Challenges and Controversies
Chapter 15 - Spine

AMA Guides to the Evaluation of Permanent Impairment
Fifth Edition

AIMEHI
June 5, 2003

Challenges

1. Which method? DRE vs. ROM method
2. How do you select the correct DRE and the value within a DRE range?
3. Why do single level fusions usually result in greater impairment than multiple level fusions?
4. How should you apportion spinal impairment?
5. What are the problems with the ROM method?

Revisions to the Fifth Edition

1. Use of diagnosis-related estimate (DRE) and range-of-motion (ROM) methods “clarified”
2. Impairment rated only when at MMI
3. DRE impairments encompass a 3% range
4. Spinal cord injury rated according to a functional approach in the nervous system chapter
5. “differentiators” now “objective findings”
6. Alteration of motion segment integrity redefined

Introduction

“The DRE method is the primary method used to evaluate individuals with an injury. Use the ROM method when the impairment is not caused by an injury or when an individual’s condition is not well recognized by a DRE category. The ROM method is also now used to evaluate individuals with an injury at more than one level in the same spinal region and in certain individuals with recurrent pathology.”

Exceptions:

• Individuals with corticospinal involvement who have been treated with decompression and multilevel fusions within the same region (rate with DRE)
• ROM model used if statutorily mandated
Challenges

- Controversies over the method to use (text not always clear)
- Inconsistencies and lack of clarity how this relates to other chapters, e.g. pain (chapters were written in isolation)
- Errors in text
- Significant changes, e.g. ranges, and the individual with radiculopathy who had a fusion

15.1 Principles of Assessment

Alteration of motion segment integrity

- Loss of motion segment integrity (rare)
  - Increased Translation or Angular Motion
- Decreased motion (new, common)
  - Developmental changes
  - Fusion
  - Fracture healing
  - Healed infection
  - Surgical arthrodesis (including failed fusion)

15.2 Determining the Appropriate Method for Assessment

Range of Motion (ROM) Method

1. Not an injury, cause uncertain AND DRE method does not apply, or cannot be easily categorized. Explain reasoning.
2. Multilevel involvement in same region
   - Fractures at multilevels
   - Disk herniations or stenosis with radiculopathy at multiple levels or bilaterally (per Dr. Haralson, Chair of the Spine Chapter, herniations must be accompanied by radiculopathy.)

Diagnosis-Related Estimate (DRE) Range-of-Motion (ROM) Methods

- “The DRE method is the principal methodology used to evaluate an individual who has had a distinct injury”
- “When the cause of the impairment is not easily determined and if the impairment can be well characterized by the DRE method, the evaluator should use the DRE method”
15.2 Determining the Appropriate Method for Assessment

Range of Motion (ROM) Method

5. Multiple episodes of other pathology producing alteration of motion segment integrity and/or radiculopathy.

6. If statutorily mandated.

“In the small number of instances in which the ROM and DRE methods can be used, evaluate the individual with both methods and award the higher rating.”

15.2a Summary of Specific Procedures and Directions

1. History, examination, review information

2. Consider permanency

3. Select region: cervical, thoracic, lumbar

4. Rate by ROM model if required

5. Determine DRE Category
   - most I, II, III
   - now only 5 categories
   - spinal cord injury now rated by functional status using criteria from Neurology chapter

6. Arrange percentage within DRE 3% range
   - If residual symptoms or objective findings impact the ability to perform ADLs despite treatment provide higher percentage
   - If had prior condition, was asymptomatic, and now at MMI has symptoms that impact ADLS, provide higher percentage
   - Provide explicit documentation

7. If more than one spine region is impaired determine the impairment of the other region(s) with the DRE method and combine

8. Determine if there was a preexisting impairment. Congenital, developmental or other preexisting conditions may be differentiated by examining preinjury roentgenograms

9. If requested, apportion.
   - Subtract pre-existing impairment, preferably using the same model

10. For individuals with corticospinal tract involvement use Table 15-6
### Diagnosis Related Estimates Method (15.3-15.7)

- Five DRE categories for 3 regions
- Rate the individual when at MMI
- Two approaches, based on:
  1. Symptoms, signs and test results, based on “Clinical findings” as indicated in Box 15-1 (p.382-3).
  2. Fractures and/or dislocations

#### Box 15-1 Clinical Findings (p. 382-383)

**Muscle Spasm**
- Common in Acute, but Rare in Chronic Back Pain, Occ. Visible, more often palpable, present supine and during “walking in place” (fails to relax side that is weight bearing).

**Muscle guarding**
- “contraction to minimize motion or agitation”, but “can be relaxed”

**Asymmetry of Spinal Motion:**
- 1 of 3 planes, caused by guarding or spasm.

**Nonverifiable Radicular Root Pain**
- pain in the distribution of a root, but no objective clinical, imaging, or EMG findings.

**Reflexes**
- Marked asymmetry (no longer absence) on repeated testing.

**Weakness and Loss of Sensation:**
- Sensory findings must be in a strict anatomic distribution
- Motor findings should be consistent with affected nerve structures (weakness is New)
- “Significant, long standing weakness is usually accompanied by atrophy.”

**Atrophy**
- Still 2 cm. @ thigh, but, now 1 cm. @ arm, forearm, & leg.

**Radiculopathy**
- Dermatomal distribution of pain, numbness, and/or paresthesias.
- Root tension sign Usually positive.
- “The diagnosis … must be substantiated by an appropriate finding on an imaging study. The presence of findings on an imaging study in and of itself does not make the diagnosis of radiculopathy. There must also be clinical evidence as described above.”
Electrodiagnostic Studies
- multiple positive waves and fibrillation potentials in muscles innervated by one nerve root.
- quality of the person performing and interpreting the study is critical. EMG should be performed only by a licensed physician qualified by reason of education, training, and experience in these procedures." ....
- (H Reflex has been deleted as criterion)

Alteration of Motion Segment Integrity
- “...can be either ...(increased translational or angular motion) or decreased motion secondary to developmental fusion, fracture healing, healed infection, or surgical arthrodesis.
- cannot be determined by physical examination but is evaluated with flexion and extension roentgenograms.”

Cauda Equina Syndrome
- Bowel or Bladder dysfunction, saddle anesthesia, variable loss of motor and sensory function.

Urodynamic Tests
- useful when Cauda Equina Syndrome is possible but not certain.
- Normal cystometrogram makes the presence of nerve related bladder dysfunction unlikely.

“In most cases . . . can assign DRE Category I, II or III” (383)
1. Category I: Subjective (findings) only
2. Category II: Objective findings, but when at MMI, no radiculopathy
3. Category III: Radiculopathy at MMI, or prior radiculopathy successfully treated by surgery.

Range of Potential Impairments
“If an individual had a prior condition (including prior rating), was asymptomatic, and now (with or without new injury) –at MMI – has symptoms (does not say “new findings”) that impact the ability to perform activities of daily living, the higher (not “highest”) rating within a range may also be used.” (p. 381)
### 15.4 DRE: Lumbar Spine

**Table 15-3 Criteria for Rating Impairment Due to Lumbar Spine Injury (p. 384)**

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>5-8%</td>
<td>10-13%</td>
<td>20-23%</td>
<td>25-28%</td>
</tr>
</tbody>
</table>

No findings  
Non-radicular findings; h/o documented radiculopathy

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>&lt;25% compression fx one vert. body; 2. post. element fx without dislocation; 3. spinous or transverse fx with displacement</td>
<td>1.25%-50% compression fx one vert. body; 2. post. element fx with displacement</td>
<td>&gt;50% compression fx one vert. body</td>
<td>&gt;50% compression fx one vert. body</td>
</tr>
</tbody>
</table>

**Table 15-5 (p. 392)**

### 15.6 DRE: Cervical Spine

<table>
<thead>
<tr>
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<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>5-8%</td>
<td>15-18%</td>
<td>25-28%</td>
<td>35-38%</td>
</tr>
</tbody>
</table>

No findings  
Non-radicular findings; h/o documented radiculopathy improved with nonoperative treatment

<table>
<thead>
<tr>
<th>I</th>
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</table>

**Table 15-5 (p. 392)**

### 15.8 Range of Motion Method

**Range of Motion (ROM) Method**

- Rate each of 3 separate factors, and then combine all 3 ratings using the Combined Values Chart (p. 604-606).

1. **Diagnosis:** Table 15-7, p. 404  
2. **Range of Motion/Ankylosis**  
3. **Neurologic Deficit**

**Measure Range Of Motion**

- “Inclinometer is the preferred device” (p.400)  
- “An impairment rating based on loss of motion is valid only if there is medically documented injury or illness with a permanent anatomic and/or physiologic residual dysfunction.” (p.398)  
  (Excludes limited motion based in symptom magnification)  
- “When physiologic measurements fail to match known pathology, they should be repeated and, if still inconsistent, disallowed until documented evidence is provided for the abnormalities noted on physical examination.” (p. 399)
15.8 Range of Motion Method

Measure Range of Motion

Reproducibility of Measurement: (p. 399)
3 consecutive measurements
Calculate the mean (average)
If average is < 50°, each of the 3 measurements must fall within 5° of the mean.
If average is > 50°, each of the 3 measurements must fall within 10% of the mean.
Motion testing can be repeated up to 6 times to obtain 3 consecutive measurements that meet these criteria.

Inconsistent Range of Motion?

• “If after six measurements inconsistency persists, the spinal motions are considered invalid. The measurements and accompanying impairment estimates may then be disallowed, in part or in their entirety.” (p. 399)

15.9 ROM: Lumbar Spine

Additional Lumbar Validity Test

“Tightest” Straight Leg Raise minus the sum of sacral inclinometer measured sacral flexion plus sacral extension should be ≤ 15°.
Tightest SLR – [sacral flex. + sacral ext.] ≤ 15°
Holds if sum of sacral flexion and extension is less than average, < 65° in women, < 55° in men.
Also invalid if individual resists passive SLR without other evidence of radiculopathy.
Either repeat the flexion-extension measurements, or disallow the impairment for flexion / extension.

Range of Motion (ROM) Method

• Rate each of 3 separate factors, and then combine all 3 ratings using the Combined Values Chart (p. 604-606).

1. Diagnosis: Table 15-7, p. 404
2. Range of Motion/Ankylosis
3. Neurologic Deficit