

**American College of Radiology  
ACR Appropriateness Criteria®**

**Thoracic Back Pain**

**Variant 1: Adult. Acute thoracic back pain without myelopathy or radiculopathy. No red flags. No prior management. Initial imaging.**

| Procedure                                       | Appropriateness Category | SOE              | Adults RRL     | Peds RRL            | Rating | Median | Final Tabulations |   |   |   |   |   |   |   |   |
|---|--------------------------|------------------|----------------|---------------------|--------|--------|-------------------|---|---|---|---|---|---|---|---|
|   |                          |                  |                |                     |        |        | 1                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Bone scan whole body                            | Usually not appropriate  | Expert Consensus | ☹☹☹ 1-10 mSv   | ☹☹☹☹ 3-10 mSv [ped] | 1      | 1      | 19                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FDG-PET/CT skull base to mid-thigh              | Usually not appropriate  | Expert Consensus | ☹☹☹☹ 10-30 mSv | ☹☹☹☹ 3-10 mSv [ped] | 1      | 1      | 18                | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Radiography thoracic spine                      | Usually not appropriate  | Expert Consensus | ☹☹☹ 1-10 mSv   |                     | 1      | 1      | 15                | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 |
| CT thoracic spine with IV contrast              | Usually not appropriate  | Expert Consensus | ☹☹☹ 1-10 mSv   | ☹☹☹☹ 3-10 mSv [ped] | 1      | 1      | 16                | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| CT thoracic spine without IV contrast           | Usually not appropriate  | Expert Consensus | ☹☹☹ 1-10 mSv   | ☹☹☹☹ 3-10 mSv [ped] | 1      | 1      | 18                | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT thoracic spine without and with IV contrast  | Usually not appropriate  | Expert Consensus | ☹☹☹☹ 10-30 mSv | ☹☹☹☹ 3-10 mSv [ped] | 1      | 1      | 15                | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| MRI thoracic spine without IV contrast          | Usually not appropriate  | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1      | 1      | 13                | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 0 |
| MRI thoracic spine without and with IV contrast | Usually not appropriate  | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1      | 1      | 16                | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| MRI thoracic spine with IV contrast             | Usually not appropriate  | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1      | 1      | 15                | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |

|   |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|---|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| CT myelography thoracic spine                   | Usually not appropriate | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv |                     | 1 | 1 | 17 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Bone scan with SPECT or SPECT/CT thoracic spine | Usually not appropriate | Expert Consensus | ⊕⊕⊕ 1-10 mSv   | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1 | 1 | 18 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Variant 2: Adult. Subacute or chronic thoracic back pain without myelopathy or radiculopathy. No red flags. Failed conservative management. Initial imaging.**

| Procedure                                       | Appropriateness Category          | SOE              | Adults RRL     | Peds RRL            | Rating | Median | Final Tabulations |   |   |   |   |   |   |   |   |
|---|-----------------------------------|------------------|----------------|---------------------|--------|--------|-------------------|---|---|---|---|---|---|---|---|
|   |                                   |                  |                |                     |        |        | 1                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Radiography thoracic spine                      | May be appropriate (Disagreement) | Expert Opinion   | ⊕⊕⊕ 1-10 mSv   |                     | 5      | 5      | 11                | 4 | 1 | 0 | 0 | 1 | 2 | 0 | 0 |
| Bone scan whole body                            | Usually not appropriate           | Expert Consensus | ⊕⊕⊕ 1-10 mSv   | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1      | 1      | 18                | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FDG-PET/CT skull base to mid-thigh              | Usually not appropriate           | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1      | 1      | 17                | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT thoracic spine with IV contrast              | Usually not appropriate           | Expert Consensus | ⊕⊕⊕ 1-10 mSv   | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1      | 1      | 15                | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 |
| CT thoracic spine without IV contrast           | Usually not appropriate           | Expert Consensus | ⊕⊕⊕ 1-10 mSv   | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1      | 1      | 16                | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| CT thoracic spine without and with IV contrast  | Usually not appropriate           | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1      | 1      | 14                | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 0 |
| MRI thoracic spine without IV contrast          | Usually not appropriate           | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1      | 1      | 13                | 3 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| MRI thoracic spine without and with IV contrast | Usually not appropriate           | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1      | 1      | 12                | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 0 |
| MRI thoracic spine with IV contrast             | Usually not appropriate           | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1      | 1      | 14                | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 0 |

|   |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|---|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| CT myelography thoracic spine                   | Usually not appropriate | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv |                     | 1 | 1 | 16 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Bone scan with SPECT or SPECT/CT thoracic spine | Usually not appropriate | Expert Consensus | ⊕⊕⊕ 1-10 mSv   | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1 | 1 | 17 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Variant 3: Adult. Thoracic back pain with myelopathy or radiculopathy. Initial imaging.**

| Procedure                                       | Appropriateness Category          | SOE              | Adults RRL     | Peds RRL            | Rating | Median | Final Tabulations |   |   |   |    |   |   |   |   |
|---|-----------------------------------|------------------|----------------|---------------------|--------|--------|-------------------|---|---|---|----|---|---|---|---|
|   |                                   |                  |                |                     |        |        | 1                 | 2 | 3 | 4 | 5  | 6 | 7 | 8 | 9 |
| MRI thoracic spine without IV contrast          | Usually appropriate               | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 8      | 8      | 0                 | 0 | 0 | 0 | 1  | 3 | 3 | 4 | 8 |
|   |                                   | References       |                | Study Quality       |        |        |                   |   |   |   |    |   |   |   |   |
|   |                                   | 20 (22048067)    |                | 4                   |        |        |                   |   |   |   |    |   |   |   |   |
|   |                                   | 33 (31304197)    |                | 4                   |        |        |                   |   |   |   |    |   |   |   |   |
| CT thoracic spine without IV contrast           | May be appropriate (Disagreement) | Expert Opinion   | ⊕⊕⊕ 1-10 mSv   | ⊕⊕⊕⊕ 3-10 mSv [ped] | 5      | 5      | 3                 | 0 | 0 | 5 | 8  | 3 | 0 | 0 | 0 |
| MRI thoracic spine without and with IV contrast | May be appropriate (Disagreement) | Expert Opinion   | ○ 0 mSv        | ○ 0 mSv [ped]       | 5      | 5      | 2                 | 0 | 1 | 0 | 1  | 0 | 8 | 4 | 3 |
| CT myelography thoracic spine                   | May be appropriate                | Limited          | ⊕⊕⊕⊕ 10-30 mSv |                     | 5      | 5      | 0                 | 0 | 1 | 1 | 14 | 3 | 0 | 0 | 0 |
|   |                                   | References       |                | Study Quality       |        |        |                   |   |   |   |    |   |   |   |   |
|   |                                   | 32 (28338452)    |                | 4                   |        |        |                   |   |   |   |    |   |   |   |   |
| Radiography thoracic spine                      | May be appropriate                | Limited          | ⊕⊕⊕ 1-10 mSv   |                     | 4      | 4      | 2                 | 1 | 1 | 6 | 7  | 2 | 0 | 0 | 0 |
|   |                                   | References       |                | Study Quality       |        |        |                   |   |   |   |    |   |   |   |   |
|   |                                   | 11 (19412022)    |                | 1                   |        |        |                   |   |   |   |    |   |   |   |   |
| Bone scan whole body                            | Usually not appropriate           | Expert Consensus | ⊕⊕⊕ 1-10 mSv   | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1      | 1      | 17                | 2 | 0 | 0 | 0  | 0 | 0 | 0 | 0 |

|   |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|---|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| FDG-PET/CT skull base to mid-thigh              | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 14 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 |
| CT thoracic spine with IV contrast              | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 15 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 |
| CT thoracic spine without and with IV contrast  | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 16 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| MRI thoracic spine with IV contrast             | Usually not appropriate | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 16 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bone scan with SPECT or SPECT/CT thoracic spine | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 17 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

**Variant 4: Adult. Thoracic back pain without or with myelopathy or radiculopathy. One or more of the following: low-velocity trauma, osteoporosis, elderly individual, or chronic steroid use. Initial imaging.**

| Procedure                              | Appropriateness Category | SOE           | Adults RRL   | Peds RRL            | Rating | Median | Final Tabulations |   |   |   |   |   |    |   |   |
|--|--------------------------|---------------|--------------|---------------------|--------|--------|-------------------|---|---|---|---|---|----|---|---|
|  |                          |               |              |                     |        |        | 1                 | 2 | 3 | 4 | 5 | 6 | 7  | 8 | 9 |
| Radiography thoracic spine             | Usually appropriate      | Limited       | ☼☼☼ 1-10 mSv |                     | 7      | 7      | 0                 | 0 | 1 | 0 | 1 | 0 | 13 | 2 | 2 |
|  |                          | References    |              | Study Quality       |        |        |                   |   |   |   |   |   |    |   |   |
|  |                          | 36 (15875926) |              | 2                   |        |        |                   |   |   |   |   |   |    |   |   |
| CT thoracic spine without IV contrast  | Usually appropriate      | Limited       | ☼☼☼ 1-10 mSv | ☼☼☼☼ 3-10 mSv [ped] | 7      | 7      | 0                 | 0 | 0 | 1 | 4 | 3 | 5  | 2 | 4 |
|  |                          | References    |              | Study Quality       |        |        |                   |   |   |   |   |   |    |   |   |
|  |                          | 36 (15875926) |              | 2                   |        |        |                   |   |   |   |   |   |    |   |   |
| MRI thoracic spine without IV contrast | Usually appropriate      | Limited       | ○ 0 mSv      | ○ 0 mSv [ped]       | 7      | 7      | 0                 | 0 | 1 | 0 | 2 | 3 | 4  | 2 | 7 |
|  |                          | References    |              | Study Quality       |        |        |                   |   |   |   |   |   |    |   |   |
|  |                          | 36 (15875926) |              | 2                   |        |        |                   |   |   |   |   |   |    |   |   |

|   |                         |                  |                |                      |   |   |    |   |   |   |    |   |   |   |   |
|---|-------------------------|------------------|----------------|----------------------|---|---|----|---|---|---|----|---|---|---|---|
| MRI thoracic spine without and with IV contrast | May be appropriate      | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]        | 5 | 5 | 2  | 0 | 1 | 3 | 11 | 2 | 0 | 0 | 0 |
| Bone scan whole body                            | May be appropriate      | Limited          | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗⊗ 3-10 mSv [ped]  | 4 | 4 | 7  | 1 | 0 | 4 | 7  | 0 | 0 | 0 | 0 |
|   |                         | References       |                | Study Quality        |   |   |    |   |   |   |    |   |   |   |   |
|   |                         | 36 (15875926)    |                | 2                    |   |   |    |   |   |   |    |   |   |   |   |
| Bone scan with SPECT or SPECT/CT thoracic spine | May be appropriate      | Limited          | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗⊗ 3-10 mSv [ped]  | 4 | 4 | 8  | 0 | 0 | 3 | 6  | 2 | 0 | 0 | 0 |
|   |                         | References       |                | Study Quality        |   |   |    |   |   |   |    |   |   |   |   |
|   |                         | 36 (15875926)    |                | 2                    |   |   |    |   |   |   |    |   |   |   |   |
| FDG-PET/CT skull base to mid-thigh              | Usually not appropriate | Expert Consensus | ⊗⊗⊗⊗ 10-30 mSv | ⊗⊗⊗⊗⊗ 3-10 mSv [ped] | 1 | 1 | 16 | 1 | 1 | 1 | 0  | 0 | 0 | 0 | 0 |
| CT thoracic spine with IV contrast              | Usually not appropriate | Expert Consensus | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗⊗ 3-10 mSv [ped]  | 1 | 1 | 12 | 0 | 3 | 2 | 0  | 1 | 1 | 0 | 0 |
| CT thoracic spine without and with IV contrast  | Usually not appropriate | Expert Consensus | ⊗⊗⊗⊗ 10-30 mSv | ⊗⊗⊗⊗ 3-10 mSv [ped]  | 1 | 1 | 18 | 0 | 1 | 0 | 0  | 0 | 0 | 0 | 0 |
| MRI thoracic spine with IV contrast             | Usually not appropriate | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]        | 1 | 1 | 11 | 0 | 4 | 2 | 0  | 2 | 0 | 0 | 0 |
| CT myelography thoracic spine                   | Usually not appropriate | Expert Consensus | ⊗⊗⊗⊗ 10-30 mSv |                      | 1 | 1 | 11 | 2 | 2 | 2 | 1  | 0 | 1 | 0 | 0 |

**Variant 5: Adult. Thoracic back pain without or with myelopathy or radiculopathy. One or more of the following: suspicion of cancer, infection, or immunosuppression. Initial imaging.**

| Procedure                                       | Appropriateness Category | SOE    | Adults RRL | Peds RRL      | Rating | Median | Final Tabulations |   |   |   |   |   |   |   |    |
|---|--------------------------|--------|------------|---------------|--------|--------|-------------------|---|---|---|---|---|---|---|----|
|   |                          |        |            |               |        |        | 1                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  |
| MRI thoracic spine without and with IV contrast | Usually appropriate      | Strong | ○ 0 mSv    | ○ 0 mSv [ped] | 9      | 9      | 0                 | 1 | 0 | 0 | 0 | 0 | 2 | 3 | 13 |

|  |                         | References       | Study Quality  |                     |   |   |    |   |   |   |    |   |   |   |   |
|--|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|----|---|---|---|---|
|  |                         | 42 (28677897)    | 4              |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 41 (22312523)    | 4              |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 40 (19325068)    | 4              |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 39 (18278491)    | 3              |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 38 (2028061)     | 1              |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 36 (15875926)    | 2              |                     |   |   |    |   |   |   |    |   |   |   |   |
| MRI thoracic spine without IV contrast | Usually appropriate     | Limited          | 0 0 mSv        | 0 0 mSv [ped]       | 7 | 7 | 0  | 0 | 0 | 1 | 2  | 3 | 8 | 2 | 3 |
|  |                         | References       | Study Quality  |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 44 (32904056)    | 1              |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 43 (29431498)    | 4              |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 42 (28677897)    | 4              |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 41 (22312523)    | 4              |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 40 (19325068)    | 4              |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 39 (18278491)    | 3              |                     |   |   |    |   |   |   |    |   |   |   |   |
| Radiography thoracic spine             | May be appropriate      | Limited          | ☼☼☼ 1-10 mSv   |                     | 5 | 5 | 1  | 0 | 0 | 2 | 12 | 4 | 0 | 0 | 0 |
|  |                         | References       | Study Quality  |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 45 (31100530)    | 4              |                     |   |   |    |   |   |   |    |   |   |   |   |
| CT thoracic spine without IV contrast  | May be appropriate      | Limited          | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 5 | 5 | 0  | 0 | 1 | 1 | 12 | 5 | 0 | 0 | 0 |
|  |                         | References       | Study Quality  |                     |   |   |    |   |   |   |    |   |   |   |   |
|  |                         | 37 (35189892)    | 2              |                     |   |   |    |   |   |   |    |   |   |   |   |
| CT myelography thoracic spine          | May be appropriate      | Expert Consensus | ☼☼☼☼ 10-30 mSv |                     | 5 | 5 | 1  | 0 | 1 | 3 | 12 | 2 | 0 | 0 | 0 |
| Bone scan whole body                   | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 10 | 2 | 2 | 0 | 3  | 2 | 0 | 0 | 0 |
| FDG-PET/CT skull base to mid-thigh     | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 17 | 0 | 1 | 0 | 1  | 0 | 0 | 0 | 0 |

|   |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|---|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| CT thoracic spine with IV contrast              | Usually not appropriate | Expert Consensus | ☹☹☹ 1-10 mSv   | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 16 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT thoracic spine without and with IV contrast  | Usually not appropriate | Expert Consensus | ☹☹☹☹ 10-30 mSv | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 16 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI thoracic spine with IV contrast             | Usually not appropriate | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 17 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bone scan with SPECT or SPECT/CT thoracic spine | Usually not appropriate | Expert Consensus | ☹☹☹ 1-10 mSv   | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 11 | 1 | 1 | 1 | 3 | 1 | 1 | 0 | 0 |

**Variant 6: Adult. Thoracic back pain without or with myelopathy or radiculopathy. Radiograph shows bone destruction or fracture or spinal deformity. Next imaging study.**

| Procedure                                       | Appropriateness Category | SOE              | Adults RRL     | Peds RRL            | Rating | Median | Final Tabulations |   |   |   |    |   |   |   |    |
|---|--------------------------|------------------|----------------|---------------------|--------|--------|-------------------|---|---|---|----|---|---|---|----|
|   |                          |                  |                |                     |        |        | 1                 | 2 | 3 | 4 | 5  | 6 | 7 | 8 | 9  |
| MRI thoracic spine without and with IV contrast | Usually appropriate      | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 9      | 9      | 0                 | 0 | 1 | 0 | 1  | 1 | 3 | 3 | 10 |
|   |                          | References       | Study Quality  |                     |        |        |                   |   |   |   |    |   |   |   |    |
|   |                          | 44 (32904056)    | 1              |                     |        |        |                   |   |   |   |    |   |   |   |    |
| CT thoracic spine without IV contrast           | Usually appropriate      | Limited          | ☹☹☹ 1-10 mSv   | ☹☹☹☹ 3-10 mSv [ped] | 7      | 7      | 0                 | 0 | 0 | 0 | 3  | 2 | 7 | 5 | 2  |
|   |                          | References       | Study Quality  |                     |        |        |                   |   |   |   |    |   |   |   |    |
|   |                          | 11 (19412022)    | 1              |                     |        |        |                   |   |   |   |    |   |   |   |    |
|   |                          | 46 (33302988)    | 4              |                     |        |        |                   |   |   |   |    |   |   |   |    |
| MRI thoracic spine without IV contrast          | Usually appropriate      | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 7      | 7      | 0                 | 0 | 0 | 1 | 3  | 2 | 5 | 4 | 4  |
|   |                          | References       | Study Quality  |                     |        |        |                   |   |   |   |    |   |   |   |    |
|   |                          | 27 (33934648)    | 2              |                     |        |        |                   |   |   |   |    |   |   |   |    |
| CT myelography thoracic spine                   | May be appropriate       | Expert Consensus | ☹☹☹☹ 10-30 mSv |                     | 5      | 5      | 0                 | 0 | 0 | 1 | 12 | 5 | 1 | 0 | 0  |

|   |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|---|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| Bone scan whole body                            | Usually not appropriate | Expert Consensus | ☹☹☹ 1-10 mSv   | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 13 | 2 | 0 | 2 | 1 | 1 | 0 | 0 | 0 |
| FDG-PET/CT skull base to mid-thigh              | Usually not appropriate | Expert Consensus | ☹☹☹☹ 10-30 mSv | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 17 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT thoracic spine with IV contrast              | Usually not appropriate | Expert Consensus | ☹☹☹ 1-10 mSv   | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 15 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |
| CT thoracic spine without and with IV contrast  | Usually not appropriate | Expert Consensus | ☹☹☹☹ 10-30 mSv | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 12 | 0 | 2 | 3 | 2 | 0 | 0 | 0 | 0 |
| MRI thoracic spine with IV contrast             | Usually not appropriate | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 16 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bone scan with SPECT or SPECT/CT thoracic spine | Usually not appropriate | Expert Consensus | ☹☹☹ 1-10 mSv   | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 14 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |

**Variant 7: Adult. Thoracic back pain without or with myelopathy or radiculopathy. Post thoracic spine surgery. Follow-up imaging.**

| Procedure                                       | Appropriateness Category | SOE              | Adults RRL   | Peds RRL            | Rating | Median | Final Tabulations |   |   |   |   |   |    |   |   |
|---|--------------------------|------------------|--------------|---------------------|--------|--------|-------------------|---|---|---|---|---|----|---|---|
|   |                          |                  |              |                     |        |        | 1                 | 2 | 3 | 4 | 5 | 6 | 7  | 8 | 9 |
| Radiography thoracic spine                      | Usually appropriate      | Expert Consensus | ☹☹☹ 1-10 mSv |                     | 7      | 7      | 0                 | 0 | 0 | 0 | 1 | 0 | 13 | 3 | 2 |
| CT thoracic spine without IV contrast           | Usually appropriate      | Expert Consensus | ☹☹☹ 1-10 mSv | ☹☹☹☹ 3-10 mSv [ped] | 7      | 7      | 0                 | 0 | 0 | 0 | 4 | 5 | 2  | 6 | 2 |
| MRI thoracic spine without IV contrast          | Usually appropriate      | Expert Consensus | ○ 0 mSv      | ○ 0 mSv [ped]       | 7      | 7      | 0                 | 0 | 0 | 0 | 2 | 3 | 6  | 5 | 3 |
| MRI thoracic spine without and with IV contrast | Usually appropriate      | Limited          | ○ 0 mSv      | ○ 0 mSv [ped]       | 7      | 7      | 0                 | 0 | 0 | 1 | 1 | 4 | 4  | 3 | 6 |

  

|               |               |
|---------------|---------------|
| References    | Study Quality |
| 47 (33222899) | 4             |
| 46 (33302988) | 4             |



|   |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|---|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| CT myelography thoracic spine                   | May be appropriate      | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv |                     | 6 | 6 | 0  | 1 | 1 | 0 | 5 | 6 | 4 | 2 | 0 |
| Bone scan whole body                            | Usually not appropriate | Expert Consensus | ⊕⊕⊕ 1-10 mSv   | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1 | 1 | 17 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| FDG-PET/CT skull base to mid-thigh              | Usually not appropriate | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1 | 1 | 16 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| CT thoracic spine with IV contrast              | Usually not appropriate | Expert Consensus | ⊕⊕⊕ 1-10 mSv   | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1 | 1 | 16 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT thoracic spine without and with IV contrast  | Usually not appropriate | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1 | 1 | 17 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| MRI thoracic spine with IV contrast             | Usually not appropriate | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 17 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bone scan with SPECT or SPECT/CT thoracic spine | Usually not appropriate | Expert Consensus | ⊕⊕⊕ 1-10 mSv   | ⊕⊕⊕⊕ 3-10 mSv [ped] | 1 | 1 | 12 | 1 | 3 | 2 | 1 | 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](http://www.acr.org/ac).