

Challenges and Controversies

Chapter 15 - Spine

AMA Guides to the Evaluation of Permanent Impairment Fifth Edition

AIMEHI
June 5, 2003

1

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?

2

Chapter 15

The Spine	373
15.1 Principles of Assessment	374
15.2 Determining the Appropriate Method for Assessment	379
15.3 Diagnosis-Related Estimates Method	381
15.4 DRE: Lumbar Spine	384
15.5 DRE: Thoracic Spine	388
15.6 DRE: Cervical Spine	392
15.7 Rating Corticospinal Tract Damage	395
15.8 Range-of-Motion Method	398
15.9 ROM: Lumbar Spine	405
15.10 ROM: Thoracic Spine	411
15.11 ROM: Cervical Spine	417
15.12 Nerve Root and/or Spinal Cord	423
15.13 Criteria for Converting Whole Person Impairment to Regional Spine Impairment	427
15.14 The Pelvis	427
15.15 Spine Evaluation Summary	429

;

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

4

15
373-374

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.”

5

15
373-374

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

6

15
373-374

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

7

15.1 Principles of Assessment

- Defines the standards for the clinical assessment – therefore opens an “incomplete” assessment to challenge
- Components
 - Comprehensive medical history
 - Review of all pertinent records
 - Comprehensive descriptions
 - Careful and thorough physical examination
 - All findings
 - Description of how the rating was calculated

15.1

8 374-379

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)

15.1

9 378

15.2 Determining the Appropriate Method for Assessment

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

10 379

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.)

15.2

11 379-380

15.2 Determining the Appropriate Method for Assessment

Range of Motion (ROM) Method

3. Alteration of motion segment integrity at multiple levels (e.g. multilevel fusions), unless there is involvement of the corticospinal tract.
4. Recurrent radiculopathy caused by a new (recurrent) disk herniation or a recurrent injury in the same spinal region. (per Dr. Haralson, Chair of the Spine Chapter, to be interpreted as the cause of the recurrent radiculopathy may be a herniation or recurrent injury, not any recurrent injury.)

15.2

12 380

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.”

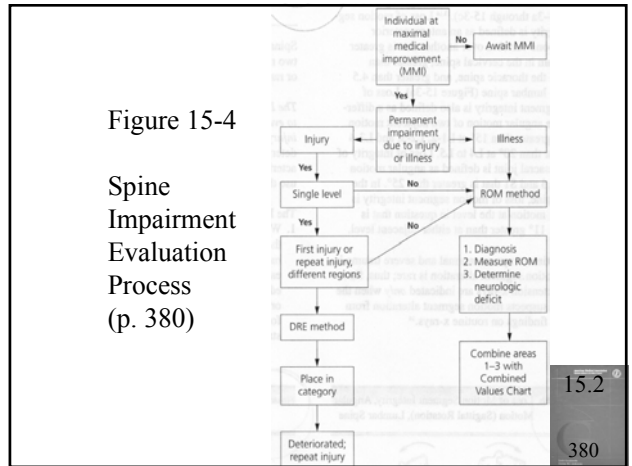


Figure 15-4
Spine Impairment Evaluation Process (p. 380)

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

15.2a Summary of Specific Procedures and Directions

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

15.2a Summary of Specific Procedures and Directions

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

15.2a Summary of Specific Procedures and Directions

9. If requested, apportion.
 - Subtract pre-existing impairment, preferably using the same model
10. For individuals with corticospinal tract involvement use Table 15-6

15.3 Diagnosis-Related Estimates Method


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

19 381-384

15.3 Diagnosis-Related Estimates Method

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



20 382-383

15.3 Diagnosis-Related Estimates Method

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”

21 382-383

15.3 Diagnosis-Related Estimates Method

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

- **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) repeated testing.

22 382-383

15.3 Diagnosis-Related Estimates Method

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

- **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.

23 382-383

15.3 Diagnosis-Related Estimates Method

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

- **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.”

24 382-383

15.3 Diagnosis-Related Estimates Method

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

• **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)

15.3

25 382-383

15.3 Diagnosis-Related Estimates Method

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

• **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.”

15.3

26 382-383

15.3 Diagnosis-Related Estimates Method

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

• **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.

15.3

27 382-383

15.3 Diagnosis-Related Estimates Method

“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.

15.3

28 383

15.3 Diagnosis-Related Estimates Method

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)

15.3

29 381

15.3 Diagnosis-Related Estimates Method

3% is duplicative to Chapter 18

- Chapter 15 Spine and Chapter 18 Pain written by different Committees, unaware of 3% range in each Chapter

30

15.4 DRE: Lumbar Spine

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

I	II	III	IV	V
0%	5-8%	10-13%	20-23%	25-28%
No findings	Non-radicular findings; h/o resolved documented radiculopathy	Radiculopathy; h/o radiculopathy resolved with surgery	Loss or alteration of motion segment integrity	III and IV
	1.<25%compression fx one vert. body; 2. post. element fx without dislocation; 3.spinous or transverse fx with displacement	1.25%-50% compression fx one vert. body; 2.post. element fx with displacement	>50% compression fx one vert. body	>50% compression fx one vert. Body with <u>15.41</u> neurological compromise 384

15.6 DRE: Cervical Spine

I	II	III	IV	V
0%	5-8%	15-18%	25-28%	35-38%
No findings	Non-radicular findings; h/o documented radiculopathy improved with nonoperative treatment	Radiculopathy; h/o radiculopathy improved with surgery	Loss or alteration of motion segment integrity	Significant UE imp. Requiring use of UE ext. functional or adaptive devices; total loss at a single level or severe, multilevel neuro dysfunction
	1.<25%compression fx one vert. body; 2. post. element fx without dislocation; 3.spinous or transverse fx with displacement	1.25%-50% compression fx one vert. body; 2.post. element fx with displacement	>50% compression fx one vert. Body without residual neural compromise	Structural compromise of the spinal canal is present with severe motor and sensory deficits by without le involvement

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).

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

15.8

Table 15-7
Criteria for Rating Whole Person . . . as Part of the ROM Model (5th ed., 404)

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).

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

15.8

15.8 Range of Motion Method

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 15.8 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 $< 50^\circ$, each of the 3 measurements must fall within 5° of the mean.

If average is $> 50^\circ$, 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.

37

15.8

399

15.8 Range of Motion Method

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)

38

15.8

399

15.9 ROM: Lumbar Spine

Figure 15-8 Lumbar Flexion and Extension (p. 405)

Figure 15-8 Two-Inclinometer Technique for Measuring Lumbar Flexion and Extension

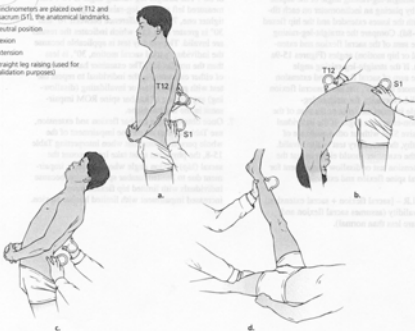
The inclinometers are placed over T12 and the sacrum (S1), the anatomical landmarks.

A. neutral position

B. flexion

C. extension

D. straight leg raising (used for validation purposes)



15.9

405

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 $\leq 15^\circ$.

Tightest SLR - [sacral flex. + sacral ext.] $\leq 15^\circ$

Holds if sum of sacral flexion and extension is less than average, $< 65^\circ$ in women, $< 55^\circ$ 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.

40

15.9

406

15.12 Nerve Root and/or Spinal Cord

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**

41

15.12

423-426

