; ↑: conditional for; ↓↓: strong against; ↓: conditional against; EPC: Expert Panel consensus</p>		
SP01. MYELOPATHY		
<p><i>For patients with traumatic injury, see T05. Suspected cervical spine trauma in adults and T08. Suspected thoracolumbar fracture [2].</i></p>	<p>1. In patients with non-traumatic <u>acute onset</u> myelopathy, we recommend MRI.</p>	↑↑
	<p>↳ 1.1 If MRI is unavailable or contraindicated, we suggest CT as an interim investigation until MRI is available.</p>	↑
	<p>2. In patients with <u>chronic or progressive</u> myelopathy, we recommend MRI.</p>	↑↑
	<p>↳ 2.1 If MRI is unavailable or contraindicated, we suggest CT as an interim investigation until MRI is available.</p>	↑
	<p>3. In patients with known malignancy or suspected secondary malignancy, refer to SP07. Suspected spinal tumour.</p>	
	SP02. SUSPECTED SPINAL INFECTION	
	<p>1. In patients with suspected spinal infection, we recommend MRI.</p>	↑↑
	<p>↳ 1.1 If MRI is unavailable or contraindicated, we suggest CT with contrast as an interim investigation until MRI is available.</p>	↑
SP03. POSSIBLE ATLANTO-AXIAL INSTABILITY (NON-TRAUMATIC)		
<p><i>For patients with traumatic injury, see T05. Suspected cervical spine trauma in adults [2].</i></p>	<p>1. In patients with non-traumatic possible atlanto-axial instability, we recommend XR (flexion, extension) as the initial imaging modality.</p>	↑↑
SP04. AXIAL PAIN (NON-TRAUMATIC)		
<p><i>For patients with traumatic injury, see T05. Suspected cervical spine trauma in adults and T08. Suspected thoracolumbar fracture [2].</i></p>	<p>1. In patients with non-traumatic axial spine pain <u>with no red flags</u>[‡], we suggest no routine imaging.</p>	↓
	<p>2. In patients with non-traumatic axial spine pain <u>with no red flags</u>[‡] when pain has not resolved after conservative treatment, we recommend XR as the initial imaging modality.</p>	↑↑
	<p>3. In patients with non-traumatic axial spine <u>with red flags</u>[‡], refer to SP01 for Myelopathy, SP02 for Suspected spinal infection, SP05 for Radicular pain, or SP07 for Suspected spinal tumour (in patients with known malignancy or suspected secondary malignancy).</p>	
	<p>4. If concern for occult metastatic lesions, we recommend MRI or NM (bone scan)[†]. <i>The choice of MRI or NM may differ based on the primary neoplasm or patient history.</i> [†] If vertebral body tumour or occult metastases are suspected, see M04. Bone tumour – Primary and M05. Bone tumour – Metastases [1].</p>	↑↑

The guideline recommendations are to assist the choice of imaging modality in situations where it is felt clinically necessary to obtain imaging. Imaging should not delay definitive management. Whether or not imaging is indicated is outside the scope of this guideline. Additionally, we did not cover serial imaging, and time intervals for follow-up of known disease and/or treatment monitoring. These recommendations are not intended to stand alone. Medical care should be based on evidence, a clinician’s expert judgment, the patient’s circumstances, values, and preferences, and resource availability. We recognize that not all imaging modalities are available in all locations, particularly in rural or remote areas of Canada. Decisions about whether to recommend that a patient travel for recommended imaging or perform alternate imaging locally can be difficult, and should consider the expected benefits of recommended imaging, risks of travel, patient preference, and other factors. This guideline is based on evidence related to diagnostic imaging tests only, not the clinical management of a patient.

Appendix 3A. Spine summary of recommendations (English)

Clinical/ Diagnostic Scenario	Recommendations	Strength of Rec.
<p>CT: computed tomography; MRI: magnetic resonance imaging; NM: nuclear medicine; US: ultrasound; XR: radiography Strength of Recommendation: ↑↑: strong for; ↑: conditional for; ↓↓: strong against; ↓: conditional against; EPC: Expert Panel consensus</p>		
	<p>✦ Severe or progressive neurologic deficits (e.g., bowel or bladder function, saddle parasthesia), Fever, Sudden back pain with spinal tenderness (especially with history of osteoporosis, cancer, steroid use), Trauma, Serious underlying medical condition (e.g., cancer) [29]</p>	
SP05. RADICULAR PAIN (NON-TRAUMATIC)		
<p><i>For patients with traumatic injury, see T05. Suspected cervical spine trauma in adults, T08. Suspected thoracolumbar fracture [2].</i></p>	<p>1. In patients with non-traumatic radicular spine pain <u>with no red flags</u>[✦], we suggest no routine imaging.</p>	↓
	<p>2. In patients with non-traumatic radicular spine pain <u>with red flags</u>[✦] when pain has not resolved after conservative treatment, we recommend MRI as the initial imaging modality.</p>	↑↑
	<p>↳ 2.1 If MRI is unavailable or contraindicated, we suggest CT as an interim investigation for lumbar radiculopathy until MRI is available.</p>	↑
	<p>↳ 2.2 For cervical or thoracic radiculopathy, we do not suggest CT.</p>	EPC
	<p>3. In patients with known malignancy or suspected secondary malignancy, refer to SP07. Suspected spinal tumour.</p>	
<p>✦ Severe or progressive neurologic deficits (e.g., bowel or bladder function, saddle parasthesia), Fever, Sudden back pain with spinal tenderness (especially with history of osteoporosis, cancer, steroid use), Trauma, Serious underlying medical condition (e.g., cancer) [29]</p>		
SP06. CAUDA EQUINA SYNDROME		
	<p>1. In patients with cauda equina syndrome, we recommend MRI in an urgent/expedited manner.</p>	↑↑
	<p>↳ 1.1 If MRI is unavailable or contraindicated, we suggest CT as an interim investigation until MRI is available. <i>CT has a high negative predictive value.</i></p>	↑
SP07. SUSPECTED SPINAL TUMOUR		
<p><i>For vertebral body tumour, see M04. Bone tumour – Primary and M05. Bone tumour – Metastases [1].</i></p>	<p>1. In patients with suspected spinal tumour (intradural/extramedullary and intramedullary), we recommend MRI as the initial imaging modality.</p>	↑↑
	<p>↳ 1.1 If MRI is unavailable or contraindicated, we recommend CT or CT myelography as an alternative.</p>	↑↑
SP08. SUSPECTED COMPRESSION FRACTURE (NON-TRAUMATIC)		
<p><i>For patients with traumatic injury, see T05. Suspected cervical spine trauma in adults and T08. Suspected thoracolumbar fracture [2].</i></p>	<p>1. In patients with non-traumatic suspected compression fracture, we recommend XR or CT as the initial imaging modality. <i>Recommendation for XR or CT may be based on patient presentation (e.g., severity, clinical factors such as inability to position patient).</i></p>	↑↑

The guideline recommendations are to assist the choice of imaging modality in situations where it is felt clinically necessary to obtain imaging. Imaging should not delay definitive management. Whether or not imaging is indicated is outside the scope of this guideline. Additionally, we did not cover serial imaging, and time intervals for follow-up of known disease and/or treatment monitoring. These recommendations are not intended to stand alone. Medical care should be based on evidence, a clinician's expert judgment, the patient's circumstances, values, and preferences, and resource availability. We recognize that not all imaging modalities are available in all locations, particularly in rural or remote areas of Canada. Decisions about whether to recommend that a patient travel for recommended imaging or perform alternate imaging locally can be difficult, and should consider the expected benefits of recommended imaging, risks of travel, patient preference, and other factors. This guideline is based on evidence related to diagnostic imaging tests only, not the clinical management of a patient.

Appendix 3A. Spine summary of recommendations (English)

Clinical/ Diagnostic Scenario	Recommendations	Strength of Rec.
CT: computed tomography; MRI: magnetic resonance imaging; NM: nuclear medicine; US: ultrasound; XR: radiography Strength of Recommendation: ↑↑: strong for; ↑: conditional for; ↓↓: strong against; ↓: conditional against; EPC: Expert Panel consensus		
SP09. SPONDYLOARTHROPATHIES		
	See 2023 CAR Musculoskeletal guideline [1].	
SP10. SPINE TRAUMA		
	See 2023 CAR Trauma guideline [2].	

The guideline recommendations are to assist the choice of imaging modality in situations where it is felt clinically necessary to obtain imaging. Imaging should not delay definitive management. Whether or not imaging is indicated is outside the scope of this guideline. Additionally, we did not cover serial imaging, and time intervals for follow-up of known disease and/or treatment monitoring. These recommendations are not intended to stand alone. Medical care should be based on evidence, a clinician’s expert judgment, the patient’s circumstances, values, and preferences, and resource availability. We recognize that not all imaging modalities are available in all locations, particularly in rural or remote areas of Canada. Decisions about whether to recommend that a patient travel for recommended imaging or perform alternate imaging locally can be difficult, and should consider the expected benefits of recommended imaging, risks of travel, patient preference, and other factors. This guideline is based on evidence related to diagnostic imaging tests only, not the clinical management of a patient.

APPENDIX 3B. SPINE SUMMARY OF RECOMMENDATIONS (FRENCH)

Scénario clinique/diagnostique	Recommandations	Force
<p>IRM : imagerie par résonance magnétique; MN : médecine nucléaire; TDM : tomodensitométrie</p> <p>Force de la recommandation : ↑↑ : fortement recommandé; ↑ : recommandé dans certain cas; ↓↓ : fortement déconseillé; ↓ : déconseillé dans certains cas; EPC : consensus d'un panel d'experts</p>		
SP01. MYÉLOPATHIE		
<p><i>Dans le cas de patients présentant une lésion traumatique, se référer au scénario T05 (Suspicion de traumatisme de la colonne cervicale chez l'adulte) et T08 (Suspicion de fracture thoraco-lombaire) [2].</i></p>	<p>1. Chez les patients présentant une myélopathie <u>aiguë</u> non traumatique, nous recommandons l'IRM.</p>	↑↑
	<p>↳ 1.1 Si l'IRM n'est pas possible ou est contre-indiquée, nous suggérons la TDM à titre d'examen par intérim jusqu'à ce que l'IRM soit possible.</p>	↑
	<p>2. Chez les patients présentant une myélopathie <u>chronique ou progressive</u>, nous recommandons l'IRM.</p>	↑↑
	<p>↳ 2.1 Si l'IRM n'est pas possible ou est contre-indiquée, nous suggérons la TDM à titre d'examen par intérim jusqu'à ce que l'IRM soit possible.</p>	↑
	<p>3. Dans le cas de patients présentant une tumeur maligne ou chez lesquels l'on présume une tumeur maligne secondaire, se référer au scénario SP07 (Suspicion de tumeur de la colonne vertébrale).</p>	
SP02. SUSPICION D'INFECTION DE LA COLONNE VERTÉBRALE		
	<p>1. Chez les patients présentant une suspicion d'infection de la colonne vertébrale, nous suggérons l'IRM.</p>	↑↑
	<p>↳ 1.1 Si l'IRM n'est pas possible ou est contre-indiquée, nous suggérons la TDM avec contraste à titre d'examen par intérim jusqu'à ce que l'IRM soit possible.</p>	↑
SP03. INSTABILITÉ ATLANTO-AXIALE POSSIBLE (NON TRAUMATIQUE)		
<p><i>Dans le cas de patients présentant une lésion traumatique, se référer au scénario T05 (Suspicion de traumatisme de la colonne cervicale chez l'adulte) [2].</i></p>	<p>1. Chez les patients présentant une possible instabilité atlanto-axiale non traumatique, nous recommandons la radiographie (flexion-extension) comme modalité d'imagerie initiale.</p>	↑↑
SP04. DOULEUR AXIALE (NON TRAUMATIQUE)		
<p><i>Dans le cas de patients présentant une lésion traumatique, se référer au scénario T05 (Suspicion de traumatisme de la colonne cervicale chez l'adulte) et T08 (Suspicion de fracture thoraco-lombaire) [2].</i></p>	<p>1. Chez les patients présentant une douleur axiale non traumatique de la colonne vertébrale, <u>sans signaux d'alerte</u>[◇], nous ne suggérons aucune imagerie de routine.</p>	↓
	<p>2. Chez les patients présentant une douleur axiale non traumatique de la colonne vertébrale, <u>sans signaux d'alerte</u>[◇], qui ne s'est pas résorbée à la suite d'un traitement conservateur, nous recommandons la radiographie comme modalité d'imagerie initiale.</p>	↑↑
	<p>3. Dans le cas de patients présentant une douleur axiale non traumatique de la colonne vertébrale, <u>avec signaux d'alarme</u>, se référer au scénario SP01 (Myélopathie), SP02 (Suspicion d'Infection de la colonne vertébrale), SP05 (Douleur radiculaire) ou SP07 (Suspicion de tumeur de la colonne vertébrale).</p>	

Ces recommandations ne sont pas conçues pour être utilisées seules. Les soins médicaux doivent reposer sur des données probantes, le jugement expert d'un clinicien, la situation, les valeurs et les préférences d'un patient, ainsi que sur la disponibilité des ressources. Nous sommes conscients que certaines modalités d'imagerie ne sont pas disponibles partout, en particulier dans les zones rurales et isolées du Canada. Il peut être difficile de décider s'il vaut mieux recommander à un patient de se déplacer pour obtenir l'imagerie recommandée ou d'effectuer localement un autre type d'imagerie; à cet égard, il faut tenir compte des avantages attendus de l'imagerie recommandée, des risques liés au déplacement, des préférences du patient et d'autres facteurs. La présente ligne directrice repose sur des données probantes liées uniquement aux tests d'imagerie diagnostique et non à la gestion clinique du patient.

Scénario clinique/diagnostique	Recommandations	Force
<p style="text-align: center;">IRM : imagerie par résonance magnétique; MN : médecine nucléaire; TDM : tomодensitométrie</p> <p>Force de la recommandation : ↑↑ : fortement recommandé; ↑ : recommandé dans certain cas; ↓↓ : fortement déconseillé; ↓ : déconseillé dans certains cas; EPC : consensus d'un panel d'experts</p>		
	<p>4. S'il existe une inquiétude liée à des lésions métastatiques occultes, nous recommandons l'IRM ou la MN (scintigraphie osseuse)[†].</p> <p><i>Le choix entre l'IRM et la MN peut différer selon la néoplasie primaire ou les antécédents médicaux du patient.</i></p> <p><i>† En cas de suspicion de tumeurs de corps vertébral ou de métastases occultes, voir M04 (Tumeur osseuse - primaire) et M05 (Tumeur osseuse - métastases) [1].</i></p> <p>◇ Atteintes neurologiques sévères ou progressives (ex. fonction intestinale ou vésicale, anesthésie en selle), fièvre, lombalgie soudaine avec douleur à la colonne à la palpation (en particulier s'il y a des antécédents d'ostéoporose, de cancer ou de corticostéroïdes), traumatisme, condition médicale sévère sous-jacente (ex. cancer) [29]</p>	<p>↑↑</p>
<p>SP05. DOULEUR RADICULAIRE (NON TRAUMATIQUE)</p>		
<p><i>Dans le cas de patients présentant une lésion traumatique, se référer au scénario T05 (Suspicion de traumatisme de la colonne cervicale chez l'adulte) et T08 (Suspicion de fracture thoraco-lombaire) [2].</i></p>	<p>1. Chez les patients présentant une douleur radiculaire non traumatique de la colonne vertébrale, <u>sans signaux d'alerte</u>[◇], nous ne suggérons aucune imagerie de routine.</p>	<p>↓</p>
	<p>2. Chez les patients présentant une douleur radiculaire non traumatique de la colonne vertébrale, <u>avec signaux d'alarme</u>[◇], et qui ne s'est pas résorbée à la suite d'un traitement conservateur, nous recommandons l'IRM comme modalité d'imagerie initiale.</p>	<p>↑↑</p>
	<p>↳ 2.1 Si l'IRM n'est pas possible ou est contre-indiquée, nous suggérons la TDM à titre d'examen par intérim de la radiculopathie lombaire jusqu'à ce que l'IRM soit possible.</p>	<p>↑</p>
	<p>↳ 2.2 Dans le cas de radiculopathies cervicales ou thoraciques, nous déconseillons la TDM.</p>	<p>EPC</p>
	<p>3. Dans le cas de patients présentant une tumeur maligne ou chez lesquels l'on présume une tumeur maligne secondaire, se référer au scénario SP07 (Suspicion de tumeur de la colonne vertébrale).</p> <p>◇ Atteintes neurologiques sévères ou progressives (ex. fonction intestinale ou vésicale, anesthésie en selle), fièvre, lombalgie soudaine avec douleur à la colonne à la palpation (en particulier s'il y a des antécédents d'ostéoporose, de cancer ou de corticostéroïdes), traumatisme, condition médicale sévère sous-jacente (ex. cancer) [29]</p>	
<p>SP06. SYNDROME DE LA QUEUE DE CHEVAL</p>		
	<p>1. Chez les patients atteints du syndrome de la queue de cheval, nous recommandons de procéder d'urgence à l'IRM.</p> <p>↳ 1.1 Si l'IRM n'est pas possible ou est contre-indiquée, nous suggérons la TDM à titre d'examen par intérim jusqu'à ce que l'IRM soit possible.</p> <p><i>La TDM a une valeur prédictive négative élevée.</i></p>	<p>↑↑</p> <p>↑</p>
<p>SP07. SUSPICION DE TUMEUR DE LA COLONNE VERTÉBRALE</p>		

Ces recommandations ne sont pas conçues pour être utilisées seules. Les soins médicaux doivent reposer sur des données probantes, le jugement expert d'un clinicien, la situation, les valeurs et les préférences d'un patient, ainsi que sur la disponibilité des ressources. Nous sommes conscients que certaines modalités d'imagerie ne sont pas disponibles partout, en particulier dans les zones rurales et isolées du Canada. Il peut être difficile de décider s'il vaut mieux recommander à un patient de se déplacer pour obtenir l'imagerie recommandée ou d'effectuer localement un autre type d'imagerie; à cet égard, il faut tenir compte des avantages attendus de l'imagerie recommandée, des risques liés au déplacement, des préférences du patient et d'autres facteurs. La présente ligne directrice repose sur des données probantes liées uniquement aux tests d'imagerie diagnostique et non à la gestion clinique du patient.

Scénario clinique/diagnostique	Recommandations	Force
<p style="text-align: center;">IRM : imagerie par résonance magnétique; MN : médecine nucléaire; TDM : tomodensitométrie</p> <p>Force de la recommandation : ↑↑ : fortement recommandé; ↑ : recommandé dans certain cas; ↓↓ : fortement déconseillé; ↓ : déconseillé dans certains cas; EPc : consensus d'un panel d'experts</p>		
<p><i>En cas de tumeurs de corps vertébral ou de métastases occultes, se référer au scénario M04 (Tumeur osseuse - primaire) et M05 (Tumeur osseuse - métastases) [1].</i></p>	<p>1. Dans le cas de patients chez qui l'on soupçonne une tumeur de la colonne vertébrale (intradurale/extramédullaire et intramédullaire), nous recommandons l'IRM comme modalité d'imagerie initiale.</p>	↑↑
	<p>↳ 1.1 Si l'IRM n'est pas possible ou est contre-indiquée, nous recommandons la TDM ou la myélo-TDM comme modalité d'imagerie subsidiaire.</p>	↑↑
<p>SP08. SUSPICION D'UNE FRACTURE DE COMPRESSION (NON TRAUMATIQUE)</p>		
<p><i>Dans le cas de patients présentant une lésion traumatique, se référer au scénario T05 (Suspicion de traumatisme de la colonne cervicale chez l'adulte) et T08 (Suspicion de fracture thoraco-lombaire) [2].</i></p>	<p>1. Chez les patients présentant une suspicion d'une fracture de compression (non traumatique), nous recommandons la radiographie ou la TDM comme modalité d'imagerie initiale.</p> <p><i>La recommandation d'une radiographie ou d'une TDM peut être fondée sur le tableau clinique du patient (ex. sévérité, facteurs cliniques tels que l'impossibilité de positionner le patient).</i></p>	↑↑
<p>SP09. SPONDYLOARTHROPATHIES</p>		
	<p>Se référer aux lignes directrices de la CAR concernant le système musculo-squelettique, publiées en 2023 [1].</p>	
<p>SP10. TRAUMATISME DE LA COLONNE VERTÉBRALE</p>		
	<p>Se référer aux lignes directrices de la CAR concernant les traumatismes, publiées en 2023 [2].</p>	

Ces recommandations ne sont pas conçues pour être utilisées seules. Les soins médicaux doivent reposer sur des données probantes, le jugement expert d'un clinicien, la situation, les valeurs et les préférences d'un patient, ainsi que sur la disponibilité des ressources. Nous sommes conscients que certaines modalités d'imagerie ne sont pas disponibles partout, en particulier dans les zones rurales et isolées du Canada. Il peut être difficile de décider s'il vaut mieux recommander à un patient de se déplacer pour obtenir l'imagerie recommandée ou d'effectuer localement un autre type d'imagerie; à cet égard, il faut tenir compte des avantages attendus de l'imagerie recommandée, des risques liés au déplacement, des préférences du patient et d'autres facteurs. La présente ligne directrice repose sur des données probantes liées uniquement aux tests d'imagerie diagnostique et non à la gestion clinique du patient.

APPENDIX 4. POTENTIALLY RELEVANT NON-ENGLISH GUIDELINES

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APPENDIX 5. AGREE-II ASSESSMENTS

Guideline	Domain 1				Domain 2				Domain 3								Domain 4				Domain 5					Domain 6			Overall quality	
	1	2	3	Score (%)	4	5	6	Score (%)	7	8	9	10	11	12	13	14	Score (%)	15	16	17	Score (%)	18	19	20	21	Score (%)	22	23		Score (%)
ACR 2021 [21] (Agarwal et al)	3	2	3	8 (89)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	3	3	9 (100)	2	3	2	1	8 (67)	3	3	6 (100)	High
EAN/PNS 2023 [22] (van Doorn et al)	3	2	3	8 (89)	3	3	3	9 (100)	3	3	3	3	1	3	3	1	20 (83)	3	3	3	9 (100)	1	3	1	1	6 (50)	3	3	6 (100)	High
EAN/PNS 2021 [23] (van den Bergh et al)	3	2	3	8 (89)	3	3	3	9 (100)	3	3	3	3	3	3	3	1	22 (92)	3	3	3	9 (100)	3	3	3	3	12 (100)	3	3	6 (100)	High
NICE (NG220) 2023 [24]	3	2	3	8 (89)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	1	3	7 (78)	1	3	1	1	6 (50)	3	3	6 (100)	High
ACR 2019 [25] (McDonald et al)	3	2	3	8 (89)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	3	3	9 (100)	2	3	3	1	9 (75)	3	3	6 (100)	High
ACR 2021 [26] (Ortiz et al)	3	2	3	8 (89)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	3	3	9 (100)	2	3	2	1	8 (67)	3	3	6 (100)	High
Australian Gdl 2023 [27] (Birrell et al)	3	2	3	8 (89)	3	1	3	7 (78)	3	3	1	3	1	3	3	1	18 (75)	2	3	1	6 (67)	1	3	1	1	6 (50)	3	3	6 (100)	Moderate
EANM/ESNR 2019 [28] (Lazzeri et al)	3	2	3	8 (89)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	3	3	9 (100)	1	3	3	1	8 (67)	3	3	6 (100)	High
ACR 2021 [30] (Hutchins et al)	3	2	3	8 (89)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	2	3	8 (89)	2	3	2	1	8 (67)	3	3	6 (100)	High
ASIPP 2020 [31] (Manchikanti et al)	3	3	3	9 (100)	3	1	3	7 (78)	3	3	3	3	1	3	3	1	20 (83)	3	3	3	9 (100)	1	1	1	1	4 (33)	3	3	6 (100)	High
CJWG 2022 [32] (Hurley et al)	3	3	3	9 (100)	3	1	3	7 (78)	3	3	3	3	1	3	3	1	20 (83)	3	1	2	6 (67)	1	1	3	1	6 (50)	3	3	6 (100)	High
JOA 2021 [33] (Haro et al)	3	3	3	9 (100)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	3	2	8 (89)	1	1	1	1	4 (33)	3	3	6 (100)	Moderate
JOA 2022 [34] (Kawakami et al)	3	3	3	9 (100)	3	3	3	9 (100)	3	3	3	3	3	3	3	1	22 (92)	3	3	2	8 (89)	3	3	3	1	10 (83)	3	3	6 (100)	High
JOA 2022 [35] (Shirado et al)	3	3	3	9 (100)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	3	2	8 (89)	3	3	3	1	10 (83)	3	3	6 (100)	High
LFIGC 2020 [36] (Cohen et al)	3	3	3	9 (100)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	3	2	8 (89)	1	1	3	1	6 (50)	3	3	6 (100)	High
NICE (NG59) 2020 [37]	3	2	3	8 (89)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	1	3	7 (78)	1	3	3	1	8 (67)	3	3	6 (100)	High
NASS 2020 [38] (Kreiner et al)	3	3	3	9 (100)	3	1	3	7 (78)	3	3	3	3	1	3	3	1	20 (83)	3	3	3	9 (100)	1	1	1	1	4 (33)	3	3	6 (100)	Moderate
VA/DoD 2019 [39] (Pangarkar et al)	3	1	3	7 (78)	3	3	3	9 (100)	3	3	3	3	3	3	3	1	22 (92)	3	3	3	9 (100)	2	3	1	1	7 (58)	3	3	6 (100)	Moderate
ACR 2020 [40] (Bestic et al)	3	2	3	8 (89)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	3	3	9 (100)	3	3	2	1	9 (75)	3	3	6 (100)	High
ESMO et al 2021 [41] (Strauss et al)	3	2	3	8 (89)	3	3	3	9 (100)	3	3	3	3	3	3	3	3	24 (100)	3	3	2	8 (89)	1	3	1	1	6 (50)	3	3	6 (100)	High

Appendix 5. AGREE-II assessments

Guideline	Domain 1				Domain 2				Domain 3							Domain 4				Domain 5					Domain 6			Overall quality		
	1	2	3	Score (%)	4	5	6	Score (%)	7	8	9	10	11	12	13	14	Score (%)	15	16	17	Score (%)	18	19	20	21	Score (%)	22		23	Score (%)
Polish Soc. 2023 [42] (Maciejczak et al)	3	2	3	8 (89)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	3	3	3	9 (100)	3	3	1	1	8 (67)	3	3	6 (100)	High
ACR 2023 [43] (Khan et al)	3	2	3	8 (89)	3	1	3	7 (78)	3	3	3	3	3	3	3	1	22 (92)	2	3	3	8 (89)	2	3	1	1	7 (58)	3	3	6 (100)	High

Abbreviations: ACR: American College of Radiology; ASIPP: American Society of Interventional Pain Physicians; CJWG: Cervical Joint Working Group; EAN/PNS: European Academy of Neurology/Peripheral Nerve Society; EANM/ESNR: European Association of Nuclear Medicine/European Society of Neuroradiology; ESMO et al: European Society for Medical Oncology-European Reference Network for Rare Adult Solid Cancers-European Reference Network for Genetic Tumour Risk Syndromes; JOA: Japanese Orthopedic Association; LFIGC: Lumbar Facet Intervention Guidelines Committee; NASS: North American Spine Society; NICE: National Institute for Health and Care Excellence; VA/DoD: Veterans Affairs/Department of Defense