# Designated Doctor Certification Course - Spine MMI and IR
# Pre-Course Cases

**Case 1**

History of Injury

- 28-year-old warehouse worker lifted 50 pound box at work 4 months ago
- Experienced lower back pain and right lower extremity pain

Treatment History – Date of Injury

- Occupational medicine physician diagnosed lumbar sprain
- Initial treatment naproxen, cyclobenzaprine and tramadol
- Released to return to work with restrictions not to lift more than 20 pounds
    - Employer able to accommodate restrictions

Treatment History - 3 Weeks Post Injury

- 6 PT visits in occupational medicine clinic consisting of hot packs, electrical stimulation, and some exercises involving lumbar and hip flexion stretching
- Follow up at three weeks post injury the IE reported worsening symptoms over the past two weeks with progression of pain extending into right buttock with "numbness and tingling" sensation in right lateral thigh and leg to the front of the shin.
- NSAID switched to meloxicam and told to discontinue physical therapy
- Continued to work with restrictions

Treatment History - 4 Weeks Post Injury

- Lumbar spine plain film x-rays obtained
- Show moderate spondylosis at L4/L5

Treatment History - 6 Weeks Post Injury

- Occupational medicine physician referral to PMR physician
- Low back and right lower extremity symptoms increased with sitting, bending forward, lifting and in morning; better withstanding and walking
- Left lumbar list
- PMR records reported
    - VAS 8/10 and Oswestry score 54%
    - Symptom diagram demonstrated right > left lumbosacral pain extending into right buttock, posterior thigh, lateral leg and dorsum of foot
- Lumbar flexion fingertips to knees with increased low back, right buttock and posterior thigh pain, extension slightly decreased with increased right low back pain
- Patellar and Achilles DTRs 2+ bilaterally, Medial hamstring DTR not testing
- Decreased sensation right lateral thigh, leg and dorsum of foot
- Right ankle dorsiflexion, EHL and hip abduction 4+/5

- Diagnosis - Right L5 radiculopathy secondary to suspected L4/L5 HNP
- PMR ordered a non-contrast lumbar MRI scan

Treatment History - 8 Weeks Post Injury

- Lumbar MRI Scan Report
  - Extruded right paramedian disc herniation, with cranial migration of disc content, causing an impression of the ventral surface of the dural sac and obliteration of the right lateral recess of the vertebral canal, with compression of the descending right L5 nerve root
  - Disc desiccation at L4/L5 and L5/S1
  - No other findings noted at other disc levels

Treatment History - 10 Weeks Post Injury

- Transforaminal Epidural Steroid Injection (ESI) at 10 weeks post injury
- Significant relief right lower extremity symptoms for 3 weeks
- Right lower extremity symptoms recurred with sitting and bending forward
- Working restricted duty
- Preauthorization denial for repeat ESI

DD Evaluation – 16 weeks post injury

- Warehouse worker for 5 years, present employer for past 2 years
- Currently working with restrictions
- No co-morbid medical conditions or relevant past medical history
- Sleep disturbed due to back and leg pain DD Evaluation
- No history of psychological distress or treatment
- Oswestry score 52%
- Pain scale 7/10
- Pain drawing shows right low back, buttock, posterior thigh and lateral leg pain extending to dorsum of right foot
- Preauthorization denial appealed

DD physical Exam – 16 weeks post injury

- Vitals
  - height 70 inches
  - weight 175 lbs.
  - BP 130/82
  - pulse 65
  - respiration 16
- Able to rise from sitting to standing with difficulty assuming lumbar lordosis
- Ambulates with normal gait
- No scars on back or trunk
- Slight left trunk list
- Able to walk on heels and toes, squat and perform 10 calf raises on each leg without obvious weakness
- 4/5 strength right EHL, right tibialis anterior, and right hip abductors; otherwise, manual muscle testing shows 5/5 strength
- Patellar and Achilles DTRs 2+ bilaterally

- Medial hamstring DTRs absent bilaterally
- Medial hamstring DTRs tested supine absent bilaterally; prone absent on right, 1+ on left
- Sensation slightly decreased over right posterior thigh and anterolateral leg and dorsum of foot
- Symmetric thigh and calf circumference
- Right supine SLR to 45° with increased sharp lower back pain extending into right buttock and posterior thigh
- Worsened with ankle dorsiflexion and hip adduction/internal rotation
- Left supine SLR 70° with only hamstring tightness/discomfort
- Negative femoral nerve root tension signs
- Tenderness with palpation and hypertonicity of right lower lumbar paraspinal muscles at L4/L5/S1

**<u>Case 1 Questions:</u>**

**Based on medical records and physical exam, what is the compensable injury for certifying MI and IR?**

A. Lumbar sprain
B. Right L5 radiculopathy
C. Lumbar sprain and right L5 radiculopathy secondary to L4/L5 HNP
D. Lumbar sprain, right L5 radiculopathy secondary to L4/L5 HNP and L4/L5 disc desiccation

**Has MMI been reached? If so, on what date?**

A. Yes, date of initial PMR visit, 6 weeks post injury
B. Yes, date of TF ESI, 10 weeks post injury
C. Yes, date of DD exam, 16 weeks post injury
D. No, not at MMI

**<u>Case 1 – The Sequel</u>**

DD Evaluation – 52 weeks post injury

- Underwent L4-5 discectomy 18 weeks after injury
- Discharged from PT with independent home and gym exercise program 32 weeks post injury
- Illegible handwritten PT discharge notes
- Medical records document PMR follow-up 40 weeks post injury
    - Reports significant improvement with discectomy and PT, but persistent low back and right lower extremity pain with sitting, bending and lifting, "2 - 3/10"
    - Working full duty, no lifting >50 lbs
    - No lumbar list
    - Decreased lumbar flexion with deviation to left and increased low back and right buttock pain, slightly decreased extension
    - Right SLR at 60° produces right low back and buttock pain, pain increased with ankle dorsiflexion
    - LE strength 5/5 bilaterally
    - LE DTRs bilaterally symmetric
    - Will continue home exercise program
    - Released to full duty, no restrictions
    - Follow-up as needed

- DD's List of IE's current complaints
  - Oswestry score 16%
  - Pain scale 2-3/10; pain drawing shows right low back, right buttock and posterior thigh pain
  - Indicates recurrent low back pain with repeated bending forward, sitting/driving greater than 45 minute intervals, lifting > 50 lbs.
  - Reports some relief of low back and RLE symptoms with HEP and ibuprofen prn

DD Clinical Exam – 52 weeks post injury

- Vitals
  - height 70 inches
  - weight 175 lbs
  - BP 120/78
  - pulse 65
  - respiration 16
- Able to slowly assume lumbar lordosis from sitting to standing
- No list or deformity
- Ambulates with normal gait

DD Physical Exam – 52 weeks post injury

- Lumbar flexion fingertips to proximal shin, with increased right low back and buttock pain, full extension with moderate low back pain
- Able to walk on heels and toes, squat and perform
  10 calf raises on each leg without obvious weakness
- 5/5 strength right EHL; 5/5 right tibialis anterior; and 5/5 right hip abductors
- Left lower extremity strength 5/5 all levels
- Patellar and Achilles DTRs 2+ bilaterally
- Medial hamstring DTRs absent bilaterally
- Sensation is intact and bilaterally symmetrical
- Symmetric thigh and calf circumference
- Right supine SLR to 62º with increased lower back pain extending into right buttock and posterior thigh
- Worsened with ankle dorsiflexion and hip adduction/internal rotation
- Left supine SLR 75º with hamstring tightness/discomfort only
- Tenderness with palpation of right lower lumbar paraspinal muscles at L4/L5/S1
- No spasm or guarding present

**Case 1 – The Sequel Questions**

**Has MMI been reached? If so, on what date?**

A. Yes, date of PT discharge, 32 weeks post injury
B. Yes, date of PMR follow up, 40 weeks post injury
C. Yes, date of DD exam, 52 weeks post injury
D. No, not at MMI

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

A. DRE I = 0%
B. DREII = 5% for non-verifiable right L5 radiculopathy
C. DRE III = 10% for right L5 radiculopathy

**Case 2**

History of Injury

- 42 year-old male taxi driver involved in rear-end motor vehicle accident 10 months ago
- Evaluated by EMS at scene of the accident
    - Neck pain and occipital headache
    - No loss of consciousness, normal neurologic exam
    - Recommended for transport, patient denied

Treatment History

- Saw chiropractor 1 week post injury
    - Neck pain, occipital headache w/ “hotness” into to right forearm and hand
    - Decreased cervical extension, right rotation and right lateral flexion with right neck pain
    - Deviation of head/neck to left during decreased extension
    - Palpation reveals hypertonicity and joint hypomobility C2/3-C6/7 R>L
    - Cervical x-rays show no evidence of fracture or dislocation
    - C5/C6 disc space narrowing, with marginal osteophyte at anterior aspect of superior endplate at C6 Chiropractor’s Records
    - Diagnosis of acute cervical sprain/strain with radiculitis
    - Manipulation and soft tissue techniques
    - Progression of exercise program – self mobilization, stretch, scapular strengthening with therabands
    - 14 visits over 12 weeks
- Chiropractor 12 week follow up
    - Continued 8/10 pain scale
    - Reduced cervical ROM with pain
    - Tenderness to palpation of C-spine and superior traps
    - Bilateral +2 upper extremity DTRs
    - Sensation decreased across C5-C7
    - Motor strength noted as 4-/5 biceps, triceps, brachioradialis and deltoids
    - Additional PT request denied

DD Exam - 24 weeks post injury

DD Medical history

- Chief complaint persistent 8/10 neck pain
- Working full duty without restrictions for last 14 weeks

    - He feels this is making him get worse, especially since additional PT has been denied
    - He feels he needs more PT to get better
- Neck Disability Index (NDI) score 52%
- Additional PT has been denied
- Referred to pain management for C-ESIs

DD Physical Exam – 24 weeks post injury

- Vitals
    - height 72 inches
    - weight 175 lbs
    - BP 118/78
    - pulse 64
    - respiration 14
- He is cooperative with history and exam but repeatedly discusses delays in care and "unreasonable" treatment by his employer and adjuster
- No scars on the neck or visible deformity, scoliosis, or kyphosis
- Cervical ROM full with complaint of increased pain
- No palpable muscle spasm of cervical paraspinal muscles
- Upper extremity DTRs +2 bilaterally
- Muscle strength is 5/5 all levels
- Sensation decreased C5-7 bilaterally

**Case 2 Questions**

**Based on medical records and physical exam, what is the compensable injury for certifying MI and IR?**

A. Cervical sprain/strain status post rear-end MVA
B. Suspected cervical HNP
C. A & B
D. Other

Has MMI been reached? If so, on what date?

A. Yes, 12 weeks post injury after 14 visits with DC
B. Yes, 24 weeks post injury date on date of DD exam
C. Other date?
D. No, not at MMI

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

A. DRE I = 0%
B. DRE II = 5%
C. DRE III = 15%
D. DRE IV = 25%

**Case 3**

History of injury

28-year-old male landscape worker began having acute low back and right buttock pain after lifting a tree 8 months ago

Treatment history

- Initially seen day of injury at occupational medicine clinic
- Diagnosed with lumbar sprain/strain
- Treated with cyclobenzaprine and Ibuprofen
- 6 visits PT over 3 weeks at occupational medicine clinic
    - Hip/lumbar flexion and rotation stretching, and some “stabilization” exercises
- Released to return to work with restrictions
- Employer did not accommodate restricted duty and reportedly said “come back when you are 100%”
- <u>10 days post injury</u>
    - reported pain and numbness in right posterior thigh and lateral calf
- <u>14 days post injury</u>
    - exam demonstrates weakness in the right hamstring, right calf and toe flexors and numb lateral foot
    - Had a positive “crossed straight leg raise”, left straight leg raise reproduced pain in the right buttock and posterior thigh.
    - Left straight leg raise reproduced right calf pain
- <u>4 weeks post injury</u>
    - x-rays 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 imaging
- <u>8 weeks post injury</u>
    - Lumbar MRI scan obtained showing disc desiccation at L5/S1 and 7 mm right posterolateral L5/S1 HNP displacing right S1 nerve root
    - Chronic bilateral pars defects well established without increased T2 or inversion recovery signal changes consistent with acute injury
- <u>14 weeks post injury</u>
    - IE had translaminar lumbar epidural steroid injection at L5/S1 without significant or lasting improvement
- <u>20 weeks post injury</u>
    - Underwent right L5/S1 hemi-laminotomy/discectomy resulting in some relief of lower extremity symptoms
- <u>24 weeks post injury</u>
    - 14 visits of active PT. Initiated lumbar extension range of motion exercises progressing into strengthening exercises and work simulation
- <u>30 weeks post injury</u>
    - Repeat lumbar MRI scan with contrast showed post-operative changes and chronic bilateral pars defects without evidence of recurrent or residual disc herniation
- <u>32 weeks post injury</u>
    - IE found another job supervising landscape crew; released to return to work full duty

- 36 weeks post injury - treating doctor exam
    - Intermittent back and right lower extremity pain
    - Right SLR “positive” at 45 degrees
    - Moderately reduced lumbar flexion
    - Right Achilles DTR decreased
    - Numbness to pinprick over the right lateral foot
    - Right ankle plantar flexion 4+/5
    - Did not want to pursue additional interventional pain management procedures
    - Continue with gabapentin, follow-up as needed

DD Medical History - 52 weeks post injury

- Chief complaint 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
- Continues to work as landscape crew supervisor
- Takes gabapentin, continues home exercise program

DD Physical Exam – 52 weeks post injury

- Vitals
    - height 70 inches
    - weight 175 lbs.
    - BP 124/78
    - pulse 62
    - respiration 13
- Pleasant affect, cooperative with history and exam, oriented to time, person, and place with normal attention span and concentration
- Able to rise from sitting to standing with no abnormal motion
- Ambulates with normal gait
- Well healed approximate 3 cm surgical scar at 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 moderately decreased; extension and left lateral flexion essentially full
- Left SLR 65º limited by hamstring tightness
- Right straight leg raise limited to 45º where it produces right low back and right buttock pain, further increased with ankle dorsiflexion
- Patellar DTRs 2+ bilaterally; right Achilles DTR decreased
- Repetitive calf raises on right reveals some weakness
- 2 cm of right calf atrophy
- Some palpatory tenderness and hypertonicity of lumbar paraspinal muscles at right lumbosacral junction

**Case 3 Questions**

**Based on medical records and physical exam, what is the compensable injury for certifying MI and IR?**

A. Lumbar sprain/strain
B. Lumbar sprain/strain and persistent right S1 radiculopathy status post right L5/S1 hemi-laminotomy/discectomy
C. Other

**Has MMI been reached? If so, on what date?**

A. Yes, 32 weeks post injury, date IE completed post-op PT, released to full duty work at new job
B. Yes, 36 weeks post injury, date of treating doctor follow-up visit
C. Yes, 52 weeks post injury, date of DD exam
D. No, not at MMI

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

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

**Case 4**

History of Injury

- 35-year-old male roofer fell from a roof sustaining T11 compression fracture and an injury to the lumbar spine at work 12 months ago

Treatment History

- Initially seen at ER
- X-rays demonstrating stable anterior compression fracture at T11 and minor spondylosis at L4-% and L5-S1
- c/o LBP with left lower leg pain / numbness to the lateral calf
- Orthopedic surgeon initiated conservative treatment with bracing, pain medication and ADL/work modifications
- 8 visits of PT over 10 weeks with significant improvement in symptoms and activity tolerance
- An MRI was ordered at follow up at 12 weeks, due to persistent tingling in the left lateral calf and dorsum of the foot
- Lumbar MRI completed at 14 weeks demonstrated:
    - Disc desiccation at L2-3 to L5-S1
    - Disc bulges at L4-5 and L5-S1
    - Far field findings on %2 and STIR images demonstrates edema in the T11 vertebral body and the T10 inferior and 12 superior endplates, but not elsewhere in the lumbar spine
- At 6 months follow up, x-rays showed well healed T11 compression fracture wth 20% loss of anterior vertebral body height
- Ortho follow up at 6 months
    - Essentially full ROM

- Decreased sensation on the lateral calf and foot
  - No atrophy and MMT was 5/5 bilateral lower extremities
  - “Much better after PT, doing well, has returned to work, return as needed”

DD Medical History – 9 months post injury

- Chief complaint low back pain
- Intermittent tingling on the top of he left foot
- Oswestry score 30%
- Pain scale 3/10
- Vitals
  - height 70 inches
  - weight 175 lbs
  - BP 128/78
  - pulse 68
  - respiration 14
- Pleasant but somewhat flat affect, cooperative with history and exam
- Oriented to time, person, and place with normal attention span and concentration
- Able to rise from sitting to standing with no abnormal motion
- Ambulates with normal gait
- No visible deformity, scoliosis or kyphosis
- Able to walk on heels, toes and squat without weakness
- Lumbar flexion and extension and right/left lateral flexion all slightly decreased
- Diffuse thoracolumbar paraspinal muscle tenderness but no spasm
- No specific segmental areas of pain other than T10, T11 and T12
- SLR bilaterally 45º limited by hamstring tightness; produced low back pain on right and back pain into posterior thigh on the left
- Significant trigger point in the left posterior gluteus medius resulted in radiating pain in the left lateral pelvis and leg, to just past the knee
- Decreased sensation lateral calf and dorsum of the left foot
- 5/5 strength of bilateral lower extremities
- Patellar and Achilles DTRs 2+ bilaterally
- No measurable atrophy of the left calf / thigh compared to the right

**<u>Case 4 Questions</u>**

**Based on medical records and physical exam, what is the compensable injury for certifying MI and IR?**

A. T-11 compression fracture
B. Lumbar sprain / strain
C. Disc desiccation L2-3 to L5-S1
D. Disc bulges at L4-5 and L5-S1

E. A and B
F. All of the above

**Has MMI been reached? If so, on what date?**

A. Yes, 6 months post injury, date of the ortho follow-up and x-rays showing healed fracture
B. Yes, date of designated doctor exam
C. No, not at MMI

**On the MMI date, what is the whole person IR?** (c/w = combined with)

A. Thoracic spine DRE II 5% c/w Lumbar spine DRE I 0% = 5%
B. Thoracic spine DRE II 5% c/w Lumbar spine DRE II 5% = 10%
C. Thoracis spine DRE II 5% c/w Lumbar spine DRE III 10% = 15%