

2015 Spine MMI and Impairment Rating

Disclaimer

The videos in this presentation are for demonstration purposes only. There may be more than one way to accomplish the physical examination of the injured employee and to obtain the required information to calculate a whole person impairment. The examining doctor should refer to the adopted edition of the AMA, *Guides to the Evaluation of Permanent Impairment*, and the decisions from the TDI-DWC dispute resolution process for guidance.

Disclaimer

The material presented in this presentation is made available by the TDI-DWC for educational purposes only. The material is not intended to represent the only method or procedure appropriate for the medical situations discussed. Rather, it is intended to present an approach, view, statement, or opinion of the faculty, which may be helpful to others who face similar situations.

Spine Case 1, MMI/IR

History of Injury

A 25-year-old auto mechanic lifted a tire at work 4 months ago and experienced lower back pain following the incident.

Spine Case 1, MMI/IR

Treatment History

- He saw his family doctor the day of his injury and was diagnosed as having a lumbar sprain; however, the hand written records are largely illegible.
- Initial treatment consisted of ibuprofen, cyclobenzaprine and tramadol, and he was restricted from returning to work in any capacity for two weeks.

Spine Case 1, MMI/IR

Treatment History

- He also had four visits of physical therapy in the family physician's office consisting of hot packs, electrical stimulation, and ultrasound.
- He had a follow up two weeks later reporting symptoms of pain extending into his right buttock with a “numbness and tingling” sensation in his right lateral thigh. He was given a prescription for meloxicam, instead of ibuprofen.

Spine Case 1, MMI/IR

Treatment History

- The family physician released him to return to work with restrictions of not lifting more than 20 pounds. His employer was able to accommodate these restrictions.

Spine Case 1, MMI/IR

Imaging

- 4 weeks post injury, lumbar spine plain film x-rays and were obtained. They were reported to show moderate spondylosis at L4/L5

Spine Case 1, MMI/IR

Additional Treatment

- 6 weeks post injury, a pain management physician was consulted upon referral from the injured employee's family doctor.
- The pain management physician's records reported "pain" with "lumbar ROM," mild weakness with right ankle dorsiflexion, and "positive" right SLR.

Spine Case 1, MMI/IR

Additional Treatment

- The pain management physician's changed his medication to Lodine and continued the work restrictions.
- A Lumbar MRI showed disk desiccation at L4/L5 with a 5 mm right posterolateral disc protrusion at L4/L5, displacing the right L5 nerve root.

Spine Case 1, MMI/IR

Designated Doctor Medical History

- The chief complaint low back pain with radiation into the right buttock, posterior thigh, and anterolateral leg.
- He is taking Lodine 400 bid, Zanaflex 4 mg bid.
- Cholecystectomy 2004, right rotator cuff repair 2006. Parents are both alive, mother has history of diabetes.

Spine Case 1, MMI/IR

Designated Doctor Medical History

- Auto mechanic since 2000, present employer since 2005. Currently working with restrictions.
- Associates degree in auto mechanics. Married 5 years with 2 children ages 4 and 2. Drinks approximately 1-2 alcoholic beverages (mostly beer) 2-3 days per week. Non-smoker. No history of substance abuse. Sleep disturbed due to back pain. No history of psychological distress or treatment.
- Oswestry score is 52%. Pain scale 7/10.

Spine Case 1, MMI/IR

Designated Doctor Physical Examination

- VITALS: Height 70 inches, Weight 175 lbs, BP 130/82, Pulse 65, Respiration 16
- Pleasant affect. Cooperative with history and examination. Oriented to time, person and place, with normal attention span and concentration.

Spine Case 1, MMI/IR

Designated Doctor Physical Examination

- Able to rise from sitting to standing with difficulty assuming lumbar lordosis. Ambulates with normal gait. No scars on the back or trunk. Slight left trunk list.
- Is able to walk on heels and toes, squat and perform 10 calf raises on each leg without obvious weakness.
- However there is 4/5 strength the right EHL, right tibialis anterior, and right hip abductors; otherwise manual muscle testing shows 5/5 strength.

Spine Case 1, MMI/IR

Designated Doctor Physical Examination

- The patellar and Achilles DTRs are 2+ bilaterally. The medial hamstring reflex is not obtainable bilaterally. Sensation was slightly decreased over the right posterior thigh and anterolateral leg. There is no lower extremity atrophy. Pedal pulses were normal.

Spine Case 1, MMI/IR

Designated Doctor Physical Examination

- Supine SLR is 45° on the right where it produces increased sharp lower back pain extending into the right buttock and posterior thigh. The pain is worsened with ankle dorsiflexion and hip adduction/internal rotation and relieved with knee flexion/hip abduction/external rotation.

Spine Case 1, MMI/IR

Designated Doctor Physical Examination

- Left SLR was to 70° and produces hamstring tightness/discomfort only. Prone hip extension with knee flexion is limited only by hip flexor tightness without evidence of femoral nerve root tension signs.

Spine Case 1, MMI/IR

Designated Doctor Physical Examination

- There was some tenderness with palpation and hypertonicity of the lumbar paraspinal muscles, right quadratus lumborum at the L4 segmental level on the right, and the right gluteus medius (L4/L5/S1).

Spine Case 1, MMI/IR

Designated Doctor Examination

- Based on the medical records and your examination of the injured employee, what is the compensable injury for certifying MMI and IR?

Spine Case 1, MMI/IR

MMI?

- **Questions for the Designated Doctor to consider in the examination:**

Has MMI been reached? If so, on what date (may not be greater than the statutory MMI date shown above)?

- Log On to *ODG*.

Official Disability Guidelines® (20th annual edition) &
ODG® *Treatment in Workers' Comp* (13th annual edition)

I. ODG® Treatment Guidelines

a. [ODG Treatment Index](#)

b. [ODG UR Advisor](#) (ICD-CPT)

c. [Drug Formulary](#) (Appendix A)

II. ODG® Duration Guidelines

a. [ICD-9/10 Index](#)

b. [Keyword Index](#)

c. [CPT® Index](#)

d. [Comorbidity Calculator](#)

e. [RTW Prescription](#)

III. ODG® Claims Reserving

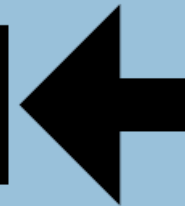
a. [ODG Reserve Calculator™](#)

Quick Links: [How to Use ODG](#) & [How to Suggest ODG Updates](#)

Infectious Diseases (updated 06/08/15)

Knee & Leg (updated 05/05/15)

Low Back (updated 05/15/15)



Mental Illness & Stress (updated 03/25/15)

Neck & Upper Back (updated 05/12/15)

Pain (updated 06/15/15)

Pulmonary (updated 05/27/15)

Shoulder (updated 05/04/15)

Low Back Chapter

Treatment Planning, CAA, and Procedure Summary

ODG -TWC

ODG Treatment

Integrated Treatment/Disability Duration Guidelines

Low Back - Lumbar & Thoracic (Acute & Chronic)

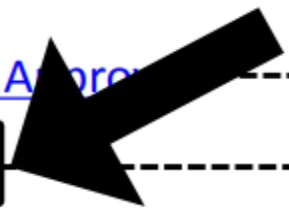
[Back to ODG - TWC Index](#)

(updated 05/15/15)

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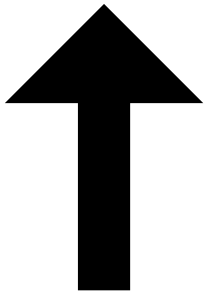


Low Back Procedure Summary A-Z

| Procedure Summary – Low Back | |
|--|--|
| Procedure/topic | Summary of medical evidence |
| Click to jump ahead: A B C D E F G H I K L M N O P R S T U V W X Y | |
| Abobotulinum toxinA (Dysport) | See Botulinum toxin . |
| AccuraScope procedure (North American Spine) | Not recommended. No quality studies of the AccuraScope procedure are published in peer-reviewed journals accepted into Medline, as required by ODG. The AccuraScope uses laser to perform anterior endoscopic neural decompression or discectomy. Peer reviewed studies of minimally invasive lumbar spine surgery procedures generally have not been positive. (Payer, 2011) Otherwise the procedure's published coverage is limited to the lay press, along with similar procedures from Laser Spine Institute. (Bloomberg, 2011) See also Percutaneous endoscopic laser discectomy (PELD), where comparative studies and particularly RCTs are scarce, and, where they exist, found that there was no clear benefit for minimally invasive procedures in lumbar spine surgery. In addition, there was less safety in these procedures. |
| Acetaminophen | See Nonprescription Medications . |
| Activity restrictions | See Work . |
| Acupuncture | Not recommended for acute low back pain. (Tulder-Cochrane, 2000) (Furlan-Cochrane, 2005) Recommended as an option for chronic low back pain using a short course of treatment in conjunction with other interventions. (See the Pain Chapter .) Acupuncture has been found to be more effective than no treatment for short-term pain relief in chronic low back pain, but the evidence for acute back pain does not support its use. (Furlan-Cochrane, 2005) (Manheimer, 2005) (van Tulder, 2005) (Thomas, 2005) (Ratcliffe, 2006) (Thomas, 2006) (Haake, 2007) (Santaguida, 2009) These authors have reported that acupuncture provides a greater effect than sham treatment, while others have reported non-significant differences between the two modalities. (Brinkhaus, 2006) In this latter case, both modalities were shown to be more effective than no treatment. (Haake, 2007) Acupuncture has not been found to be better than other treatment (either conventional or alternative) in terms of pain or function. Acupuncture has been shown to add to the treatment effect of conventional therapy (improving pain and function) when compared to conventional therapy alone. (van Tulder, 2005) (Manheimer, 2005) (Furlan-Cochrane, 2005) Overall outcomes from trials have been mixed, with some lower-quality trials producing positive results, but trials with higher validity scores tending to be negative or inconclusive. There is a tendency for patient expectations to influence the |

Low Back – Physical Therapy

Physical therapy (PT)



Recommended. There is strong evidence that physical methods, including exercise and return to normal activities, have the best long-term outcome in employees with low back pain. See also [Exercise](#). Direction from physical and occupational therapy providers can play a role in this, with the evidence supporting active therapy and not extensive use of passive modalities. The most effective strategy may be delivering individually designed exercise programs in a supervised format (for example, home exercises with regular therapist follow-up), encouraging adherence to achieve high dosage, and stretching and muscle-strengthening exercises seem to be the most effective types of exercises for treating chronic low back pain. ([Hayden, 2005](#)) Studies also suggest benefit from early use of aggressive physical therapy (“sports medicine model”), training in exercises for home use, and a functional restoration program, including intensive physical training, occupational therapy, and psychological support. ([Zigenfus, 2000](#)) ([Linz, 2002](#)) ([Cherkin-NEJM, 1998](#)) ([Rainville, 2002](#)) Successful outcomes depend on a functional restoration program, including intensive physical training, versus extensive use of passive modalities. ([Mannion, 2001](#)) ([Jouset, 2004](#)) ([Rainville, 2004](#)) ([Airaksinen, 2006](#)) One clinical trial found both effective, but chiropractic was slightly more favorable for acute back pain and physical therapy for chronic cases. ([Skargren, 1998](#)) A spinal stabilization program is more effective than standard physical therapy sessions, in which no exercises are prescribed. With regard to manual therapy, this approach may be the most common physical therapy modality for chronic low back disorder, and it may be appropriate as a pain reducing modality, but it should not be used as an isolated modality because it does not concomitantly reduce disability, handicap, or improve quality of life. ([Goldby-Spine, 2006](#)) Better symptom relief is achieved with directional preference exercise. ([Long, 2004](#)) As compared with no therapy, physical therapy (up to 20 sessions over 12 weeks) following disc herniation surgery was effective. Because of the limited benefits of physical therapy relative to "sham" therapy (massage), it is open to question whether this treatment acts primarily physiologically, but psychological factors may contribute substantially to the benefits observed. ([Erdogmus, 2007](#)) In this RCT, exercise and stretching, regardless of whether it is achieved via yoga classes or conventional PT supervision, helps improve low back pain. ([Sherman, 2011](#)) See also specific physical therapy modalities, as well as [Exercise](#); [Work conditioning](#); [Lumbar extension exercise equipment](#); [McKenzie method](#); [Stretching](#); & [Aquatic therapy](#). [Physical therapy is the treatment of a disease or injury by the use of therapeutic exercise and other interventions that focus on improving posture, locomotion, strength, endurance, balance, coordination, joint mobility, flexibility, activities of daily living and alleviating pain. ([BlueCross BlueShield, 2005](#)) As for visits with any medical provider, physical therapy treatment does not preclude an employee from being at work when not visiting the medical provider, although time off may be required for the visit.]

ODG - Physical Therapy (PT)

Recommended. There is strong evidence that physical methods, including exercise and return to normal activities, have the best long-term outcome in employees with low back pain.

See also **Exercise**. Direction from physical and occupational therapy providers can play a role in this, with the evidence supporting active therapy and not extensive use of passive modalities.

ODG - Physical Therapy (PT)

The most effective strategy may be delivering individually designed exercise programs in a supervised format (for example, home exercises with regular therapist follow-up), encouraging adherence to achieve high dosage, and stretching and muscle-strengthening exercises seem to be the most effective types of exercises for treating chronic low back pain. (**Hayden, 2005**)

ODG - Physical Therapy (PT)

Active Treatment versus Passive Modalities:

The use of active treatment modalities instead of passive treatments is associated with substantially better clinical outcomes. In a large case series of patients with acute low back pain treated by physical therapists, those adhering to guidelines for active rather than passive treatments incurred fewer treatment visits, cost less, and had less pain and less disability. The overall success rates were 64.7% among those adhering to the active treatment recommendations versus 36.5% for passive treatment. **(Fritz, 2007)**

ODG - Physical Therapy (PT)

The most commonly used active treatment modality is Therapeutic exercises (97110), but other active therapies may be recommended as well, including Neuromuscular reeducation (97112), Manual therapy (97140), and Therapeutic activities/exercises (97530).

ODG - Physical Therapy (PT)

A recent RCT comparing active spinal stabilization exercises (using the GDS or Godelive Denys-Struyf method) with passive electrotherapy using TENS plus microwave treatment (conventional physical therapy in Spanish primary care), concluded that treatment of nonspecific LBP using the GDS method provides greater improvements in the midterm (6 months) in terms of pain, functional ability, and quality of life. (**Arribas, 2009**)

ODG - Physical Therapy (PT)

In this RCT, two active interventions, multidisciplinary rehab (intensive, bio-psychosocial PT) and exercise (exercises targeted at trunk muscles together with stretching and relaxation), reduced the probability of sickness absence, and were more effective for pain than self-care advice at 12 months.
(Rantonen, 2012)

ODG - Physical Therapy (PT)

Post Epidural Steroid Injections: ESIs are currently recommended as a possible option for short-term treatment of **radicular pain** (sciatica), defined as pain in dermatomal distribution with corroborative objective findings of radiculopathy.

The general goal of physical therapy during the acute/subacute phase of injury is to decrease guarding, maintain motion, and decrease pain and inflammation.

ODG - Physical Therapy (PT)

Progression of rehabilitation to a more advanced program of stabilization occurs in the maintenance phase once pain is controlled.

There is little evidence-based research that addresses the use of physical therapy post ESIs. Most randomized controlled trials have utilized an ongoing, home directed program post injection.

Current literature indicates further physical therapy treatment post ESI would be to emphasize the home exercise program.

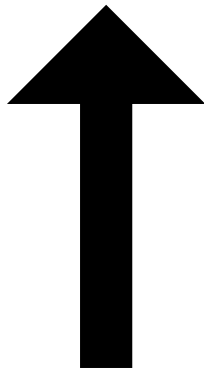
ODG - Physical Therapy (PT)

This requirement would generally be included in the currently suggested maximum visits for the underlying condition or at least not require more than 2 additional visits to reinforce the home exercise program.

ESIs have been found to have limited effectiveness for treatment of chronic pain. The claimant should continue to follow a home exercise program post injection. **(Luijesterburg, 2007) (Luijsterburg2, 2007) (Price, 2005) (Vad, 2002) (Smeal, 2004)**

Epidural Steroid Injections (ESIs) Therapeutic

Epidural steroid injections (ESIs), therapeutic



Recommended as a possible option for short-term treatment of radicular pain (defined as pain in dermatomal distribution with corroborative findings of radiculopathy) with use in conjunction with active rehab efforts. Not recommended for spinal stenosis or for nonspecific low back pain. See specific criteria for use below. Radiculopathy symptoms are generally due to herniated nucleus pulposus or spinal stenosis, but ESIs have not been found to be as beneficial a treatment for the latter condition. According to SPORT, ESIs are associated with less improvement in spinal stenosis. ([Radcliff, 2013](#))

Short-term symptoms: The American Academy of Neurology recently concluded that epidural steroid injections may lead to an improvement in radicular pain between 2 and 6 weeks following the injection, but they do not affect impairment of function or the need for surgery and do not provide long-term pain relief beyond 3 months. ([Armon, 2007](#)) Epidural steroid injection can offer short-term pain relief and use should be in conjunction with other rehab efforts, including continuing a home exercise program. There is little information on improved function or return to work. There is no high-level evidence to support the use of epidural injections of steroids, local anesthetics, and/or opioids as a treatment for acute low back pain without radiculopathy. ([Benzon, 1986](#)) ([ISIS, 1999](#)) ([DePalma, 2005](#)) ([Molloy, 2005](#)) ([Wilson-MacDonald, 2005](#))

Use for chronic pain: Chronic duration of symptoms (> 6 months) has also been found to decrease success rates with a threefold decrease found in patients with symptom duration > 24 months. The ideal time of either when to initiate treatment or when treatment is no longer thought to be effective has not been determined. ([Hopwood, 1993](#)) ([Cyteval, 2006](#)) Indications for repeating ESIs in patients with chronic pain at a level previously injected (> 24 months) include a symptom-free interval or indication of a new clinical presentation at the level.

For spinal stenosis: The use of epidural steroid injection (ESI) in patients with lumbar spinal stenosis is common, but there is little evidence in the literature to demonstrate its long-term benefit. Despite equivalent baseline status, ESIs are associated with significantly less improvement at 4 years among all patients with spinal stenosis.

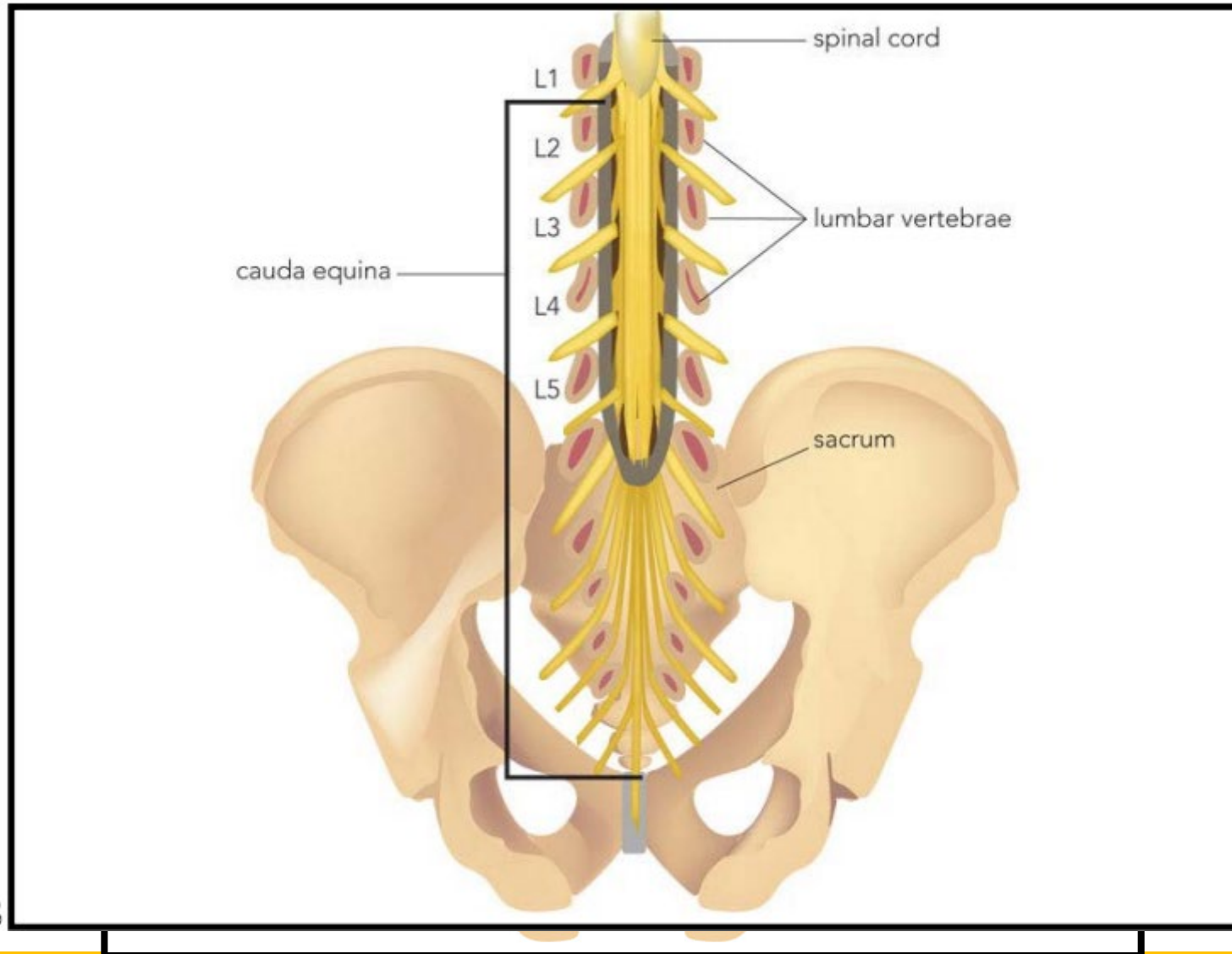
ESI - Transforaminal approach

Transforaminal approach: Some groups suggest that there may be a preference for a transforaminal approach as the technique.

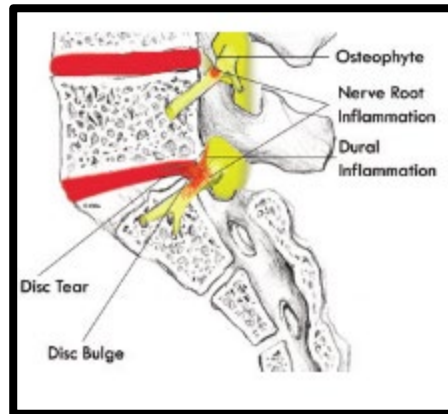
This approach allows for delivery of medication at the target tissue site, and an advantage for transforaminal injections in herniated nucleus pulposus over translaminar or caudal injections has been suggested in the best available studies. **(Riew, 2000) (Vad, 2002) (Young, 2007)**

This approach may be particularly helpful in patients with large disc herniations, foraminal stenosis, and lateral disc herniations. **(Colorado, 2001) (ICSI, 2004) (McLain, 2005)**
(Wilson-MacDonald, 2005)

ESI – Transforaminal Approach



ESI - Transforaminal



ESI - Transforaminal



ESI – Caudal approach

- Two recent RCTs of caudal injections had different conclusions. This study concluded that caudal injections demonstrated 50% pain relief in 70% of the patients, but required an average of 3-4 procedures per year. (**Manchikanti, 2011**)
- This higher quality study concluded that caudal injections are not recommended for chronic lumbar radiculopathy. (**Iversen, 2011**)

Discectomy/Laminectomy

Discectomy/ laminectomy



Recommended for indications below. Surgical discectomy for carefully selected patients with radiculopathy due to lumbar disc prolapse provides faster relief from the acute attack than conservative management, although any positive or negative effects on the lifetime natural history of the underlying disc disease are still unclear. Unequivocal objective findings are required based on neurological examination and testing. ([Gibson-Cochrane, 2000](#)) ([Malter, 1996](#)) ([Stevens, 1997](#)) ([Stevenson, 1995](#)) ([BlueCross BlueShield, 2002](#)) ([Buttermann, 2004](#)) For unequivocal evidence of radiculopathy, see AMA Guides. ([Andersson, 2000](#)) Standard discectomy and microdiscectomy are of similar efficacy in treatment of herniated disc. ([Bigos, 1999](#)) While there is evidence in favor of discectomy for prolonged symptoms of lumbar disc herniation, in patients with a shorter period of symptoms but no absolute indication for surgery, there are only modest short-term benefits, although discectomy seemed to be associated with a more rapid initial recovery, and discectomy was superior to conservative treatment when the herniation was at L4-L5. ([Osterman, 2006](#)) The SPORT studies concluded that both lumbar discectomy and nonoperative treatment resulted in substantial improvement after 2 years, but those who chose discectomy reported somewhat greater improvements than patients who elected nonoperative care. ([Weinstein, 2006](#)) ([Weinstein2, 2006](#)) A recent RCT compared decompressive surgery with nonoperative measures in the treatment of patients with lumbar spinal stenosis, and concluded that, although patients improved over the 2-year follow-up regardless of initial treatment, those undergoing decompressive surgery reported greater improvement regarding leg pain, back pain, and overall disability, but the relative benefit of initial surgical treatment diminished over time while still remaining somewhat favorable at 2 years. ([Malmivaara, 2007](#)) Patients undergoing lumbar discectomy are generally satisfied with the surgery, but only half are satisfied with preoperative patient information. ([Ronnbeg, 2007](#)) If patients are pain free, there appears to be no contraindication to their returning to any type of work after lumbar discectomy. A regimen of stretching and strengthening the abdominal and back muscles is a

Discectomy/Laminectomy

ODG Indications for Surgery™ -- Discectomy/laminectomy --

Required symptoms/findings; imaging studies; & conservative treatments below:

I. Symptoms/Findings which confirm presence of radiculopathy. Objective findings on examination need to be present. Straight leg raising test, crossed straight leg raising and reflex exams should correlate with symptoms and imaging.

Findings require ONE of the following:

- A. L3 nerve root compression, requiring ONE of the following:
 - 1. Severe unilateral quadriceps weakness/mild atrophy
 - 2. Mild-to-moderate unilateral quadriceps weakness
 - 3. Unilateral hip/thigh/knee pain
- B. L4 nerve root compression, requiring ONE of the following:
 - 1. Severe unilateral quadriceps/anterior tibialis weakness/mild atrophy
 - 2. Mild-to-moderate unilateral quadriceps/anterior tibialis weakness
 - 3. Unilateral hip/thigh/knee/medial pain
- C. L5 nerve root compression, requiring ONE of the following:
 - 1. Severe unilateral foot/toe/dorsiflexor weakness/mild atrophy
 - 2. Mild-to-moderate foot/toe/dorsiflexor weakness
 - 3. Unilateral hip/lateral thigh/knee pain
- D. S1 nerve root compression, requiring ONE of the following:
 - 1. Severe unilateral foot/toe/plantar flexor/hamstring weakness/atrophy
 - 2. Moderate unilateral foot/toe/plantar flexor/hamstring weakness
 - 3. Unilateral buttock/posterior thigh/calf pain

(EMGs are optional to obtain unequivocal evidence of radiculopathy but not necessary if radiculopathy is already clinically obvious.)

II. Imaging Studies, requiring ONE of the following, for concordance between radicular findings on radiologic evaluation and physical exam findings:

- A. Nerve root compression (L3, L4, L5, or S1)
- B. Lateral disc rupture
- C. Lateral recess stenosis

Diagnostic imaging modalities, requiring ONE of the following:

- 1. MR imaging
- 2. CT scanning
- 3. Myelography

111

ODG Indications for Surgery™ Discectomy/Laminectomy

Required symptoms/findings; imaging studies; and conservative treatments must be met.

- I. **Symptoms/Findings** which confirm the presence of radiculopathy.

The subjective symptoms need to correlate with the **OBJECTIVE FINDINGS** on examination need to be present. Straight leg raising test, crossed straight leg raising and reflex exams must correlate with symptoms and imaging.

Example of L5 Nerve Root Compression, requires ONE of the following:

1. Severe unilateral foot/toe dorsiflexor weakness or mild atrophy
2. Mild-to-moderate foot/toe/dorsiflexor weakness (or more proximal at hamstrings and gluteus medius)
3. Unilateral posterolateral hip/posterolateral thigh/knee pain (anterior and lateral compartment below the knee and middle of the foot)

EMG / NCS are optional to obtain unequivocal evidence of radiculopathy but are not necessary if the radiculopathy is already clinically obvious.

Discectomy / Laminectomy

II. Imaging Studies:

Requires ONE of the following, for concordance between radicular findings on radiologic evaluation and physical exam findings:

- A. Nerve root compression (L3, L4, L5, or S1)
- B. Lateral disc rupture
- C. Lateral recess stenosis

Diagnostic imaging modalities, requires ONE of the following:

- 1. MR imaging
- 2. CT scanning
- 3. Myelography
- 4. Myelography & X-Ray

Conservative Treatments

Requiring ALL of the Following:

- A. **Activity modification** (not bed rest) after patient education (> or = 2 months)
- B. **Drug therapy** requiring at least ONE of the following:
 1. NSAID drug therapy
 2. Other analgesic therapy
 3. Muscle relaxants
 4. Epidural Steroid Injection (ESI)

Conservative Treatments

Requiring ALL of the Following:

- **C. Support provider referral**, requiring at least ONE of the following (in order of priority):
 1. Physical therapy
(teach home exercise/stretching)
 2. Manual therapy
(chiropractor or massage therapist)
 3. Psychological screening that could affect surgical outcome
 4. Back school

MMI - Spine Case 1

Question for the Designated Doctor:

Has MMI been reached; if so, on what date?

- If not at MMI, why not and what is needed to reach MMI? Is this consistent with ODG (including Appendix D)?
- If at MMI, why and what is the date?
- Explain and give rationale for your MMI date.
- Complete [DWC Form-069](#) and narrative report.



1. Has MMI been reached;
if so, on what date?

- A. Yes, 4 weeks post injury
- B. Yes, 6 weeks post injury
- C. Yes, date of Designated Doctor Exam
- D. No, not at MMI

Questions About Spine Case 1?

Impairment Rating

How to Determine Impairment Rating

- Assignment of an impairment rating for the current compensable injury shall be based on the injured employee's **condition on the MMI date** considering the medical record and the certifying examination.
- Assign one whole body impairment rating for the current compensable injury.
- Use the rating criteria contained in the appropriate edition of the *AMA Guides to the Evaluation of Permanent Impairment*.

How to Determine Impairment Rating

- **Show your work!** so that “... any knowledgeable person can compare the clinical findings with the guides criteria and determine whether or not the impairment estimates reflect those criteria.” *AMA Guides*, page 8
- Document the findings and explain the impairment rating in your narrative report, plus relevant worksheets.
- Complete and sign the [DWC Form-069](#).

Impairment Rating

Question for Designated Doctor:

On the certified MMI date, what is the impairment rating?

- Perform thorough, relevant physical examination of all compensable body areas/systems.
- Correlate with the findings in prior medical records.
- Make referrals, if necessary, to answer question.
- Use 4th Edition of *AMA Guides* to rate.
- **Show your work!**

Overview of the *AMA Guides*

- *AMA Guides*, 4th edition published June 1993
- Effective in the Texas workers' compensation system October 15, 2001
- 15 Chapters
- Chapters 1 and 2 – Impairment Evaluation; Records and Reports

Overview of the *AMA Guides*

- Chapter 3 – The Musculoskeletal System (Hand and Upper Extremity, Lower Extremity, Spine)
- Approximately 90% of designated doctor examinations involve these 3 body areas

Overview of the *AMA Guides*

- If the *Guides* are followed, two doctors evaluating the same patient should report similar results and conclusions
- If not, consider:
 - Did both doctors review all of the medical records?
 - Did both doctors follow the *Guides*?
 - Is the medical condition stable?
 - Did the patient give full effort?

Measurements

Consistency of measurements

(all measurements, not just ROM)

- Between examiners (pages 7, 8, and 9)
- By the same examiner generally within +/- 10%, (page 9)
- “...plausible and relate to the impairment being evaluated,” (page 8)
- With medical records (page 8)

Measurements

- Active, not passive ROM, should be rated (Comparing active with passive may provide useful information).
- Rounding and interpolating are permitted **unless the book gives other directions.**
- DO NOT round impairment rating in DWC system (Not as instructed in the *AMA Guides* on page 9.)

Combined Values

- Each organ system/body area should be expressed as a whole person impairment, then
- Whole person impairments should be **combined** using the Combined Values Chart (pp. 322 – 324).
- “Combining” assures that the impairment can’t exceed 100%. It reduces the remaining portion of the whole person that is available for the second impairment.
- Example 40% c/w 40% (of the remaining 60%) = 64%

Combining 3 or More Impairment Values

- “If three or more impairment values are to be combined, select any two and find their combined value as above. Then use that value and the third value to locate the combined value of all. This process can be repeated indefinitely, the final value in each instance being the combination of all the previous values. In each step of this process, the larger impairment value must be identified at the **side** of the chart.” (page 322)
- **Best practice - combine the largest % with the second largest %, then combine with third largest %, etc.**

Impairment Rating - Spine

- Most common, simplest portion of Chapter 3
- Diagnosis Related Estimates (**DRE**) aka “the Injury Model” vs. Range of Motion (**ROM**) model
- DRE is preferred – See pp. 94, 99, 101, 112 of the *Guides*
- DRE should be used for conditions in T. 70 (page 108) per instructions on p. 94
- DRE category is determined by differentiators or structural inclusions

Impairment Rating - Spine

- Use of the DRE Model is **not optional** and is to be used unless there is a specific reason why it cannot... Appeal Panel Decision No. 030288-s
- ROM model - used as a differentiator *if* DRE does not apply or *if* there is a disagreement between DRE categories - page 101

ROM Model

Do not confuse “ROM model” with “non-uniform loss of ROM,” which is a common DRE II differentiator. The “ROM model” is a DRE differentiator, but is rarely necessary.

- 1.T. 75, P. 113 for Specific Spine Disorders
- 2.Valid inclinometric ROM measures
 - At least 3 consecutive measurements
- 3.Neurologic impairment

Terminology

- “Cervicothoracic” = Cervical
- “Thoracolumbar” = Thoracic
- “Lumbosacral” = Lumbar

Per page 95, *Guides*

Table 70, P. 108

Spine Impairment
Categories for
Cervicothoracic,
Thoracolumbar,
and Lumbosacral
Regions.

| Patient's condition | Category | | | | | Category * | | |
|---|----------|----|-----|----|---|------------|-----|------|
| | I | II | III | IV | V | VI | VII | VIII |
| Complaints or symptoms | I | | | | | | | |
| Vertebral body compression, less than 25% | | II | | | | | | |
| Posterior element fracture, healed, stable, no dislocation or radiculopathy | | II | | | | | | |
| Transverse or spinous process fracture with dislocation of fragment, healed, stable | | II | | | | | | |
| Vertebral body compression fracture 25%–50% | | | III | | | | | |
| Posterior element fracture with spinal canal displacement or radiculopathy, healed, stable | | | III | | | | | |
| Radiculopathy | | | III | | | | | |
| Loss of motion segment integrity | | | | IV | | | | |
| Vertebral body compression, greater than 50% | | | | IV | V | | | |
| Multilevel structural compromise | | | | IV | V | | | |
| Cauda equina syndrome <i>without</i> bowel or bladder impairment | | | | | | VI | | |
| Cauda equina syndrome <i>with</i> bowel or bladder impairment | | | | | | | VII | |
| Paraplegia | | | | | | | | VIII |
| Spondylolysis <i>without</i> loss of motion segment integrity or radiculopathy | I | II | | | | | | |
| Spondylolysis <i>with</i> loss of motion segment integrity or radiculopathy | | | III | IV | V | | | |
| Spondylolisthesis <i>without</i> loss of motion segment integrity or radiculopathy | I | II | | | | | | |
| Spondylolisthesis <i>with</i> loss of motion segment integrity or radiculopathy | | | III | IV | V | | | |
| Spondylolisthesis <i>with</i> cauda equina syndrome | | | | | | VI | VII | VIII |
| Vertebral body fracture <i>without</i> loss of motion segment integrity or radiculopathy | | II | III | IV | | | | |
| Vertebral body fracture <i>with</i> loss of motion segment integrity or radiculopathy | | | III | IV | V | | | |
| Vertebral body fracture <i>with</i> cauda equina syndrome | | | | | | VI | VII | VIII |
| Vertebral body dislocation <i>without</i> loss of motion segment integrity or radiculopathy | | II | III | IV | | | | |
| Vertebral body dislocation <i>with</i> loss of motion segment integrity or radiculopathy | | | III | IV | V | | | |
| Vertebral body dislocation <i>with</i> cauda equina syndrome | | | | | | VI | VII | VIII |
| Previous spine operation <i>without</i> loss of motion segment integrity or radiculopathy | | II | III | IV | | | | |
| Previous spine operation <i>with</i> loss of motion segment integrity or radiculopathy | | | III | IV | V | | | |
| Previous spine operation <i>with</i> cauda equina syndrome | | | | | | VI | VII | VIII |
| Stenosis, or facet arthrosis or disease, or disk arthrosis | I | II | | | | | | |

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Table 72. DRE Lumbosacral Spine Impairment

**T. 72,
P. 110**

| DRE impairment category | Description | % Impairment of the whole person |
|-------------------------|---|----------------------------------|
| I | Complaints or symptoms | 0 |
| II | Minor impairment: clinical signs of lumbar injury are present without radiculopathy or loss of motion segment integrity | 5 |
| III | Radiculopathy: evidence of radiculopathy is present | 10 |
| IV | Loss of motion segment integrity: criteria for this condition are described in Section 3.3b, p. 95 | 20 |
| V | Radiculopathy and loss of motion segment integrity | 25 |
| VI | Cauda equina-like syndrome <i>without</i> bowel or bladder impairment | 40 |
| VII | Cauda equina syndrome <i>with</i> bowel or bladder impairment | 60 |
| VIII | Paraplegia | 75 |

DRE Cervicothoracic Spine Impairments

T. 73,
P. 110

Table 73. DRE Cervicothoracic Spine Impairment Categories*

| DRE impairment category | Description | % Impairment of the whole person | Impairment (%) with long-tract signs* combined | | |
|-------------------------|---|----------------------------------|---|----------|-----------|
| | | | VI (40) | VII (60) | VIII (75) |
| I | Complaints or symptoms | 0 | | | |
| II | Minor impairment: clinical signs of neck injury are present without radiculopathy or loss of motion segment integrity | 5 | 43 | 62 | 76 |
| III | Radiculopathy: evidence of radiculopathy is present | 15 | 49 | 66 | 79 |
| IV | Loss of motion segment integrity or multilevel neurologic compromise | 25 | 55 | 70 | 81 |
| V | Severe upper extremity neurologic compromise: single-level or multilevel loss of function | 35 | 61 | 74 | 84 |
| VI | Cauda equina syndrome <i>without</i> bowel or bladder impairment | 40 | The 40% impairment for category VI must be combined with the impairment percent from the most appropriate cervicothoracic impairment category, II, III, IV, or V. | | |
| VII | Cauda equina syndrome <i>with</i> bowel or bladder impairment | 60 | The 60% impairment for category VII must be combined with the impairment percent from the most appropriate cervicothoracic impairment category, II, III, IV, or V. | | |
| VIII | Paraplegia | 75 | The 75% impairment for category VIII must be combined with the impairment percent from the most appropriate cervicothoracic impairment category, II, III, IV, or V. | | |

*If a patient has an impairment in cervicothoracic spine impairment category VI, VII, or VIII, the appropriate impairment percent should be *combined* (Combined Values Chart, p. 322) with the percent in cervicothoracic impairment category II, III, IV, or V that best reflects the patient's condition.

If the patient's bowel or bladder function is impaired and there is no cervicothoracic or lower-limb impairment that meets the criteria of categories VI, VII, or VIII, the impairment should be evaluated according to criteria in the *Guides* chapters on the digestive or urinary and reproductive systems.

DRE Thoracolumbar Spine Impairment Categories

T. 74,
P. 111

| DRE impairment category | Description | % Impairment of the whole person | Impairment (%) with long-tract signs* combined |
|-------------------------|---|----------------------------------|---|
| I | Complaints or symptoms | 0 | VI (35) VII (55) VIII (70) |
| II | Minor impairment | | |
| | A. Clinical signs of thoracolumbar injury are present without radiculopathy or loss of motion segment integrity | 5 | |
| | B. Structural inclusions are present, ie, less than 25% compression of vertebral body or posterior element fracture without dislocation | 5 | 38 57 72 |
| III | Radiculopathy | | |
| | A. Neurologic evidence of limb impairment is present | 15 | |
| | B. Structural inclusions are present, ie, 25% to 50% compression fracture of 1 vertebral body or posterior element fracture disrupting spinal canal | 15 | 45 62 75 |
| IV | Loss of motion segment integrity or multi-level neurologic compromise | 20 | 48 64 76 |
| V | Radiculopathy and loss of motion segment integrity | 25 | Impairment percents in thoracolumbar category V are not combined with impairment percents representing long-tract signs for the thoracolumbar spine |
| VI | Cauda equina syndrome <i>without</i> bowel or bladder impairment | 35 | The 35% thoracolumbar category VI impairment must be combined with the impairment percent from the most appropriate thoracolumbar impairment category, II, III, or IV |
| VII | Cauda equina syndrome <i>with</i> bowel or bladder impairment | 55 | The 55% thoracolumbar category VII impairment must be combined with the impairment percent from the most appropriate thoracolumbar impairment category, II, III, or IV |
| VIII | Paraplegia | 70 | The 70% thoracolumbar category VIII impairment must be combined with the impairment percent from the most appropriate thoracolumbar impairment category, II, III, or IV |



Impairment Rating - Spine

Differentiators – T. 71, pp. 109, 99, and 102-107

- Muscle guarding, spasm
- Non-uniform loss of ROM
- Dysmetria-impaired ability to accurately control range of movement
- Non-verifiable radicular complaints
- Loss of relevant reflex(es)
- Decreased muscle circumference, atrophy (≥ 2 cm)
- Electrodiagnosis (unequivocal evidence of acute nerve root compromise)
- Loss of motion segment integrity seen on flexion/extension x-rays
- Loss of bowel or bladder control (rectal exam shows loss of sphincter tone, use of assistive device such as catheter)
- Bladder studies-unequivocal incontinence
- Range of motion model

Impairment Rating - Spine DRE I “Complaints or Symptoms”

- Complaints or symptoms without significant clinical findings or differentiators.
- There are NO structural inclusions.
- 0% whole person impairment

Spine Case 2, MMI/IR

History of Injury

- A 25 year old male sandwich delivery driver was involved in a rear-end motor vehicle accident 8 months ago.

Spine Case 2, MMI/IR

Treatment History

- He saw his family physician 2 days later who found him to have restricted, painful cervical ROM and paraspinal tenderness. He diagnosed cervical sprain/strain, prescribed an NSAID and 6 visits of PT involving stretching exercises.

Spine Case 2, MMI/IR

Treatment History

- His symptoms of neck pain, restricted movement and occipital headache persisted.
- He was able to return to part time work with restrictions.

Spine Case 2, MMI/IR

Imaging

- **4 weeks** post injury cervical spine x-rays were obtained which showed some mild C5/6 degenerative changes and decreased cervical lordosis.
- **6 weeks** post injury cervical spine MRI scan was obtained, which showed disc desiccation and a 2 mm right paracentral disc protrusion at C5/6, not touching the thecal sac or nerve roots.

Spine Case 2, MMI/IR

Imaging

- 8 weeks post injury an upper extremity EMG / NCS was obtained and showed only some increased insertional activity in the bilateral mid cervical paraspinal muscles.

Insertional activity is subjective.

Paraspinal muscles innervated by posterior rami, so don't equate with a radiculopathy.

Spine Case 2, MMI/IR

Additional Treatment

- **12 weeks** post injury he saw a neurosurgeon. Surgery and cervical epidural injections were not recommended.
- **14 weeks** post injury his family physician referred him to a chiropractor who performed manipulation and a McKenzie based exercise program, progressing into neck, and scapular strengthening exercises.

Spine Case 2, MMI/IR

Additional Treatment

- He was seen for 16 visits over 10 weeks with improvement in his symptoms, range of motion, functional activities.
- He returned to full time work with restrictions.

Spine Case 2, MMI/IR

Additional Treatment

- The chiropractor's records at discharge (at **24 weeks post injury**) documented pain scale of 4/10, Neck Disability Index (NDI) score 22%, and full cervical ROM.

Spine Case 2, MMI/IR

Additional Treatment

The notes also show that he continued to have intermittent neck pain, provoked with neck flexion activities like reading and significantly relieved with McKenzie exercises.

He has no other treatment other than to see his family physician's PA for the purpose of being released to full duty 4 weeks after being released by the DC (***28 weeks post injury***).

The PA did not document specific physical exam findings.

Spine Case 2, MMI/IR

Designated Doctor Medical History

- Chief complaint is neck pain.
- Pain drawing shows an “ache” sensation in the right side of the neck.
- He has been working full duty without restrictions for the last 4 weeks.
- Neck Disability Index (NDI) score is 16%, 2/10 pain scale.

Spine Case 2, MMI/IR

Designated Doctor Physical Examination

- VITALS: Height 70 inches, Weight 175 lbs, BP 118/78, Pulse 64, Respiration 14
- Pleasant affect. Cooperative with history and examination. Oriented to time, person, and place with normal attention span and concentration.
- No scars on the neck or visible deformity, scoliosis, or kyphosis.

Spine Case 2, MMI/IR

Designated Doctor Physical Examination

- Cervical right lateral flexion and right rotation are slightly decreased with right neck pain.
- Cervical flexion, extension, left lateral flexion and left rotation are full and without pain.

Spine Case 2, MMI/IR

Designated Doctor Physical Examination

- There is no palpable muscle spasm of the cervical paraspinal muscles.
- Upper extremity deep tendon reflexes, sensation, and strength are normal.
- There is no upper extremity atrophy.

Spine Case 2, MMI/IR

Designated Doctor Examination

- Based on the medical records and your physical examination of the injured employee, what is the compensable injury for certifying MMI and IR?

Spine Case 2, MMI/IR

Questions for the Designated Doctor to consider in the examination:

Has MMI been reached; if so, on what date (may not be greater than the statutory MMI date shown on DWC-32)?

2. Has MMI been reached;
if so, on what date?

- A. Yes, 24 weeks post injury
- B. Yes, 28 weeks post injury
- C. Yes, date of designated doctor exam
- D. No, not at MMI

Spine Case 2, MMI/IR

Question for the Designated Doctor to consider in the examination:

On the MMI date, what is the whole person IR?

3. On the Date of MMI,
what is the whole person IR?

- A. DRE I = 0%
- B. DRE II = 5%
- C. DRE III = 10%
- D. DRE IV = 20%

Questions About Spine Case 2?

Impairment Rating – Spine DRE II

“Minor Impairment”

Structural Inclusions

- Compression Fracture < 25%
- Non-displaced posterior element fractures
- Transverse or spinous process fracture with displacement

Clinical Findings

- Muscle spasm/guarding
- Non-uniform loss of ROM
- Dysmetria
- Non-verifiable radicular complaints
- No objective signs of radiculopathy
- No loss of structural (motion segment) integrity on lateral view flexion/extension x-rays
- 5% whole person impairment

Spine Case 3, MMI/IR

History of Injury

- 25 year-old male roofer began having acute low back and right buttock pain after lifting and carrying shingles at work 8 months ago. He had worked as a roofer for 10 years.

Spine Case 3, MMI/IR

Treatment History

- Initially seen the day of the injury (DOI) at an occupational medicine clinic.
- Diagnosed with a lumbar sprain/strain.
- Treated with ibuprofen & cyclobenzaprine.

Spine Case 3, MMI/IR

Treatment History

- He had 6 visits of physical therapy - hip/lumbar flexion and rotation stretching, and some “stabilization” exercises.
- Released to return to work with restrictions.

Spine Case 3, MMI/IR

Treatment History

- Restricted duty work was not available.
- Reported he began having pain and numbness in the right posterior thigh and lateral calf doing “crunches” in physical therapy 5 days post injury.

Spine Case 3, MMI/IR

Imaging

- **4 weeks** post injury x-rays were obtained and showed moderate spondylosis at L5/S1 with bilateral pars defects with a Grade I isthmic spondylolisthesis also at L5/S1.
- No evidence of segmental instability or alteration of motion segment stability on standing flexion and extension views.

Spine Case 3, MMI/IR

Imaging

- **8 weeks** post injury, a lumbar MRI scan was obtained showing disc desiccation at L5/S1 and a 7 mm right posterolateral L5/S1 HNP displacing the right S1 nerve root.
- Chronic bilateral pars defects are well established without increased T2 or Inversion Recovery signal changes consistent with an acute injury.

Spine Case 3, MMI/IR

Additional Treatment

- **16 weeks** post injury 1 lumbar epidural steroid injection was performed.
- **17 weeks through 24 weeks** post injury – 14 visits of active physical therapy. Initiated lumbar extension range of motion exercises progressing into strengthening exercises and work simulation.
- **22 weeks** post injury – released to return to work full duty.

Spine Case 3, MMI/IR

Designated Doctor Medical History

- Chief complaint of episodes of low back, right buttock, and right posterior thigh pain after prolonged sitting, repeated bending forward, or lifting.
- Lower back, buttock, and right lower extremity symptoms had improved significantly.
- He is not interested in pursuing additional injections or surgery at this time, but wants to “leave my options open as I have lifetime medical care for this injury.”

Spine Case 3, MMI/IR

Designated Doctor Medical History

- As of 22 weeks post injury, has continued to work without restrictions.
- Takes over-the-counter ibuprofen as needed and continues his exercises at home.
- Oswestry score is 28%.

Spine Case 3, MMI/IR

Designated Doctor Physical Examination

- **VITALS:** Height 70 inches, Weight 175 lbs., BP 124/78, Pulse 62, Respiration 13
- **Pleasant affect.** Cooperative with history and examination. Oriented to time, person and place, with normal attention span and concentration.

Spine Case 3, MMI/IR

Designated Doctor Physical Examination

- Ambulates with normal gait. No scars on the back or trunk or visible deformity, scoliosis or kyphosis.
- Able to heel and toe walk without apparent weakness. Only able to perform 8 of 10 complete calf raises on the right due to weakness.

Spine Case 3, MMI/IR

Designated Doctor Physical Examination

- Lumbar flexion and right lateral flexion are moderately restricted; extension and left lateral flexion are essentially full.
- Supine left SLR is accomplished to 60° limited only by hamstring tightness.
- Supine right SLR is limited to 44° where it produces right low back and right buttock pain; further increased with ankle dorsiflexion and hip adduction/internal rotation.

Spine Case 3, MMI/IR

Designated Doctor Physical Examination

- Right ankle inversion and eversion are 4/5.
- Bilaterally symmetric Patellar, medial hamstring and Achilles deep tendon reflexes (DTRs).
- Decreased sensation of the right calf and lateral foot.
- 1 cm of right calf atrophy.
- Palpation reveals tenderness and hypertonicity of the right lumbosacral paraspinals and gluteus maximus.

Spine Case 3, MMI/IR

Designated Doctor Examination

- Based on the medical records and your physical examination of the injured employee, what is the compensable injury for certifying MMI and IR?

Spine Case 3, MMI/IR

Questions for the Designated Doctor to consider in the examination:

Has MMI been reached; if so, on what date (may not be greater than the statutory MMI date shown on DWC-32)?

Spine Case 3, MMI/IR

Question for the Designated Doctor to consider in the examination:

Is the injured employee at MMI?

4. Is the injured employee at MMI?

- A. Yes, at completion of initial 6 visits of PT
- B. Yes, at 22 weeks post injury when released to full duty
- C. Yes, at 24 weeks post injury when he completed additional PT and ESI
- D. Yes, date of designated doctor exam
- E. No, not at MMI

Spine Case 3, MMI/IR

Question for the Designated Doctor to consider in the examination:

On the MMI date, what is the whole person IR?

5. On the Date of MMI,
what is the whole person IR?

- A. DRE I = 0%
- B. DRE II = 5%
- C. DRE III = 10%
- D. DRE IV = 20%

Questions About Spine Case 3?

Impairment Rating - Spine DRE III “Radiculopathy”

Structural Inclusions

- Compression Fracture of 25% to 50%
- Displaced posterior element fractures that disrupt the spinal canal

Not a spinous or transverse process

Clinical Findings

- Loss of relevant reflex(es),
- 2 cm or greater atrophy with circumferential measurements of relevant extremity

Cervicothoracic and

Thoracolumbar = 15% WP

Lumbosacral = 10% WP

Spine DRE III Radiculopathy

| Nerve Root | Weakness (Atrophy) | Deep Tendon Reflex |
|------------|--|--|
| C5 | Deltoid, Biceps (upper arm) | Biceps |
| C6 | Biceps (upper arm), wrist extensors (forearm) | Brachioradialis |
| C7 | Triceps(upper arm), wrist flexors (forearm), finger extensors (forearm) | Triceps |
| C8 | Hand intrinsics (difficult to measure) | |
| T1 | Hand intrinsics (difficult to measure) | |
| L4 | Quadriceps (thigh) | Patellar or “knee jerk” |
| L5 | Gluteus medius (difficult to measure), tibialis anterior (lower leg) and extensor hallucis longus (difficult to measure) | Medial hamstring (difficult to obtain) |
| S1 | Gastrocnemius, soleus (lower leg/calf) | Achilles or “ankle jerk” |

Impairment Rating – Spine DRE III Radiculopathy

- APDs 040924, 091039, 111710 - **Loss of relevant reflex(es) includes *decreased* and *absent* reflexes.**
- APD 030091-s Radiculopathy requires > 2 cm of atrophy and/or loss of relevant reflex(es).
- APD 072220-s clarified that DRE III radiculopathy was for atrophy of **2 cm or more.**

Impairment Rating - Spine

DRE III - Radiculopathy

Electrodiagnostic studies?

- APD 051456 EDX studies may be used to verify radiculopathy as stated page 102, DRE III and in T. 71, P. 109, but are **insufficient alone** to rate as DRE III

Impairment Rating - Spine DRE III Radiculopathy

- What about MRI, CT, Discograms and other X-ray findings?
- History and other physical exam findings?
- There should be clinical correlation.
- Surgery?
(page 100 Guides vs. DWC law and rules) –
Rate impairment that is present at MMI.

Impairment Rating - Spine

DRE III - Radiculopathy

- Radiculopathy may be an accepted or compensable condition, with corresponding clinical findings, BUT it must reach the threshold of clinical findings to be ratable as DRE III.
- Must have “**significant signs**” of radiculopathy
 - Loss of relevant reflex(es) – includes decreased and absent relevant reflex(es).
 - 2 cm or greater atrophy with circumferential measurements of relevant extremity.

Spine Case 4, MMI/IR

History of Injury

A 25-year-old male construction worker began having acute low back and right posterior thigh pain after carrying some lumber at work 10 months ago.

Spine Case 4, MMI/IR

Treatment History

- He was initially seen at an occupational medicine clinic and treated with 6 visits of physical therapy and 2 different NSAIDs without improvement in his symptoms or activity tolerance.
- He was released to return to work with restrictions; however, his employer was unable to accommodate the restrictions and told him to return “when you are 100%.”

Spine Case 4, MMI/IR

Imaging

- **6 weeks** post injury, plain film x-rays and a lumbar MRI scan were obtained due to persistent symptoms.
- Plain film x-rays showed with moderate spondylosis at L5/S1.
- The lumbar MRI scan showed a 7 mm posterolateral right L5/S1 HNP displacing the right S1 nerve root.

Spine Case 4, MMI/IR

Additional Treatment

- **9 weeks** post injury he had a translaminar lumbar epidural steroid injection at L5/S1 without significant improvement.
- **16 weeks** post injury he underwent a right L5/S1 hemi-laminotomy/discectomy resulting in some relief of his lower extremity symptoms.

Spine Case 4, MMI/IR

Additional Treatment

- 28 weeks post injury - He was able to return to full duty work.
- This was 12 weeks after surgery and after completing 14 visits of post-operative active rehabilitation.

Spine Case 4, MMI/IR

Medical History

- Chief complaint was low back pain and right leg pain and weakness.
- Oswestry score is 32% and pain scale is 3/10.

Spine Case 4, MMI/IR

Physical Examination

- VITALS: Height 70 inches, Weight 175 lbs., BP 128/82, Pulse 68, Respiration 14
- Pleasant but somewhat flat affect.
Cooperative with history and examination.
Oriented to time, person, and place, with normal attention span and concentration.

Spine Case 4, MMI/IR

Physical Examination

- Able to rise from sitting to standing with no abnormal motion. Ambulates with normal gait.
- Well healed approximate 3 cm surgical scar at the midline lumbosacral junction. No visible deformity, scoliosis, or kyphosis.
- Able to walk on heels, weakness on right toe walk.
- 4/5 strength of right toe flexion; ankle inversion and eversion; and knee flexion.
- Lumbar flexion and right lateral flexion are moderately decreased; extension and left lateral flexion are essentially full.

Spine Case 4, MMI/IR

Physical Examination

- Left SLR is 65° limited by hamstring tightness.
- Right straight leg raise is limited to 45° where it produces right low back and right buttock pain, further increased with ankle dorsiflexion.
- Patellar DTRs are 2+ bilaterally. The right Achilles DTR is decreased.
- Repetitive calf raises on the right reveals some weakness.

Spine Case 4, MMI/IR

Physical Examination

- 2 cm of right calf atrophy
- There is some palpatory tenderness and hypertonicity of the lumbar paraspinal muscles at the right lumbosacral junction.

Spine Case 4, MMI/IR

Designated Doctor Examination

- Based on the medical records and your physical examination of the injured employee, what is the compensable injury for certifying MMI and IR?

Spine Case 4, MMI/IR

Questions for the Designated Doctor to consider in the examination:

- Has MMI been reached?
If so, on what date
(may not be greater than the statutory
MMI date shown above)?

6. Is the injured employee at MMI?

- A. Yes, 6 weeks post injury
- B. Yes, 28 weeks post injury
- C. Yes, date of designated doctor exam
- D. No, not at MMI

Spine Case 4, MMI/IR

Question for the Designated Doctor to consider in the examination:

- On the MMI date, what is the whole person IR?

7. On the Date of MMI,
what is the whole person IR?

- A. DRE I = 0%
- B. DRE II = 5%
- C. DRE III = 10%
- D. DRE IV = 20%

Questions About Spine Case 4?

Impairment Rating - Spine

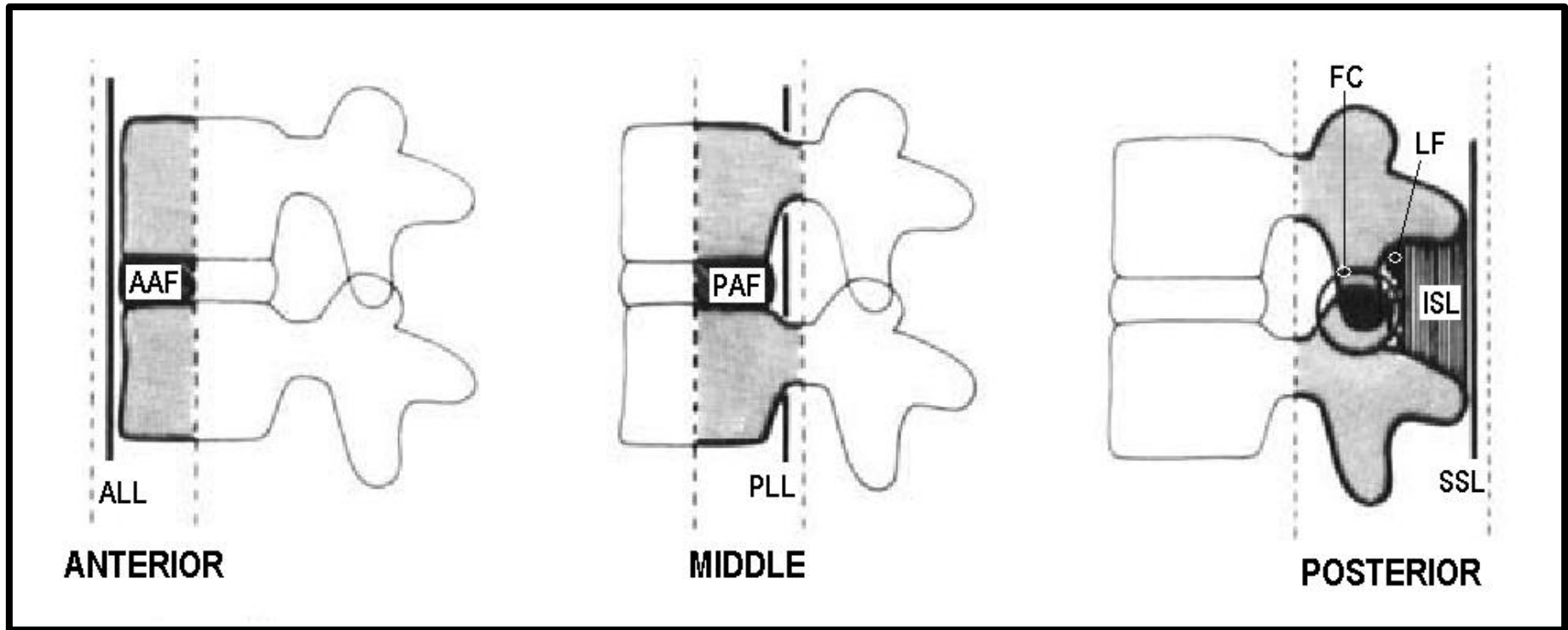
Other DRE Categories IV - VIII

- Very rare circumstances
- Refer to *Guides*, pp. 102-111

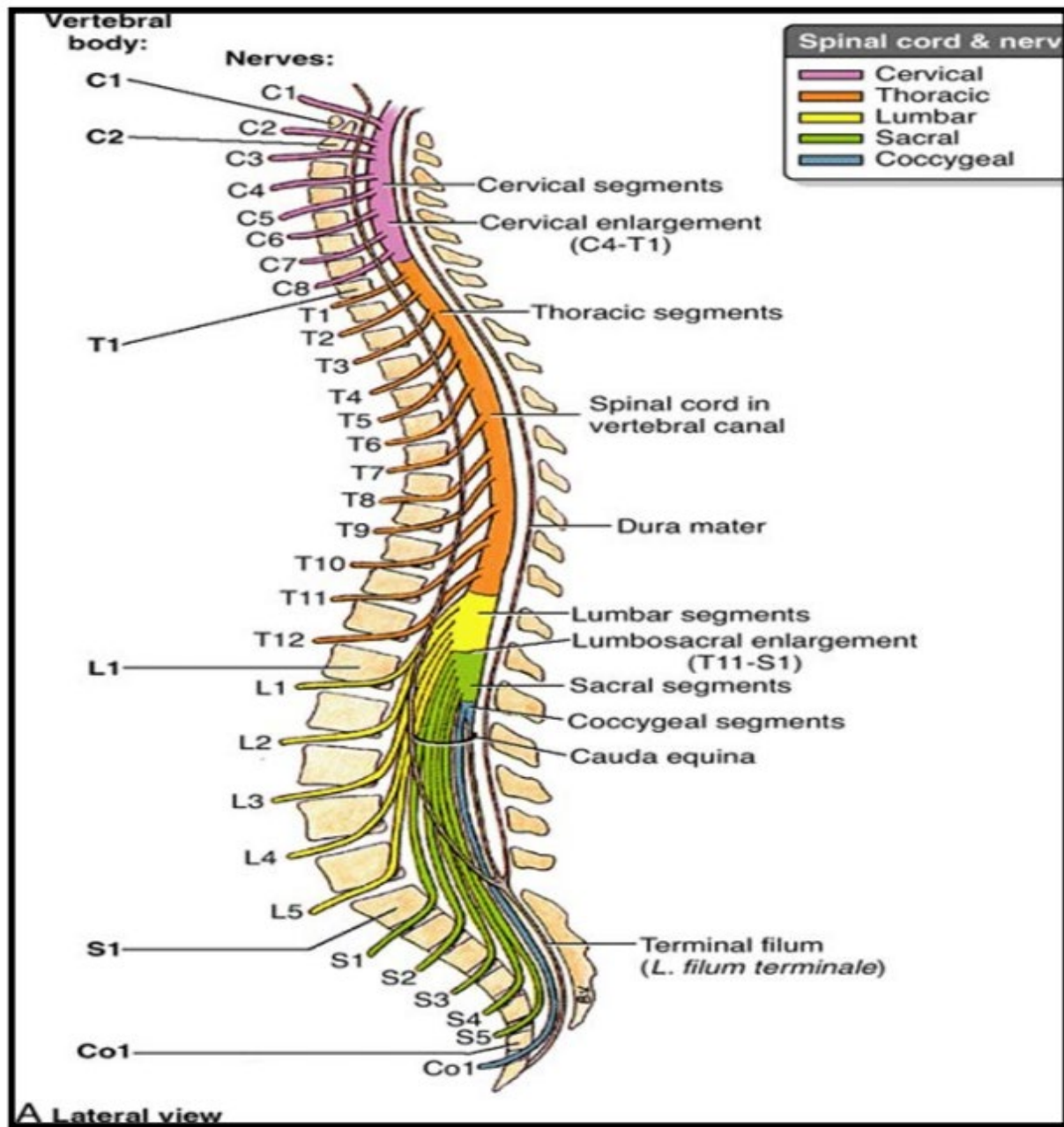


DRE Model - SPINAL ANATOMY

3 Column Theory (Denis)



(AAL: Anterior longitudinal ligament, AAF: Anterior annulus fibrosus, PLL: Posterior longitudinal ligament, PAF: Posterior annulus fibrosus, SSL: Supraspinous ligament, ISL: Interspinous ligament, LF: Ligamentum flavum, PC: Facet capsule)



Impairment Rating - Spine DRE IV

Loss of motion segment integrity

■ Lumbar

- ≥ 5 mm translation of one vertebra on another
- $\geq 15^{\circ}$ **more** angular motion at L5-S1 than L4-L5;
 $\geq 11^{\circ}$ more angular motion than adjacent at other levels

■ Cervical

- ≥ 3.5 mm translation of one vertebra on another
- $\geq 11^{\circ}$ more angular motion

Bilateral or multilevel radiculopathy in Cervical or Thoracic spine

■ Structural inclusions

- Compression Fracture $>50\%$
- Multilevel spine segment structural compromise (fractures and dislocations)

- Cervicothoracic = 25%;
Thoracolumbar and
Lumbosacral = 20% WP

Impairment Rating – Spine

Loss of Motion Segment Integrity

Figure 62 Loss of Motion Segment Integrity: **Translation**

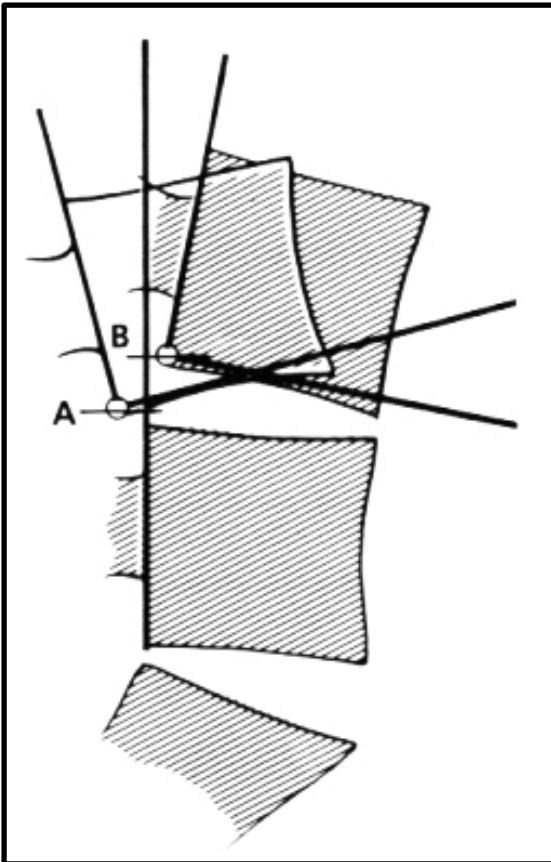
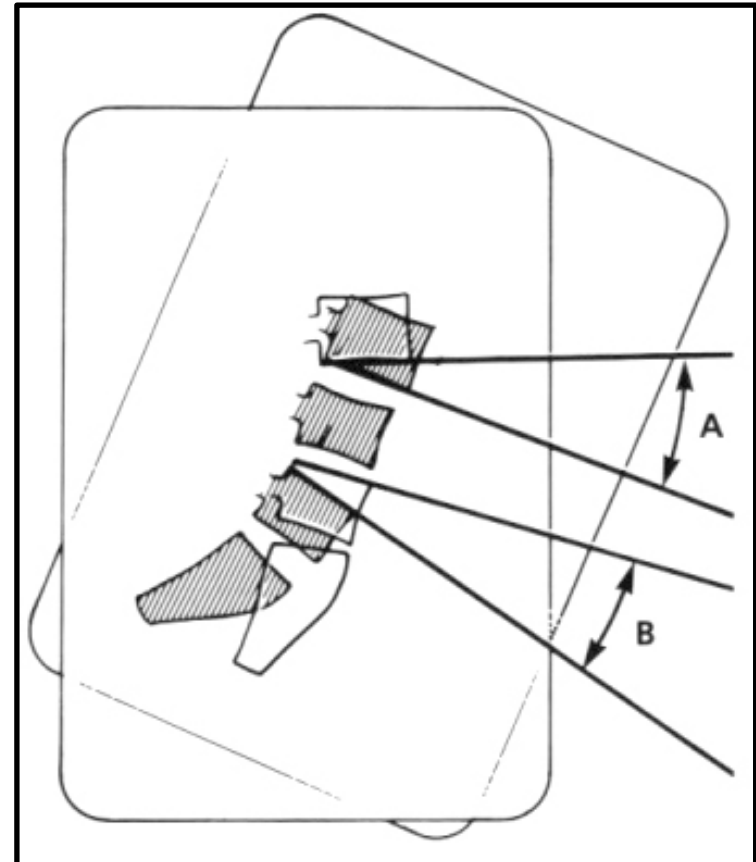


Figure 63 Loss of Motion Segment Integrity: **Angular Motion**



Lumbosacral DRE Category V: Radiculopathy *AND*

Loss of Motion Segment Integrity

Must meet the Threshold for
BOTH DRE Categories III
(Structural or Radiculopathy criteria)
and DRE Category IV (Documented
loss of structural integrity)

25% WP Impairment

Lumbosacral DRE Category VI: “Cauda Equina Like” Syndrome without Bowel or Bladder Signs

Structural Inclusions

- None
- Permanent partial loss of bilateral lower extremity function
- No bowel or bladder symptoms

40% Impairment



Lumbosacral DRE Category VII: Cauda Equina Like Syndrome with Bowel or Bladder

Structural Inclusions

- None

Requirements of DRE VI plus:

- Bowel or bladder symptoms requiring the use of assistive devices
- Evidence from EMG or cystometrogram

60% Impairment

Lumbosacral DRE Category VIII: Paraplegia

Structural Inclusions

- None

Total or near total loss of lower extremity function.

Not just preference for use of wheelchair. Must be structural damage to the spine that causes anatomic damage to the cauda equina.

75% Impairment



Cervicothoracic DRE Category IV: Loss of Motion Segment Integrity *OR* Multilevel Neurologic Compromise

Structural Inclusions

- Compression fracture > 50%
- Multilevel motion segment structural compromise (multilevel fractures/dislocations)

Differentiators

- Loss of motion segment integrity
- Bilateral or multi-level radiculopathy (One root each side or two or more roots the same side)

25% Impairment

Cervicothoracic DRE Category V: Severe Upper Extremity Neurological Compromise

Structural Inclusions

- Structural compromise with severe upper extremity motor compromise

Differentiators

- **Total** single level loss or **severe** multilevel loss
- Requires use of external functional or adaptive device

35% Impairment

Cervicothoracic DRE Category VI, VII and VIII

- Must Combine the impairment from category VI, VII and VIII **WITH** impairment from categories II thru V.
- Appropriate, as usually have to have significant structural damage to cause these higher degrees of neurologic injury.
- Cervical injury **and** long tract signs.
Long tract = hyperreflexia, clonus, Babinski + sensory / motor changes.

Cervicothoracic DRE Category VI: “Cauda Equina Like” Syndrome without Bowel or Bladder

Structural Inclusions

- None
- If patient does not require ambulatory assistive device they are placed in DRE V (p. 105)

Differentiators

- Bilateral lower extremity neurological impairment
- No bowel or bladder

Must combine with II thru V

40% Impairment



Cervicothoracic DRE Category VII: Cauda Equina Like Syndrome with Bowel or Bladder

Structural Inclusions

- None

Combine with II thru V

Differentiators

- Severe lower extremity compromise
- Bowel or bladder involvement requiring assistive devices

60% Impairment

Cervicothoracic DRE Category VIII: Paraplegia = Thoracolumbar, Quadriplegia / Tetraplegia = Cervicothoracic

Structural Inclusions

- None

Combine with II thru V

Differentiators

- Complete loss of or near complete loss of lower extremity function

75% Impairment

Thoracolumbar

Rate by the **same methodology**
as the Cervicothoracic spine,
IF there is spinal cord involvement.

Categories VI, VII, VIII combine with the
structural injury defined by category II - V

What About Multilevel Compression Fractures?

- **One** vertebral body compression fracture is rated as DRE II, III or IV, depending on the percentage of compression – see pp. 102-106
- “If the patient demonstrates the structural inclusions of two categories, the physician should place the patient in the category of the higher impairment percent” page 99
- Multilevel spine (motion) segment structural compromise, such as fractures or dislocations is rated as DRE IV (i.e. If there are several contiguous levels with compression fractures, there is often associated posterior ligament injury, which will result in segmental instability.

What About Multilevel Compression Fractures?

Conclusion:

- AMA Guides are unclear
- At the discretion of the examining doctor
- Provide a rationale explaining why you selected and how you used the methodology to assign the IR
- **“Show your work!”**

3.4 The Pelvis, page 131

The following shows impairment values associated with selected disorders of the pelvis:

| Disorder | % Impairment of the whole person |
|---|---|
| 1. Healed fracture <i>without</i> displacement or residual sign(s) | 0 |
| 2. Healed fracture <i>with</i> displacement and <i>without</i> residual sign(s) involving: | |
| a. Single ramus | 0 |
| b. Rami, bilateral | 0 |
| c. Ilium | 0 |
| d. Ischium | 0 |
| e. Symphysis pubis, without separation | 5 |
| f. Sacrum | 5 |
| g. Coccyx | 0 |
| 3. Healed fracture(s) <i>with</i> displacement, deformity, and residuals sign(s) involving: | |
| a. Single ramus | 0 |
| b. Rami, bilateral | 5 |
| c. Ilium | 2 |
| d. Ischium, displaced 1 inch or more | 10 |
| e. Symphysis pubis, displaced or separated | 15 |
| f. Sacrum, into sacroiliac joint | 10 |
| g. Coccyx, nonunion or excision | 5 |
| h. Fracture into acetabulum | Evaluate on basis of restricted motion of hip joint |

The impairment estimate for hemipelvectomy is 50% of the whole person (Table 63, p. 83, lower extremity).

Impairment Rating - Spine Pearls

- **DRE is the rule.**
- ROM **model** used as differentiator **very rarely**, in specific instances as a DRE “tie breaker.”
- Non uniform loss of ROM, not the ROM model, is specifically listed as a differentiator for DRE II.
- Radiculopathy with significant signs (loss of relevant reflexes and/or 2 cm or greater atrophy) at MMI are the threshold to qualify for DRE III and the findings should correlate with medical history, physical exam and imaging.
- Diagnosis of radiculopathy on DWC Form-032 (Box 37) **does not** automatically qualify for DRE III.

Questions About DRE Categories IV -VIII?

ARE YOU READY FOR MORE?

Case # 5

- A 32 year old male truck driver was involved in a rollover motor vehicle accident. He was extricated from the vehicle.
- He had abrasions and a laceration on his left parietal area. He had initial loss of strength in his limbs and severe loss of ability to move his proximal arms.
- He was transported to the major trauma center. Imaging and stabilization continued. He had no intracranial trauma by CT and GCS was 15.

Case # 5

Initial x-rays and CT of the cervical spine demonstrated a fracture of the left C4-C5 pedicle and a dislocation of the right C4-C5 facet joint (right C4 rotated anterior to the C5). There was measurable rotatory instability and there was translation of C4 on C5 of > 3.5 mm.

The MRI demonstrated a spinal cord contusion from C3 to C6.

Surgical stabilization included a C4 – C6 posterior fusion. After the acute hospitalization, he was transferred to a rehab facility. He had initial gait imbalance, which improved over time. He had profound weakness in his shoulders greater than the distal hand. He had a Foley catheter for period of time.

The claimant was in a rehab facility for 2 months after the C4 – C6 posterior fusion.

Case # 5

- His physical exam initially demonstrated profound weakness in the right > left arm (ventral root) and more pain and dysesthesias in the left > right arm in a C5 > C6 distribution. He also had weakness and balance issues due to proprioceptive loss in the legs and trunk with difficulty ambulating due to the cord contusion.
- By discharge from the hospital, he was ambulating (with poor balance) without an assistive device and voiding on his own.
- An EMG at 6 months demonstrated significant abnormal spontaneous potentials in the Supraspinatus, Deltoid, Biceps, Triceps and Pronator Teres in the right > left arm. There was evidence of reinnervation in most of the muscles.

Case # 5

- His functional status continued to improve with out-patient rehab and time for spontaneous recovery. At MMI, his exam demonstrated:
- Gait without an assistive device with fair to good balance.
- Normal rectal tone (and no need for urinary diversion)
- Strength in the right Supraspinatous, Deltoid & Biceps were 3+/5 and the Triceps and Pronator Teres were 4/5. Strength in the left Supraspinatous, Deltoid & Biceps was 4/5 and the Triceps and Pronator Teres was 5-/5. He has dysesthesias in the left arm in a C5> C6 distribution.
- He has to wear a shoulder cuff orthotic on the right arm to keep the shoulder joint reduced.

Cervical Spine injury

Bowel or Bladder changes without verifiable, related lower extremity symptoms

- There is a documented cervical **spinal cord** injury
- Use rating from Digestive and/or Urinary & Reproductive chapter(s) and combine with appropriate spine DRE category
- Combine with appropriate DRE II – V category

Case # 5

- **Impairment Rating:**
 - **DRE V Severe Upper Extremity Neurological Compromise**
- Doesn't reach the threshold for DRE VI
 - No need for lower extremity assistive device

DRE V Cervicothoracic = 35% WP

Questions