American College of Radiology
ACR Appropriateness Criteria®

Suspected Spine Trauma

Variant 1: Age greater than or equal to 16 years and less than 65 years. Suspected acute blunt cervical spine trauma; imaging not indicated by NEXUS or CCR clinical criteria. Patient meets low-risk criteria. Initial imaging.

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CTA head and neck with IV contrast

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**CT myelography cervical spine**

- Usually not appropriate
- **Expert Consensus**
  - ☢☢☢☢ 10-30 mSv
  - ☢☢☢ 0.3-3 mSv [ped]
- 1 1 15 2 0 0 0 0 0 0 0

**CT cervical spine with IV contrast**

- Usually not appropriate
- **Expert Consensus**
  - ☢☢☢ 1-10 mSv
  - ☢☢☢☢ 3-10 mSv [ped]
- 1 1 15 1 1 0 0 0 0 0 0

**CT cervical spine without and with IV contrast**

- Usually not appropriate
- **Strong**
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- 1 1 15 1 1 0 0 0 0 0 0

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MRI cervical spine without and with IV contrast

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Radiography cervical spine | Usually not appropriate | Strong | ☢☢ 0.1-1mSv | ☢☢☢ 0.03-0.3 mSv [ped] | 1 | 1 | 9 | 3 | 1 | 0 | 2 | 1 | 0 | 0 | 1

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Radiography cervical spine

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- CTA head and neck with IV contrast: Usually not appropriate.
- CT myelography cervical spine: Usually not appropriate.
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| Procedure                          | Appropriateness | Expert Consensus | Radiation Dose
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| MRA neck without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 15 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| MRI cervical spine without IV contrast | Usually not appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 9 | 6 | 1 | 0 | 0 | 0 | 0 | 0 |

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**Variant 3:** Age greater than or equal to 16 years. Suspected acute cervical spine blunt trauma. Confirmed or suspected cervical spinal cord or nerve root injury, with or without traumatic injury identified on cervical CT. Next imaging study.

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**MRI cervical spine without and with IV contrast**

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Variant 8: Age greater than or equal to 16 years. Suspected acute cervical spine blunt trauma. Follow-up imaging on patient with no unstable injury demonstrated initially, but kept in collar for neck pain. No new neurologic symptoms. Includes whiplash associated disorders.

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**Radiography cervical spine**

- May be appropriate
- Strong
- ☢☢ 0.1-1 mSv
- ☢☢ 0.03-0.3 mSv [ped]
- ☢☢☢ 0.1-1 mSv
- ☢☢☢ 0.03-0.3 mSv [ped]
- ☢☢☢☢ 0.1-1 mSv
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- ☢☢☢☢ 0.03-0.3 mSv [ped]

**References**

- 35 (24139671)
- 74 (21265348)
- 75 (20583514)
- 100 (17108836)
- 101 (27984030)

**Study Quality**

- Good
## Variant 9: Age greater than or equal to 16 years. Blunt trauma meeting criteria for thoracic and lumbar imaging. Initial imaging.

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### MRI thoracic and lumbar spine without IV contrast

- **Expert Consensus**: Usually not appropriate
- **O 0 mSv**
- **[ped]**
- **SOE**: 0
- **Adults RRL**: 1
- **Peds RRL**: 1
- **Rating**: 9
- **Median**: 0
- **Final Tabulations**: 0 0 0 0 0 0 0 0 0

### MRI thoracic and lumbar spine without and with IV contrast

- **Expert Consensus**: Usually not appropriate
- **O 0 mSv**
- **[ped]**
- **SOE**: 0
- **Adults RRL**: 1
- **Peds RRL**: 1
- **Rating**: 15
- **Median**: 0
- **Final Tabulations**: 0 0 0 0 0 0 0 0 0

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### Variant 10: Age greater than or equal to 16 years. Acute thoracic or lumbar spine injury detected on radiographs or noncontrast CT. Neurologic abnormalities. Next imaging study.

#### Procedure

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MRI thoracic and lumbar spine without and with IV contrast

| MRI thoracic and lumbar spine without and with IV contrast | Usually not appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 13 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |
|-----------------------------------------------------------|-------------------------|---------|----------|---------------|----|----|----|----|----|----|----|----|----|----|----|----|
| References                                               | Study Quality           |         |          |               |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 43 (24033302)                                            | 3                      |         |          |               |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 41 (20336892)                                            | 4                      |         |          |               |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 111 (14769351)                                           | 4                      |         |          |               |    |    |    |    |    |    |    |    |    |    |    |    |    |
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.