

# American College of Radiology ACR Appropriateness Criteria®

## Demyelinating Diseases

**Variant 1: Adult. Acute or subacute sensorimotor or brainstem symptoms. Suspect demyelinating disease of the central nervous system. Initial imaging.**

| Procedure                                                    | Appropriateness Category | SOE              | Adults RRL | Peds RRL      | Rating | Median | Final Tabulations |   |   |   |   |   |   |   |    |
|--------------------------------------------------------------|--------------------------|------------------|------------|---------------|--------|--------|-------------------|---|---|---|---|---|---|---|----|
|                                                              |                          |                  |            |               |        |        | 1                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  |
| MRI head without and with IV contrast                        | Usually appropriate      | Limited          | O 0 mSv    | O 0 mSv [ped] | 9      | 9      | 0                 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10 |
| MRI cervical and thoracic spine without and with IV contrast | Usually appropriate      | Limited          | O 0 mSv    | O 0 mSv [ped] | 8      | 8      | 0                 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 3  |
| MRI head without IV contrast                                 | May be appropriate       | Limited          | O 0 mSv    | O 0 mSv [ped] | 6      | 6      | 0                 | 0 | 1 | 0 | 4 | 4 | 0 | 1 | 0  |
| MRI orbits without and with IV contrast                      | May be appropriate       | Limited          | O 0 mSv    | O 0 mSv [ped] | 5      | 5      | 0                 | 0 | 0 | 0 | 7 | 2 | 0 | 1 | 0  |
| MRI orbits without IV contrast                               | May be appropriate       | Limited          | O 0 mSv    | O 0 mSv [ped] | 5      | 5      | 1                 | 0 | 3 | 1 | 4 | 1 | 1 | 0 | 0  |
| MRI cervical and thoracic spine without IV contrast          | May be appropriate       | Expert Consensus | O 0 mSv    | O 0 mSv [ped] | 5      | 5      | 0                 | 0 | 1 | 0 | 8 | 0 | 0 | 1 | 0  |
| MRI cervical and thoracic spine with IV contrast             | May be appropriate       | Limited          | O 0 mSv    | O 0 mSv [ped] | 5      | 5      | 0                 | 0 | 2 | 0 | 6 | 2 | 0 | 0 | 0  |
| MRI lumbar spine without and with IV contrast                | May be appropriate       | Limited          | O 0 mSv    | O 0 mSv [ped] | 4      | 4      | 1                 | 1 | 2 | 4 | 2 | 0 | 0 | 0 | 0  |
| MRI orbits with IV contrast                                  | May be appropriate       | Limited          | O 0 mSv    | O 0 mSv [ped] | 4      | 4      | 1                 | 0 | 4 | 2 | 2 | 0 | 1 | 0 | 0  |

|                                                 |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|-------------------------------------------------|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| MRI lumbar spine without IV contrast            | Usually not appropriate | Expert Consensus | 0 0 mSv        | 0 0 mSv [ped]       | 3 | 3 | 3  | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 0 |
| MRI head with IV contrast                       | Usually not appropriate | Expert Consensus | 0 0 mSv        | 0 0 mSv [ped]       | 3 | 3 | 4  | 1 | 4 | 1 | 0 | 0 | 0 | 0 | 0 |
| CT orbits with IV contrast                      | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 9  | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT orbits without IV contrast                   | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT orbits without and with IV contrast          | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head with IV contrast                        | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 10 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head without IV contrast                     | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 6  | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 |
| CT head without and with IV contrast            | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 8  | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine with IV contrast                | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine without IV contrast             | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine without and with IV contrast    | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI lumbar spine with IV contrast               | Usually not appropriate | Expert Consensus | 0 0 mSv        | 0 0 mSv [ped]       | 1 | 1 | 6  | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 |
| CT cervical and thoracic spine with IV contrast | Usually not appropriate | Limited          | ☼☼☼☼ 10-30 mSv |                     | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|                                                             |                         |                  |                |  |   |   |    |   |   |   |   |   |   |   |   |
|-------------------------------------------------------------|-------------------------|------------------|----------------|--|---|---|----|---|---|---|---|---|---|---|---|
| CT cervical and thoracic spine without IV contrast          | Usually not appropriate | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv |  | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT cervical and thoracic spine without and with IV contrast | Usually not appropriate | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv |  | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Variant 2: Adult. Acute or subacute sensorimotor symptoms below a spinal cord level. Suspect transverse myelitis. Initial imaging.**

| Procedure                                                    | Appropriateness Category | SOE              | Adults RRL   | Peds RRL            | Rating | Median | Final Tabulations |   |   |   |   |   |   |   |    |
|--------------------------------------------------------------|--------------------------|------------------|--------------|---------------------|--------|--------|-------------------|---|---|---|---|---|---|---|----|
|                                                              |                          |                  |              |                     |        |        | 1                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  |
| MRI cervical and thoracic spine without and with IV contrast | Usually appropriate      | Limited          | O 0 mSv      | O 0 mSv [ped]       | 9      | 9      | 0                 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10 |
| MRI head without and with IV contrast                        | Usually appropriate      | Limited          | O 0 mSv      | O 0 mSv [ped]       | 7      | 7      | 0                 | 0 | 0 | 0 | 0 | 1 | 6 | 1 | 2  |
| MRI head without IV contrast                                 | May be appropriate       | Limited          | O 0 mSv      | O 0 mSv [ped]       | 5      | 5      | 0                 | 0 | 1 | 1 | 6 | 2 | 0 | 0 | 0  |
| MRI cervical and thoracic spine without IV contrast          | May be appropriate       | Limited          | O 0 mSv      | O 0 mSv [ped]       | 5      | 5      | 0                 | 0 | 1 | 0 | 5 | 3 | 1 | 0 | 0  |
| MRI cervical and thoracic spine with IV contrast             | May be appropriate       | Limited          | O 0 mSv      | O 0 mSv [ped]       | 5      | 5      | 0                 | 0 | 2 | 0 | 7 | 1 | 0 | 0 | 0  |
| MRI lumbar spine without and with IV contrast                | May be appropriate       | Expert Consensus | O 0 mSv      | O 0 mSv [ped]       | 4      | 4      | 4                 | 1 | 0 | 3 | 2 | 1 | 0 | 0 | 0  |
| MRI head with IV contrast                                    | Usually not appropriate  | Expert Consensus | O 0 mSv      | O 0 mSv [ped]       | 3      | 3      | 4                 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0  |
| MRI lumbar spine without IV contrast                         | Usually not appropriate  | Expert Consensus | O 0 mSv      | O 0 mSv [ped]       | 2      | 2      | 5                 | 1 | 0 | 2 | 3 | 0 | 0 | 0 | 0  |
| CT orbits with IV contrast                                   | Usually not appropriate  | Expert Consensus | ⊕⊕⊕ 1-10 mSv | ⊕⊕⊕ 0.3-3 mSv [ped] | 1      | 1      | 11                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  |

|                                                    |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|----------------------------------------------------|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| CT orbits without IV contrast                      | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT orbits without and with IV contrast             | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head with IV contrast                           | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head without IV contrast                        | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 10 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head without and with IV contrast               | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine with IV contrast                   | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine without IV contrast                | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 9  | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine without and with IV contrast       | Usually not appropriate | Limited          | ☼☼☼☼ 10-30 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI lumbar spine with IV contrast                  | Usually not appropriate | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 7  | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 |
| MRI orbits without and with IV contrast            | Usually not appropriate | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 6  | 0 | 2 | 1 | 2 | 0 | 0 | 0 | 0 |
| MRI orbits without IV contrast                     | Usually not appropriate | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 6  | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 |
| CT cervical and thoracic spine with IV contrast    | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv |                     | 1 | 1 | 9  | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT cervical and thoracic spine without IV contrast | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv |                     | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|                                                             |                         |         |                |               |   |   |    |   |   |   |   |   |   |   |   |
|-------------------------------------------------------------|-------------------------|---------|----------------|---------------|---|---|----|---|---|---|---|---|---|---|---|
| CT cervical and thoracic spine without and with IV contrast | Usually not appropriate | Limited | ⊕⊕⊕⊕ 10-30 mSv |               | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI orbits with IV contrast                                 | Usually not appropriate | Limited | ○ ○ mSv        | ○ ○ mSv [ped] | 1 | 1 | 7  | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 |

**Variant 3: Adult. Known demyelinating disease. Stable neurologic examination. Surveillance imaging.**

| Procedure                                                    | Appropriateness Category | SOE              | Adults RRL   | Peds RRL            | Rating | Median | Final Tabulations |   |   |   |   |   |   |   |   |
|--------------------------------------------------------------|--------------------------|------------------|--------------|---------------------|--------|--------|-------------------|---|---|---|---|---|---|---|---|
|                                                              |                          |                  |              |                     |        |        | 1                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| MRI head without and with IV contrast                        | Usually appropriate      | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 9      | 9      | 0                 | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 6 |
| MRI cervical and thoracic spine without and with IV contrast | Usually appropriate      | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 9      | 9      | 0                 | 0 | 1 | 0 | 3 | 0 | 1 | 0 | 6 |
| MRI head without IV contrast                                 | Usually appropriate      | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 8      | 8      | 0                 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 5 |
| MRI cervical and thoracic spine without IV contrast          | Usually appropriate      | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 7      | 7      | 0                 | 0 | 1 | 0 | 1 | 2 | 4 | 0 | 3 |
| MRI cervical and thoracic spine with IV contrast             | May be appropriate       | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 5      | 5      | 0                 | 0 | 1 | 1 | 8 | 0 | 0 | 0 | 0 |
| MRI orbits without and with IV contrast                      | Usually not appropriate  | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 3      | 3      | 2                 | 1 | 4 | 1 | 2 | 0 | 0 | 0 | 0 |
| MRI head with IV contrast                                    | Usually not appropriate  | Expert Consensus | ○ ○ mSv      | ○ ○ mSv [ped]       | 3      | 3      | 4                 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT orbits with IV contrast                                   | Usually not appropriate  | Expert Consensus | ⊕⊕⊕ 1-10 mSv | ⊕⊕⊕ 0.3-3 mSv [ped] | 1      | 1      | 11                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT orbits without IV contrast                                | Usually not appropriate  | Expert Consensus | ⊕⊕⊕ 1-10 mSv | ⊕⊕⊕ 0.3-3 mSv [ped] | 1      | 1      | 11                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|                                                    |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|----------------------------------------------------|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| CT orbits without and with IV contrast             | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head with IV contrast                           | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head without IV contrast                        | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head without and with IV contrast               | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine with IV contrast                   | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine without IV contrast                | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine without and with IV contrast       | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI lumbar spine without IV contrast               | Usually not appropriate | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 7  | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |
| MRI lumbar spine without and with IV contrast      | Usually not appropriate | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 7  | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI lumbar spine with IV contrast                  | Usually not appropriate | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 8  | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI orbits without IV contrast                     | Usually not appropriate | Expert Consensus | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 6  | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| CT cervical and thoracic spine with IV contrast    | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv |                     | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT cervical and thoracic spine without IV contrast | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv |                     | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|                                                             |                         |                  |                |               |   |   |    |   |   |   |   |   |   |   |   |
|-------------------------------------------------------------|-------------------------|------------------|----------------|---------------|---|---|----|---|---|---|---|---|---|---|---|
| CT cervical and thoracic spine without and with IV contrast | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv |               | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI orbits with IV contrast                                 | Usually not appropriate | Limited          | ○ ○ mSv        | ○ ○ mSv [ped] | 1 | 1 | 6  | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |

**Variant 4: Adult. Known demyelinating disease. New or progressive neurologic deficits. Initial imaging.**

| Procedure                                                    | Appropriateness Category          | SOE              | Adults RRL   | Peds RRL            | Rating | Median | Final Tabulations |   |   |   |   |   |   |   |    |
|--------------------------------------------------------------|-----------------------------------|------------------|--------------|---------------------|--------|--------|-------------------|---|---|---|---|---|---|---|----|
|                                                              |                                   |                  |              |                     |        |        | 1                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  |
| MRI head without and with IV contrast                        | Usually appropriate               | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 9      | 9      | 0                 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10 |
| MRI cervical and thoracic spine without and with IV contrast | Usually appropriate               | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 9      | 9      | 0                 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 8  |
| MRI orbits without and with IV contrast                      | Usually appropriate               | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 7      | 7      | 0                 | 0 | 1 | 0 | 4 | 0 | 2 | 1 | 3  |
| MRI head without IV contrast                                 | May be appropriate                | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 6      | 6      | 0                 | 0 | 1 | 0 | 4 | 4 | 1 | 0 | 0  |
| MRI orbits without IV contrast                               | May be appropriate                | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 5      | 5      | 0                 | 0 | 2 | 0 | 7 | 0 | 1 | 0 | 0  |
| MRI cervical and thoracic spine without IV contrast          | May be appropriate                | Limited          | ○ ○ mSv      | ○ ○ mSv [ped]       | 5      | 5      | 0                 | 0 | 1 | 0 | 5 | 2 | 2 | 0 | 0  |
| MRI cervical and thoracic spine with IV contrast             | May be appropriate                | Expert Consensus | ○ ○ mSv      | ○ ○ mSv [ped]       | 5      | 5      | 0                 | 0 | 1 | 1 | 6 | 2 | 0 | 0 | 0  |
| MRI orbits with IV contrast                                  | May be appropriate (Disagreement) | Expert Opinion   | ○ ○ mSv      | ○ ○ mSv [ped]       | 5      | 5      | 2                 | 1 | 0 | 2 | 3 | 1 | 1 | 0 | 0  |
| CT orbits with IV contrast                                   | Usually not appropriate           | Expert Consensus | ☼☼☼ 1-10 mSv | ☼☼☼ 0.3-3 mSv [ped] | 1      | 1      | 11                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  |

|                                                    |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|----------------------------------------------------|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| CT orbits without IV contrast                      | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT orbits without and with IV contrast             | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head with IV contrast                           | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head without IV contrast                        | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head without and with IV contrast               | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine with IV contrast                   | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine without IV contrast                | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv   | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine without and with IV contrast       | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI lumbar spine without IV contrast               | Usually not appropriate | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 7  | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 |
| MRI lumbar spine without and with IV contrast      | Usually not appropriate | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 6  | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |
| MRI lumbar spine with IV contrast                  | Usually not appropriate | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 1 | 1 | 8  | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| CT cervical and thoracic spine with IV contrast    | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv |                     | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT cervical and thoracic spine without IV contrast | Usually not appropriate | Expert Consensus | ☼☼☼☼ 10-30 mSv |                     | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|                                                             |                         |                  |                |               |   |   |    |   |   |   |   |   |   |   |   |
|-------------------------------------------------------------|-------------------------|------------------|----------------|---------------|---|---|----|---|---|---|---|---|---|---|---|
| CT cervical and thoracic spine without and with IV contrast | Usually not appropriate | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv |               | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI head with IV contrast                                   | Usually not appropriate | Expert Consensus | ○ ○ mSv        | ○ ○ mSv [ped] | 1 | 1 | 6  | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |

**Variant 5: Adult. Acute or chronic symmetric weakness. Suspect demyelinating disease of the peripheral nervous system. Initial imaging.**

| 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               | Limited        | ○ ○ mSv    | ○ ○ mSv [ped] | 9      | 9      | 0                 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 8 |
| MRI brachial plexus without and with IV contrast             | Usually appropriate               | Limited        | ○ ○ mSv    | ○ ○ mSv [ped] | 9      | 9      | 0                 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 7 |
| MRI lumbosacral plexus without and with IV contrast          | Usually appropriate               | Limited        | ○ ○ mSv    | ○ ○ mSv [ped] | 9      | 9      | 0                 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 8 |
| MRI cervical and thoracic spine without and with IV contrast | Usually appropriate               | Limited        | ○ ○ mSv    | ○ ○ mSv [ped] | 9      | 9      | 0                 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 6 |
| MRI head without and with IV contrast                        | May be appropriate                | Limited        | ○ ○ mSv    | ○ ○ mSv [ped] | 5      | 5      | 1                 | 0 | 0 | 0 | 6 | 2 | 0 | 1 | 0 |
| MRI lumbar spine without IV contrast                         | May be appropriate (Disagreement) | Expert Opinion | ○ ○ mSv    | ○ ○ mSv [ped] | 5      | 5      | 0                 | 0 | 2 | 0 | 5 | 2 | 1 | 0 | 0 |
| MRI brachial plexus without IV contrast                      | May be appropriate (Disagreement) | Expert Opinion | ○ ○ mSv    | ○ ○ mSv [ped] | 5      | 5      | 0                 | 0 | 1 | 1 | 4 | 2 | 2 | 0 | 0 |
| MRI lumbosacral plexus without IV contrast                   | May be appropriate (Disagreement) | Expert Opinion | ○ ○ mSv    | ○ ○ mSv [ped] | 5      | 5      | 0                 | 0 | 1 | 1 | 4 | 2 | 2 | 0 | 0 |
| MRI cervical and thoracic spine without IV contrast          | May be appropriate                | Limited        | ○ ○ mSv    | ○ ○ mSv [ped] | 5      | 5      | 0                 | 0 | 1 | 0 | 5 | 2 | 2 | 0 | 0 |

|                                                  |                         |                  |                |                     |   |   |    |   |   |   |   |   |   |   |   |
|--------------------------------------------------|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| MRI lumbosacral plexus with IV contrast          | May be appropriate      | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 5 | 5 | 1  | 1 | 0 | 3 | 4 | 0 | 1 | 0 | 0 |
| MRI lumbar spine with IV contrast                | Usually not appropriate | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 3 | 3 | 4  | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 |
| MRI cervical and thoracic spine with IV contrast | Usually not appropriate | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 3 | 3 | 2  | 1 | 6 | 0 | 1 | 0 | 0 | 0 | 0 |
| MRI brachial plexus with IV contrast             | Usually not appropriate | Limited          | ○ 0 mSv        | ○ 0 mSv [ped]       | 3 | 3 | 4  | 0 | 2 | 1 | 3 | 0 | 0 | 1 | 0 |
| CT orbits with IV contrast                       | Usually not appropriate | Expert Consensus | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT orbits without IV contrast                    | Usually not appropriate | Expert Consensus | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT orbits without and with IV contrast           | Usually not appropriate | Expert Consensus | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head with IV contrast                         | Usually not appropriate | Limited          | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head without IV contrast                      | Usually not appropriate | Expert Consensus | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗ 0.3-3 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT head without and with IV contrast             | Usually not appropriate | Expert Consensus | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗⊗ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine with IV contrast                 | Usually not appropriate | Expert Consensus | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗⊗ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine without IV contrast              | Usually not appropriate | Expert Consensus | ⊗⊗⊗ 1-10 mSv   | ⊗⊗⊗⊗ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT lumbar spine without and with IV contrast     | Usually not appropriate | Expert Consensus | ⊗⊗⊗⊗ 10-30 mSv | ⊗⊗⊗⊗ 3-10 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|                                                             |                         |                  |                |               |   |   |    |   |   |   |   |   |   |   |   |
|-------------------------------------------------------------|-------------------------|------------------|----------------|---------------|---|---|----|---|---|---|---|---|---|---|---|
| MRI head without IV contrast                                | Usually not appropriate | Limited          | 0 0 mSv        | 0 0 mSv [ped] | 1 | 1 | 6  | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| MRI orbits without and with IV contrast                     | Usually not appropriate | Expert Consensus | 0 0 mSv        | 0 0 mSv [ped] | 1 | 1 | 9  | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| MRI orbits without IV contrast                              | Usually not appropriate | Expert Consensus | 0 0 mSv        | 0 0 mSv [ped] | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT cervical and thoracic spine with IV contrast             | Usually not appropriate | Limited          | ☢☢☢☢ 10-30 mSv |               | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT cervical and thoracic spine without IV contrast          | Usually not appropriate | Limited          | ☢☢☢☢ 10-30 mSv |               | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT cervical and thoracic spine without and with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢☢ 10-30 mSv |               | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI head with IV contrast                                   | Usually not appropriate | Limited          | 0 0 mSv        | 0 0 mSv [ped] | 1 | 1 | 6  | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 0 |
| MRI orbits with IV contrast                                 | Usually not appropriate | Limited          | 0 0 mSv        | 0 0 mSv [ped] | 1 | 1 | 10 | 1 | 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](http://www.acr.org/ac).