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MIRR PHYSICIAN SPOTLIGHT
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Jeffrey E. Hazlewood, MD, has been a member of the Medical Impairment Rating Registry since 2006. He currently practices physical medicine and rehabilitation in Lebanon and Murfreesboro, Tennessee. His practice is centered largely on workers' compensation, and he has a special interest in cost-effective management of chronic pain/open life-time medical cases. To prevent injuries from becoming chronic, Dr. Hazlewood strongly believes in ordering appropriate physical therapy and judiciously administering injections. He himself is a non-interventional physiatrist, but when the appropriate occasion warrants, he makes referrals for the injections.

Dr. Hazlewood grew up in Jackson, Tennessee. He received his B.S. degree at Rhodes College and his medical degree from the University of Tennessee, Memphis. After completing his residency at the University of Alabama, Birmingham, he moved to Lebanon, Tennessee, where he is now a staff member at the University Medical Center. He was Medical Director of UMC-McFarland Rehabilitation unit for 13 years and directed the Timberridge Post-acute brain injury rehab unit for a few years. He is currently a fellow of the

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"Dr. Hazlewood has strong interests in impairment rating evaluation, electrodiagnostic testing, and teaching in the fields of physiatry and pain management."

American Academy of Physical Medicine and Rehabilitation and Board Certified in Physical Medicine and Rehabilitation with a subspecialty in Pain Medicine. His society memberships include the American Medical Association, The American Academy of Physical Medicine and Rehabilitation, the Rotary Club, and the American Association of Electrodiagnostic Medicine. Honors include Phi Beta Kappa in college, and chief resident at UAB.

Professionally, Dr. Hazlewood has strong interests in impairment ratings evaluations, electrodiagnostic testing, and teaching in the fields of physiatry and pain management. He went into physiatry because of his love for in-patient rehabilitation. Personally, he enjoys playing golf and watching professional tennis matches across the country. By making two holes-in-one in 10 days in the Chamber of Commerce Tournament, he won a new Cadillac. He is married and has two children, ages 20 and 23.

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EVALUATING RADICULOPATHY

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In workers' compensation patients, most requests for permanent impairment rating of low back injuries involve the diagnostic labels of back strain or disc herniation. Choosing the right diagnosis and class for these injuries is the crucial first step, and, for those with sciatic (leg) symptoms, involves correctly choosing between "non-verifiable radicular complaints" and "residual radiculopathy."

The impairment class that you choose for a back injury depends in large measure on the finding of chronic radiculopathy. Under current state law, if the injured worker has an average weekly wage of $750, the difference between an impairment award with and without radiculopathy is $10,000 to $40,000 (five to 20 percentage points WPI). With multipliers, a finding of radiculopathy can increase the same award by as much as $240,000.

Consequently, it is essential that you, as an MIR Physician, are able to distinguish persisting radiculopathy, as defined by the *AMA Guides, 6th Edition*, from resolved radiculopathy and from non-verifiable radicular complaints. It is also extremely important that you support your findings with objective clinical evidence. This means documenting the physical exam findings in the physical exam section of your report. It also means explaining in detail why you are rating the condition under the diagnosis you have chosen and the category of radiculopathy (or non-verifiable radicular symptoms or resolved radiculopathy) in the discussion section of your report.

> "For the purposes of the Guides, radiculopathy is defined as significant alteration in the **function** of a single or multiple nerve roots and is usually caused by mechanical or chemical irritation of one or several nerves. The diagnosis **requires clinical findings** including specific dermatomal distribution of pain, numbness, and or paresthesias."
>
> Page 576, *AMA Guides, 6th Edition*.

Doctors make diagnoses; imaging does not. "Although imaging and other studies may assist physicians in making a diagnosis," according to page 577 of the *AMA Guides, 6th Edition*, "it is important to note that a positive imaging study, in and of itself, does not make the diagnosis. [...] For imaging studies to be of diagnostic value, clinical symptoms and signs must be consistent with the imaging findings. In other words, an imaging test is useful to confirm a diagnosis, but findings on an imaging study alone are insufficient to qualify for an impairment."

Clinical evidence of chronic radiculopathy might include (1) **motor weakness**, (2) **muscle atrophy**, (3) **impaired sharp-dull discrimination**, (4) **abnormal electrodiagnostic tests**, and (5) **reflex abnormali-**

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ties. Findings generally should be in the appropriate **myotomal** and **dermatomal** patterns.

(1) **Motor Weakness:** Muscles with major findings of radiculopathy are generally weak. The examiner should be mindful of pain inhibition and poor effort on testing, which are not signs of neurologic weakness.

Neurologic weakness does not "come and go" (is not intermittent) either with peripheral nerve injury in the limbs, or with nerve root injury in the spine. It would be very unusual for only one examiner to find significant neurologic weakness that other examiners had overlooked unless it is a new finding from new pathology. The muscles that are weak with injury to specific nerve roots are usually, but not always, consistent with textbook descriptions of the nerve roots supply of specific muscles. Anomalous innervation does occur, and examiners may wish to consult current references[1 2] on the specific deficits seen with documented injury to specific nerve roots.

(2) **Muscle Atrophy**: Muscles with major neurologic weakness from radiculopathy are generally also atrophic. The most frequent issue with atrophy is examiners failing to measure limb circumference and inspect limbs for specific atrophy of single muscles. If atrophy is pronounced, it can be further documented by digital photography, with photographs attached to the report. In patients with a body mass index greater than 35, or with major limb edema, it is nearly impossible to recognize atrophy. Neurologic atrophy does not "come and go." Atrophy that is real is persistent, and thus if other examiners have looked for atrophy and not found it, it would be unusual for you to find it. If only one examiner has found atrophy, and you do not find atrophy, the other examiner's finding would be unreliable.

(3) **Impaired Sharp vs. Dull Discrimination:** This finding on sensory exam is a key differentiator between "non-verifiable radicular complaints" and persisting radiculopathy (6th ed., 576).

For this test to be clinically significant, patients should have their eyes closed, and the examiner should use a disposable pin with sharp and blunt ends. After the examiner touches the patient with the pin, the patient should indicate which leg, "left or right," was touched and with which end of the pin, "sharp or dull," was the stimulus. "I can't tell" is an acceptable answer in those who sense the stimulus.

Those with major sensory deficit fail to recognize that they were even touched on the anesthetic dermatome, regardless of what stimulus was applied. Thus, the radiculopathy definition would be the equivalent of Grade 3 or Grade 4 severity in Table 16-11 and the text on page 532 (Lower Extremity Chapter). Grades 1 and 2 sensory deficit in the Lower Extremity Chapter are consistent with the Spine Chapter's term "Non-verifiable radicular symptoms." Remember that patients who are guessing should be correct about half the time and incorrect about half the time. Patients who volunteer an answer but who are always wrong multiple consecutive times (answer "sharp" to the dull stimulus, and

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answer "dull" to the sharp stimulus) are probably correctly perceiving the stimulus and consciously choosing the incorrect answer. It is possible to flip a coin and get six consecutive heads, and it is possible to guess incorrectly six consecutive times, but both events would occur only once in 64 attempts, and 10 successive "incorrect" guesses would occur only one time out of 1024 attempts by chance alone.

Permanent nerve root injury does not cause loss of sharp versus dull discrimination that "comes and goes." If real, this deficit should persist over time and be recognizable by multiple examiners. As discussed above in motor weakness, due to anomalous innervation, a sensory deficit may not correspond exactly with a textbook dermatome[3].

(4) **Abnormal Electrodiagnostic Tests**: If you have access to electrodiagnostic tests, the tests must be reliable. According to page 579 of the *6th Edition*, "the quality of the test and interpretations of the results depend on the skill and knowledge of the individual performing the study. The technique and documentation of the electromyographer may be considered in assessing 'EMG evidence' and validity." If the physician, or non-physician, who administers or interprets the test in question is outside your community or otherwise unfamiliar to you, the validity of their work is difficult for you to determine. If the results are illogical based on the symptom location, the physical exam, or the imaging, you may disallow the study as you are the ultimate authority. The reason for choosing not to consider the electrodiagnostic study should be stated in your report.

Surface EMG is not needle EMG and is not a basis for electrodiagnostic tests to be a useful clinical study, either to establish a diagnosis or to choose a Grade Modifier Clinical Studies. *The Guides* discusses Electrodiagnostic Verification of Radiculopathy on pages 579-80. The complete "textbook" definition of acute radiculopathy includes:

A) Fibrillations and positive waves in multiple muscles (two or more) innervated by the same nerve root and yet by different peripheral nerves (not likely to be multiple simultaneous peripheral nerve injuries).

B) Fibrillations and positive waves in the paraspinal muscles on the same side as the radiculopathy (not consistent with a peripheral nerve injury or a plexus injury). In those who have had prior lumbar surgery the paraspinal muscles are not interpretable, as the surgical exposure alone can permanently alter the needle EMG of the paraspinal muscles.

C) A normal sensory nerve action potential amplitude (voltage) in a sensory nerve served by the same nerve root on accompanying nerve conduction testing. Bilateral nerve conduction testing is necessary to establish this fact.

Note that conclusions based on other testing parameters, like H-reflex, F waves, insertional activity, or somatosensory evoked potentials, are not to be considered in the *AMA Guides, 6th Edition* impairment ratings.

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The *Guides* discusses chronic radiculopathy and points out that changes in the configuration of the motor units in a muscle with remote nerve or nerve root injury are more challenging for the electromyographer to reliably determine. Fibrillations and positive waves typically disappear once ongoing nerve injury ceases, and thus are no longer present six to nine months after injury for cervical radiculopathy, and 12-18 months after injury for lumbar radiculopathy. The chronic changes of high amplitude, polyphasic motor units persist permanently. While these chronic changes are at least this old, they may be decades old, and like absent reflexes may be difficult to assign to an appropriate age or event.

Positive needle EMG studies are a sufficient finding to state a person has radiculopathy on the day of the test, but it is still possible to have radiculopathy despite a normal (negative) needle EMG. The Evidence Based Review by the American Association of Neuromuscular and Electrodiagnostic Medicine[4] conducted methodologically sound studies on needle EMG in acute lumbosacral radiculopathy. Those prospective studies with reasonable study size are summarized from that article in the table below. The column "Negative Predictive Value," by subtracting from 100%, shows the percentage of persons with a negative needle EMG who actually meet the study's criteria for having true radiculopathy, either by MRI or by MRI plus surgical verification. Thus needle EMG is a sufficient, but not a necessary finding for the presence of acute radiculopathy on the day of the test.

While positive EMG studies for acute radiculopathy are a sufficient objective finding to state the person has radiculopathy on the date of the test, and while frequently those with positive needle EMG do have per-

Author (year)	Test	Number of patients	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Dillingham (2006)	EMG WITHOUT PM	206	89-92%			
Dillingham (2006)	EMG With PM	206	77-90			
Haig (1997)	EMG With PM	114	66.7%	92%	92%	66.7%
Haig (2005)	EMG	60	45.8%	87.5%	78.6%	61.8%
Haig (2005)	EMG With PM	60	29.2%	100%	100%	58.5%

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sisting radiculopathy at MMI, that does not mean the radiculopathy must persist despite time and treatment. It is possible, particularly with successful discectomy/decompressive surgery, for radiculopathy to resolve, and to no longer be present at MMI, or at the time of an IME after the date of MMI.

5) **Reflex Abnormalities**: The examiner should be mindful that a loss of a reflex, while an objective finding, does not necessarily indicate persisting radiculopathy. It is common for patients with a previous back injury to lose a reflex permanently. Such a loss does not necessarily indicate radiculopathy for the new injury. In peripheral neuropathy, reflexes are usually lost diffusely. In isolated peripheral nerve injury or mononeuritis multiple, a reflex may be lost asymmetrically and simulate the finding of radiculopathy. Isolated loss of an ankle reflex in an otherwise happy and healthy person who has had a remote L5-S1 discectomy is not, by itself, sufficient to document persisting radiculopathy. Similarly, loss of a knee reflex in a person with a prior upper lumbar discectomy is not by itself sufficient evidence of persisting radiculopathy.

Straight Leg Raise (SLR): A positive straight-leg test, due to the subjective feedback of the patient, is not, by itself, considered clinical evidence of radiculopathy. Examinees are often familiar with this test and know that a demonstration of pain might convince a physician that something is wrong.

For a positive SLR to be clinically significant, it must be clinically validated. According to page 575 of the *6th Edition*, validation can be achieved if "ankle dorsiflexion and hip internal rotation" increase pain "while the other movements decrease the pain." A sitting SLR may also help validate a supine SLR since examinees are less familiar with the sitting SLR. Distraction can be added by examining the plantar surface of the foot of the seated examinee (hips flexed 80-90 degrees) with the knee fully extended by the examiner while asking, "Is there any problem with your foot that causes you to limp or walk funny?" If true positive straight leg raising is present, the examinee may grimace, or lean backward and place their hands behind them on the exam table ("tripod sign").

> "Nonverifable radicular complaints are defined as chronic persisting limb pain or numbness, which is consistently and repetitively recognized in medical records, in the distribution of a single nerve root that the examiner can name and with the following characteristics: preserved sharp vs. dull sensation and preserved muscle strength in the muscles it innervates, is not significantly compressed on imaging, and is not affected on electrodiagnostic studies (if performed)."
>
> Page 576, *AMA Guides, 6th Edition*

The Guides: Examiners should remember that most lumbar discectomy surgery is done for radicular pain that the examinee is not willing to live with, and that surgery can be appropriately performed for symptom relief in those who never meet the *Guides* impairment rating definition of objectively verified

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radiculopathy. These cases may be ratable as "Non-specific chronic or chronic recurrent low back pain" (the first row in Table 17-4), despite the fact that discectomy has been performed.

To be rated as "intervertebral disk herniation" from the second row of the table, the footnote "a" in Tables 17-2, 17-3, and 17-4 refers the reader to the full footnote on page 571 which states "Intervertebral disk herniation excludes annular bulge, annular tear, and **disk herniation on imaging** without consistent objective findings of radiculopathy at the appropriate level(s) when most symptomatic." Thus, in cases with prior surgery, the examiner must review records in the pre-operative period to determine whether there were, or were not, objective findings of radiculopathy other than imaging to determine whether to rate from row #2 or row #1 of Table 17-4.

For those who are to be rated from row #2 (intervertebral disc herniation), the examiner must then determine if at MMI, or at the date of the exam if done after MMI, there are or there are not persisting objective signs of radiculopathy, to differentiate Class 1 from Classes 2 to 4.

Myotomal/Dermatomal Patterns: Due to natural variation in the nervous system, the location of the motor weakness and sensory loss might not match perfectly with the dermatomes in Figure 17-4 on page 578. Rather, as stated on page 575, some "overlap may occur," and symptoms may extend into the dermatome at a level above or below the normal distribution. If, on the other hand, imaging shows, for example, a right-sided disc herniation with nerve root compression, and the patient complains of numbness in the L5-S1 distribution of the left leg, then corroborative evidence for radiculopathy is clearly lacking.

Summary: When considering radiculopathy in the appropriate *Guides, 6th Edition* spine grid, the evaluator must distinguish radicular (limb) symptoms that are continuous, intermittent, or completely resolved. The diagnosis requires clinical evidence. In the absence of adequate clinical evidence, if the injured worker has consistent claims of persisting numbness, pain, or paresthesia, the symptoms might fit the definition of "Nonverifiable Radicular Complaints" as described on page 576. Here the complaints might be appropriately dermatomal, but sharp versus dull sensation and motor strength are preserved, electrodiagnostic tests are unremarkable, and the nerve is not **still** significantly compressed on imaging (it may have been compressed "once upon a time"). Rating the common scenarios of back and leg pain, or neck and arm pain, using the *Guides, 6th Edition* requires the examiner to carefully examine medical records for neurologic findings and to carefully document the current neurologic exam, as these findings are crucial to proper impairment assessment.

[1]Suri P, Rainville J, Katz JN, et al. The Accuracy of the Physical Examination for the Diagnosis of Midlumbar and Low Lumbar Nerve Root Impingement. Spine 2011; 36 (1): 63-73.

[2]Hancock MJ, Koes, B, Ostelo R, Peul W. Diagnostic Accuracy of the Clinical Examination in Identifying the Level of Herniation in Patients with Sciatica. Spine 2011: 36 (11); E712-E719

[3]Taylor CS, Coxon AJ, Watson PC, Greenough CG. Do L5 and S1 Nerve Root Compressions Produce Radicular Pain in a Dermatomal Pattern? Spine 2013; 38 (12): 995-8.

[4]Cho SC, Ferrante MA, Levin KH, et al. Utility of Electrodiagnostic Testing in Evaluating Patients with Lumbosacral Radiculopathy: An Evidence Based Review (AANEM Practice Guideline). Muscle & Nerve 2010; 42: 276-282.

MANSELL V. BRIDGESTONE FIRESTONE

TENNESSEE SUPREME COURT UPHOLDS CONSTITUTIONALITY OF MIRR PROCESS

Josh Baker, Esquire

On August 20, 2013, the Tennessee Supreme Court issued its opinion in the case of William Mansell v. Bridgestone Firestone North American Tire, LLC, et al. where it upheld the constitutionality of the Medical Impairment Rating Registry process. William Mansell suffered an injury to his shoulder within the course of his employment with Firestone. The authorized treating physician, Dr. Sean Kaminsky, assigned Mansell an impairment rating of 3% to the body as a whole. Mansell received an independent medical evaluation from Dr. Robert Landsberg who assigned an impairment rating of 10% to the body as a whole. The parties proceeded to mediation, exhausted the benefit review conference process, and Mansell filed suit in Smith County Circuit Court.

After Mansell filed suit, Firestone requested an impairment rating through the MIRR program. Mansell filed a motion to quash the request which was granted by the courts. The court held that Firestone could not receive a rating through the MIRR program after Mansell filed suit because the Department of Labor had "relinquished jurisdiction" of the case. Additionally, the court made comments suggesting the presumption of correctness attached to a rating assigned by a physician selected through the MIRR program rendered the MIRR process unconstitutional. In the end, the trial court agreed with the impairment rating of Dr. Landsberg and awarded Mansell workers' compensation benefits based on that rating. Firestone appealed.

On appeal, the Supreme Court overturned the trial court's order that quashed Firestone's MIRR application and remanded the case with instructions for the parties to complete the process. The Court held that the constitutionality issue was not ripe because the Attorney General's Office had not been provided an opportunity to respond to the issue at the trial court level.

After the case was remanded, Mansell received an evaluation from Dr. James Wiesman who was selected through the MIRR program. After completing the examination, Dr. Wiesman assigned an impairment rating of 7% and the parties returned to the trial court with the Attorney General's Office par-

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ticipating to address the constitutionality issue. At the hearing, the trial court again adopted the impairment rating of Dr. Landsberg holding that Mansell had successfully rebutted the presumption of correctness afforded Dr. Wiesman's rating. Additionally, the trial court ruled that the MIRR process was not available after suit is filed in court. Finally, the court ruled that if the process were available after the suit was filed the process presented "an unconstitutional infringement on th[e] Court's powers to use the Rules of Evidence to establish or to approve the qualifications of experts, to weigh any and all relevant evidence, to compare through the crucible of cross-examination or even direct examination of any expert, the bias, prejudice or the like." Firestone and the Attorney General's Office appealed the decision.

At this second appeal, the Supreme Court reversed the decision of the trial court on all counts. The Court first ruled that the statute providing for the MIRR process, T.C.A. § 50-6-204(d)(5), did not prohibit any party who had a dispute over the employee's degree of permanent medical impairment from receiving a neutral impairment rating from a Registry physician even if suit had already been filed in a trial court. Secondly, the Court held that the MIRR process was not in conflict with the Tennessee Rules of Evidence and did not violate separation of powers principles. The Court acknowledged that the program placed some limitations on a trial court's ability to determine admissibility of expert testimony. However, the limitations did not conflict with the rules of evidence because there is nothing in the rules that would render an opinion issued by a MIR Registry physician inadmissible. The Court reasoned that Registry physicians are all licensed to practice in Tennessee and are board certified making them eligible to provide expert testimony.

Third, the Court held that the statute did not infringe on separation of principles because the statute affords a rebuttable presumption of correctness to the MIRR physician's opinion thereby leaving room for the trial court to reach an alternate conclusion when determining the employee's degree of permanent impairment. Last, the Court ruled the trial court incorrectly held that Mansell had overcome the presumption of correctness afforded Dr. Wiesman's impairment opinion and assigned Mansell an impairment rating of 7%. A copy of the entire opinion can be found here: http://www.tncourts.gov/sites/default/files/mansellwilliamopn_0.pdf .

"The Court held that the MIRR process was not in conflict with the Tennessee Rules of Evidence and did not violate separation of powers principles."