American College of Radiology
ACR Appropriateness Criteria®

Low Back Pain

Variant 1: Acute, subacute, or chronic uncomplicated low back pain or radiculopathy. No red flags. No prior management.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT lumbar spine with IV contrast	Usually not appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without IV contrast	Usually not appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0
MRI lumbar spine without and with IV contrast	Usually not appropriate		O 0 mSv	O 0 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0
MRI lumbar spine without IV contrast	Usually not appropriate		O 0 mSv	O 0 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0
Tc-99m bone scan with SPECT spine	Usually not appropriate		☢☢☢ 1-10 mSv		2	n/a	0	0	0	0	0	0	0	0	0
Radiography lumbar spine	Usually not appropriate		☢☢☢ 1-10 mSv	☢☢ 0.03-0.3 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0
CT myelography lumbar spine	Usually not appropriate		☢☢☢☢ 10-30 mSv		2	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without and with IV contrast	Usually not appropriate		☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0

Variant 2: Acute, subacute, or chronic uncomplicated low back pain or radiculopathy. One or more of the following: low velocity trauma, osteoporosis, elderly individual, or chronic steroid use.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI lumbar spine without IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	7	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without IV contrast	Usually appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	n/a	0	0	0	0	0	0	0	0	0
Radiography lumbar spine	Usually appropriate		☢☢☢ 1-10 mSv	☢☢ 0.03-0.3 mSv [ped]	7	n/a	0	0	0	0	0	0	0	0	0
Tc-99m bone scan with SPECT spine	Usually not appropriate		☢☢☢ 1-10 mSv		3	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine with IV contrast	Usually not appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	n/a	0	0	0	0	0	0	0	0	0
Discography and post-discography CT lumbar spine	Usually not appropriate		☢☢☢ 1-10 mSv		1	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without and with IV contrast	Usually not appropriate		☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
CT myelography lumbar spine	Usually not appropriate		☢☢☢☢ 10-30 mSv		1	n/a	0	0	0	0	0	0	0	0	0

Variant 3: Acute, subacute, or chronic low back pain or radiculopathy. One or more of the following: suspicion of cancer, infection, or immunosuppression.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI lumbar spine without and	Usually		O 0 mSv	O 0 mSv	8	n/a	0	0	0	0	0	0	0	0	0

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
with IV contrast	appropriate			[ped]											
MRI lumbar spine without IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	7	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
Radiography lumbar spine	May be appropriate		☢☢☢ 1-10 mSv	☢☢ 0.03-0.3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
Tc-99m bone scan whole body with SPECT complete spine	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
FDG-PET/CT whole body	May be appropriate		☢☢☢☢ 10-30 mSv		4	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without and with IV contrast	Usually not appropriate		☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	3	n/a	0	0	0	0	0	0	0	0	0
CT myelography lumbar spine	Usually not appropriate		☢☢☢☢ 10-30 mSv		3	n/a	0	0	0	0	0	0	0	0	0

Variant 4: Acute, subacute, or chronic low back pain or radiculopathy. Surgery or intervention candidate with persistent or progressive symptoms during or following 6 weeks of conservative management.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI lumbar spine without IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0

CT lumbar spine with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
MRI lumbar spine without and with IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT myelography lumbar spine	May be appropriate		☢☢☢☢ 10-30 mSv		5	n/a	0	0	0	0	0	0	0	0	0
Radiography lumbar spine	May be appropriate		☢☢☢ 1-10 mSv	☢☢ 0.03-0.3 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
Tc-99m bone scan with SPECT spine	May be appropriate		☢☢☢ 1-10 mSv		4	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without and with IV contrast	Usually not appropriate		☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	3	n/a	0	0	0	0	0	0	0	0	0
Discography and post-discography CT lumbar spine	Usually not appropriate		☢☢☢ 1-10 mSv		3	n/a	0	0	0	0	0	0	0	0	0

Variant 5: Low back pain or radiculopathy. New or progressing symptoms or clinical findings with history of prior lumbar surgery.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI lumbar spine without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
MRI lumbar spine without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0

CT lumbar spine with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT myelography lumbar spine	May be appropriate		☢☢☢☢ 10-30 mSv		5	n/a	0	0	0	0	0	0	0	0	0
Radiography lumbar spine	May be appropriate		☢☢☢ 1-10 mSv	☢☢ 0.03-0.3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
Tc-99m bone scan with SPECT spine	May be appropriate		☢☢☢ 1-10 mSv		5	n/a	0	0	0	0	0	0	0	0	0
Discography and post-discography CT lumbar spine	May be appropriate		☢☢☢ 1-10 mSv		5	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without and with IV contrast	Usually not appropriate		☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	3	n/a	0	0	0	0	0	0	0	0	0

Variant 6: Low back pain with suspected cauda equina syndrome or rapidly progressive neurologic deficit.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI lumbar spine without IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	9	n/a	0	0	0	0	0	0	0	0	0
MRI lumbar spine without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
CT myelography lumbar spine	May be appropriate		☢☢☢☢ 10-30 mSv		6	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0

Radiography lumbar spine	Usually not appropriate		☢☢☢ 1-10 mSv	☢☢ 0.03-0.3 mSv [ped]	3	n/a	0	0	0	0	0	0	0	0	0
CT lumbar spine without and with IV contrast	Usually not appropriate		☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	3	n/a	0	0	0	0	0	0	0	0	0
Tc-99m bone scan with SPECT spine	Usually not appropriate		☢☢☢ 1-10 mSv		2	n/a	0	0	0	0	0	0	0	0	0

Appendix Key

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

Appropriateness Category: The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

SOE: Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- **Study Quality**: The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

RRL: Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

Rating: The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Median: The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Final tabulations: A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at **www.acr.org/ac.**