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Notice of Independent Review Decision

DATE OF REVIEW: 11/13/09

IRO CASE #:

A DESCRIPTION OF THE QUALIFICATIONS FOR EACH PHYSICIAN OR OTHER HEALTH CARE PROVIDER WHO REVIEWED THE DECISION:

This case was reviewed by a Orthopaedic Surgery, Licensed in Texas and Board Certified. The reviewer has signed a certification statement stating that no known conflicts of interest exist between the reviewer and the injured employee, the injured employee's employer, the injured employee's insurance carrier, the utilization review agent (URA), any of the treating doctors or other health care providers who provided care to the injured employee, or the URA or insurance carrier health care providers who reviewed the case for a decision regarding medical necessity before referral to the IRO. In addition, the reviewer has certified that the review was performed without bias for or against any party to the dispute.

DESCRIPTION OF THE SERVICE OR SERVICES IN DISPUTE

Exam under anesthesia, revision lumbar spine surgery, disc excision, arthrodesis with cages, posterior instrumentation at L4-5, exploration-repair L5-S1 as indicated with 2 days inpatient stay

REVIEW OUTCOME

Upon independent review the reviewer finds that the previous adverse determination/adverse determinations should be:

Overtuned (Disagree)

INFORMATION PROVIDED TO THE IRO FOR REVIEW

- o Submitted medical records were reviewed in their entirety.
- o Treatment guidelines were provided to the IRO.
- o 07-09-09 MRI lumbar spine read by Dr.
- o 08-10-09 EMG/NCV BUE/BLE read by Dr.
- o 08-10-09 MRI read by Dr.
- o 08-11-09 New Patient Surgical Consultation from Dr.
- o 08-12-09 Evoked Potential Study upper and lower extremities read by Dr.
- o 10-02-09 Behavioral Health Assessment, unsigned
- o 10-20-09 Fax request for pre-authorization lumbar surgery with fusion from Dr.
- o 10-23-09 Initial Adverse Determination letter
- o 10-26-09 Fax appeal with 21 pages attached from Dr.
- o 11-02-09 Adverse Determination letter on reconsideration
- o 11-04-09 Confirmation of Receipt of IRO request from TDI
- o 11-04-09 Request for IRO from the Claimant
- o 11-05-09 Notice of Case Assignment of IRO from TDI

PATIENT CLINICAL HISTORY [SUMMARY]:

According to the medical records and prior reviews the patient is an employee who sustained an industrial injury to the neck and low back on xx/xx/xx when he slipped and fell while unloading a truck with a dolly. He was examined and sent for PT and MRI. His history includes a lumbar surgery performed in the 1980s described as a bilateral laminectomy at L5-S1.

Lumbar MRI was performed on July 9, 2009 and revealed: The post-operative alignment of the lumbar spine is anatomic. No arachnoiditis or pseudomeningocele is noted. At L4-5 an annular disc bulge flattens the thecal sac with moderate facet joint arthrosis and mild bilateral foraminal narrowing. At L5-S1 a bilateral laminectomy is seen. A residual annular disc bulge is noted with moderate narrowing of the left and mild narrowing of the right neuroforamen. No postoperative canal stenosis or scar formation is identified.

Nerve studies were performed on August 10, 2009 for continuing neck and low back complaints and some urinary urgency. Upper extremity studies showed acute bilateral C6 radiculopathy primarily on the left and some slowing of the median nerve, left greater than right. Lower extremity studies showed acute irritability in the bilateral L5 and S1 roots with a greater power reduction on the right though that particular element seems to be chronic and may be related to his previous injury whereas the acute irritability [is attributed] to his most recent injury. There is mild involvement of the lower sacral S2-4 motor roots based on external and sphincter sampling. There is significant reduction of the left quadriceps jerk with the quadriceps on the left side not showing any significant changes on EMG and it is not certain that C6 is the only cervical root to be involved based on imaging study and therefore upper and lower extremity SEPs will be requested for further evaluation.

Repeat cervical and lumbar MRIs were performed on August 10, 2009. Per the provider, the lumbar MRI reveals L5-S1 postoperative changes only with collapse, bone-on-bone. At L4-5, noncontained disc herniation rated as stage II with annular herniation, nuclear extrusion, and spinal stenosis.

A new patient surgical consultation was provided on August 11, 2009 by the current provider. The patient has continuing cervical and lumbar complaints and a failed low back syndrome with bilateral leg pain, worse on the right. He had surgery in the 1980s and returned to work as a . He has failed conservative treatments over the last 9 months. His back and bilateral leg pain is worse than his neck and arm pain. MRIs have shown disc pathology and instability in the cervical and lumbar spine. He does not smoke.

Flexion/extension radiographs reveal, at L4-5, an extension angle measured 21 degrees with facet subluxation and foraminal stenosis. Per the provider, this demonstrates a spinal instability pattern as per the American Academy of Orthopedic Surgeons Instructional Course Lectures, preponderance of literature and ODG interpretations. Similar opinions based on radiographs were opined for the patient's cervical spine condition. The patient reportedly has failed conservative treatment including medication, PT and epidural injections. Nerve studies were not yet available. Physical examination findings included, mild muscle spasms, positive flip test bilaterally, positive nerve stretch test (Lasegue's) bilaterally at 45 degrees, positive stretch test (Braggard's) on the left, decreased knee jerk bilaterally (symmetrical reflexes is not a positive finding), patient report of paresthesias in the L5 and L4 nerve root distribution greater on the left, weakness of quadriceps, tibialis anterior on the left and tibialis anterior on the right. Recommendation is for revision lumbar spine surgery with decompressive lumbar laminectomy, discectomy, and arthrodesis with internal fixation at L4-5 and evaluation at L5-S1 intraoperatively to see if this needs to be included in the arthrodesis for a stable base upon which to build L4-5. After this heals the patient may be a candidate for anterior cervical decompression and discectomy.

Evoked potential studies were performed on August 12, 2009 and interpreted as showing: Slowing of the left L3 sensory dermatome with the other levels being within normal limits. The EMG however did show significant L5 and S1 motor radiculopathy somewhat more involved on the right side. Upper extremity studies were done as well.

A Behavior Health Assessment was performed on October 2, 2009. The patient reports neck pain and headaches. He rates his pain as 9/10. He is negative for diabetes, hypertension and chronic heart disease. His neck pain radiates to his left arm. He has low back pain that radiates to both legs. He has high anxiety per testing. He is 5' 7" and 270 pounds. He has Major Depressive Disorder without psychotic features and Pain Disorder.

On October 20, 2009 request was made for inpatient lumbar surgery to include examination under anesthesia, revision lumbar spine surgery, disc excision, arthrodesis with cages, posterior instrumentation at L4-5, exploration-repair L5-S1 as indicated with 2 days inpatient length of stay.

Request for exam under anesthesia, revision lumbar spine surgery, disc excision, arthrodesis with cages, posterior instrumentation at L4-5, exploration-repair L5-S1 as indicated with 2 days inpatient stay was considered in review on October 23, 2009 with recommendation made for non-certification. 15 pages of records were submitted for review. A peer discussion was attempted but not realized. ODG indications/criteria for surgery are referenced. The criteria for lumbar fusion are cited. Per the reviewer, the patient is an appropriate candidate for minimal decompression at L4-5 with fusion surgery at L5-S1; however the exam under anesthesia and revision at L4-5 is not indicated. Given the patient has not had surgery at L4-5 previously, arthrodesis appears to be indicated at L5-S1 but not at L4-5. The surgical request as stated is not medically necessary. The patient may require an independent second surgical opinion prior to proceeding with surgery.

On October 26, 2009 request was made for appeal of the denied surgery.

Request for reconsideration, revision lumbar surgery with fusion and instrumentation L4-5, exploration and repair at L5-S1 with 2 day inpatient stay was considered in review of November 2, 2009 with recommendation for non-certification. The reviewer states "no flexion and extension views are reported." 34 pages of records were reviewed including redundant records. A peer discussion was attempted but not realized. It was reported that there is instability at L4-5 level; however, the record does not include independent flexion and extension radiographs to establish the degree of translation at this level. There is inadequate documentation of failure of conservative care. There is no indication of attempt of PT and/or ESIs. The psychological assessment appears incomplete. The patient is noted to have severe levels of depression and anxiety with no evidence of treatment with individual psychotherapy or psychotropic drugs and clearly at this point does not appear to be a suitable candidate for surgery.

An IRO was requested on November 4, 2009.

ANALYSIS AND EXPLANATION OF THE DECISION INCLUDE CLINICAL BASIS, FINDINGS AND CONCLUSIONS USED TO SUPPORT THE DECISION.

The Official Disability Guidelines criteria for lumbar fusion include, neural arch defect - spondylolytic spondylolisthesis, congenital neural arch hypoplasia. Segmental Instability (objectively demonstrable) - Excessive motion, as in degenerative spondylolisthesis, surgically induced segmental instability and mechanical intervertebral collapse of the motion segment and advanced degenerative changes after surgical disectomy. Fusion procedures are not recommended unless there is objectively demonstrated severe structural instability and/or acute or progressive neurologic dysfunction, but recommended as an option for spinal fracture, dislocation, spondylolisthesis or frank neurogenic compromise, subject to the selection criteria outlined. It is also noted that, fusion can be considered if, revision surgery for failed previous operation(s) if significant functional gains are anticipated, although revision surgery for purposes of pain relief must be approached with extreme caution due to the less than 50% success rate reported in medical literature. After failure of two discectomies on the same disc, fusion may be an option at the time of the third discectomy, which should also meet the ODG criteria. A thorough psychological screen is also required which addresses confounding issues.

MRI of July 9, 2009 was significant only for, a residual annular disc bulge at L5-S1 with moderate narrowing of the left and mild narrowing of the right neuroforamen. No postoperative canal stenosis or scar formation was identified. MRI of August 10, 2009, as interpreted by the provider, revealed L5-S1 postoperative changes only with collapse, bone-on-bone. At L4-5, noncontained disc herniation rated as stage II with annular herniation, nuclear extrusion, and spinal stenosis. Nerve studies of August 10, 2009 showed, acute irritability in the bilateral L5 and S1 roots with a greater power reduction on the right though that particular element seems to be chronic and may be related to his previous injury whereas the acute irritability [is attributed] to his most recent injury. There is mild involvement of the lower sacral S2-4 motor roots based on external and sphincter sampling. Flexion/extension radiographs as taken and interpreted by the provider, reveal at L4-5, an extension angle measured 21 degrees with facet subluxation and foraminal stenosis which is interpreted as indicating instability at this level. The patient has reportedly failed conservative treatment including medication, PT and epidural injections.

Clinically, physical examination findings included, mild muscle spasms, positive flip test bilaterally, positive nerve stretch test (Lasegue's) bilaterally at 45 degrees, positive stretch test (Braggard's) on the left, decreased knee jerk bilaterally, patient report of paresthesias in the L5 and L4 nerve root distribution greater on the left (a subjective finding), weakness of quadriceps, tibialis anterior on the left and tibialis anterior on the right.

The first level reviewer noted, the patient is a candidate for minimal decompression at L4-5 with fusion surgery at L5-S1; however the exam under anesthesia and revision at L4-5 is not indicated as there was not a prior surgery at this level. However, flexion/extension radiographs have demonstrated structural instability at L4-5 with documentation of relative angular motion greater than 20 degrees.

The second line reviewer noted that independent flexion and extension radiographs to establish the degree of translation L4-5 were not documented. Flexion/extension views were taken and interpreted by the provider. The second line reviewer stated that there is no indication of attempt of PT and/or ESIs. Per the initial report of the provider, the patient has (reportedly) failed conservative treatment including medication, PT and epidural injections.

The prior reviewer noted that the psychological assessment appears incomplete. The patient is noted to have severe levels of depression and anxiety with no evidence of treatment with individual psychotherapy or psychotropic drugs and clearly at this point does not appear to be a suitable candidate for surgery has merit.

While it is noted that the patient reportedly has diabetes, hypertension and chronic heart disease and at 5'7" and 270 pound he has a BMI of 42.3, all of which would be risk factors for a good surgical outcome. The patient does meet the guidelines because of his failure of non operative treatment, abnormal imaging studies, and his abnormal motion.

Therefore, my recommendation is to disagree with the previous non-certification of the request for exam under anesthesia, revision lumbar spine surgery, disc excision, arthrodesis with cages, posterior instrumentation at L4-5, exploration-repair L5-S1 as indicated with 2 days inpatient stay.

The IRO's decision is consistent with the following guidelines:

A DESCRIPTION AND THE SOURCE OF THE SCREENING CRITERIA OR OTHER CLINICAL BASIS USED TO MAKE THE DECISION:

____ACOEM- AMERICAN COLLEGE OF OCCUPATIONAL &
ENVIRONMENTAL MEDICINE UM KNOWLEDGBASE

- AHCPR- AGENCY FOR HEALTHCARE RESEARCH & QUALITY GUIDELINES
- DWC- DIVISION OF WORKERS COMPENSATION POLICIES OR GUIDELINES
- EUROPEAN GUIDELINES FOR MANAGEMENT OF CHRONIC LOW BACK PAIN
- INTERQUAL CRITERIA
- MEDICAL JUDGEMENT, CLINICAL EXPERIENCE AND EXPERTISE IN ACCORDANCE WITH ACCEPTED MEDICAL STANDARDS
- MERCY CENTER CONSENSUS CONFERENCE GUIDELINES
- MILLIMAN CARE GUIDELINES
- ODG- OFFICIAL DISABILITY GUIDELINES & TREATMENT GUIDELINES
- PRESSLEY REED, THE MEDICAL DISABILITY ADVISOR
- TEXAS GUIDELINES FOR CHIROPRACTIC QUALITY ASSURANCE & PRACTICE PARAMETERS
- TEXAS TACADA GUIDELINES
- TMF SCREENING CRITERIA MANUAL
- PEER REVIEWED NATIONALLY ACCEPTED MEDICAL LITERATURE (PROVIDE A DESCRIPTION)
- OTHER EVIDENCE BASED, SCIENTIFICALLY VALID, OUTCOME

The Official Disability Guidelines - Lumbar Chapter (10-30-2009) Lumbar fusion:

Not recommended for patients who have less than six months of failed recommended conservative care unless there is objectively demonstrated severe structural instability and/or acute or progressive neurologic dysfunction, but recommended as an option for spinal fracture, dislocation, spondylolisthesis or frank neurogenic compromise, subject to the selection criteria outlined in the section below entitled, "Patient Selection Criteria for Lumbar Spinal Fusion," after 6 months of conservative care. For workers' comp populations, see also the heading, "Lumbar fusion in workers' comp patients." After screening for psychosocial variables, outcomes are improved and fusion may be recommended for degenerative disc disease with spinal segment collapse with or without neurologic compromise after 6 months of compliance with recommended conservative therapy. [For spinal instability criteria, see AMA Guides (Andersson, 2000)] For complete references, see separate document with all studies focusing on Fusion (spinal). There is limited scientific evidence about the long-term effectiveness of fusion for degenerative disc disease compared with natural history, placebo, or conservative treatment. Studies conducted in order to compare different surgical techniques have shown success for fusion in carefully selected patients.

According to the recently released AANS/NASS Guidelines, lumbar fusion is recommended as a treatment for carefully selected patients with disabling low back pain due to one- or two-level degenerative disc disease after failure of an appropriate period of conservative care. This recommendation was based on one study that contained numerous flaws, including a lack of standardization of conservative care in the control group. At the time of the 2-year follow up it appeared that pain had significantly increased in the surgical group from year 1 to 2. Follow-up post study is still pending publication. In addition, there remains no direction regarding how to define the "carefully selected patient." (Resnick, 2005) (Fritzell, 2004) A recently published well respected international guideline, the "European Guidelines," concluded that fusion surgery for nonspecific chronic LBP cannot be recommended unless 2 years of all other recommended conservative treatments - including multidisciplinary approaches with combined programs of cognitive intervention and exercises - have failed, or such combined programs are not available, and only then in carefully selected patients with maximum 2-level degenerative disc disease.

For chronic LBP, exercise and cognitive intervention may be equivalent to lumbar fusion without the potentially high surgical complication rates. In acute spinal cord injury (SCI), if the spine is unstable following injury, surgical fusion and bracing may be necessary. (Bagnall-Cochrane, 2004) (Siebenga, 2006) A study on improving quality through identifying inappropriate care found

that use of guideline-based Utilization Review (UR) protocols resulted in a denial rate for lumbar fusion 59 times as high as denial rates using non-guideline based UR. (Wickizer, 2004) The profit motive and market medicine have had a significant impact on clinical practice and research in the field of spine surgery. (Weiner-Spina, 2004) (Shah-Spina, 2005) (Abelson, 2006) Data on geographic variations in medical procedure rates suggest that there is significant variability in spine fusion rates, which may be interpreted to suggest a poor professional consensus on the appropriate indications for performing spinal fusion. (Deyo-Spina, 2005) (Weinstein, 2006) Outcomes from complicated surgical fusion techniques (with internal fixation) may be no better than the traditional posterolateral fusion. (van Tulder, 2006) (Maghout-Juratli, 2006) Despite the new technologies, reoperation rates after lumbar fusion have become higher. (Martin, 2007) According to the recent Medicare Coverage Advisory Committee Technology Assessment, the evidence for lumbar spinal fusion does not conclusively demonstrate short-term or long-term benefits compared with nonsurgical treatment for elderly patients. (CMS, 2006) When lumbar fusion surgery is performed, either with lateral fusion alone or with interbody fusion, unlike cervical fusion, there is no absolute contraindication to patients returning even to contact sports after complete recovery from surgery. Like patients with a thoracic injury, those with a lumbar injury should be pain free, have no disabling neurological deficit, and exhibit evidence of bone fusion on x-ray films before returning. (Burnett, 2006) A recent randomized controlled trial comparing decompression with decompression and instrumented fusion in patients with foraminal stenosis and single-level degenerative disease found that patients universally improved with surgery, and this improvement was maintained at 5 years. However, no obvious additional benefit was noted by combining decompression with an instrumented fusion. (Hallett, 2007) Discography may be supported if the decision has already been made to do a spinal fusion, and a negative discogram could rule out the need for fusion on that disc (but a positive discogram in itself would not justify fusion). Discography may help distinguish asymptomatic discs among morphologically abnormal discs in patients without psychosocial issues. Precise prospective categorization of discographic diagnoses may predict outcomes from treatment, surgical or otherwise. (Derby, 2005) (Derby2, 2005) (Derby, 1999) New research shows that healthcare expenditures for back and neck problems have increased substantially over time, but with little improvement in healthcare outcomes such as functional disability and work limitations. Rates of imaging, injections, opiate use, and spinal surgery have increased substantially over the past decade, but it is unclear what impact, if any, this has had on health outcomes. (Martin, 2008) The efficacy of surgery for nonspecific back pain is uncertain. There may be some patients for whom surgery, fusion specifically, might be helpful, but it is important for doctors to discuss the fact that surgery doesn't tend to lead to huge improvements on average, about a 10- to 20-point improvement in function on a 100-point scale, and a significant proportion of patients still need to take pain medication and don't return to full function. (Chou, 2008) Lumbar spinal fusion surgeries use bone grafts, and are sometimes combined with metal devices, to produce a rigid connection between two or more adjacent vertebrae. The therapeutic objective of spinal fusion surgery for patients with low back problems is to prevent any movement in the intervertebral spaces between the fused vertebrae, thereby reducing pain and any neurological deficits.

Lumbar fusion for spondylolisthesis: Recommended as an option for spondylolisthesis. Patients with increased instability of the spine after surgical decompression at the level of degenerative spondylolisthesis are candidates for fusion. (Eckman, 2005) This study found only a 27% success from spinal fusion in patients with low back pain and a positive single-level low-pressure provocative discogram, versus a 72% success in patients having a well-accepted single-level lumbar pathology of unstable spondylolisthesis. (Carragee, 2006) Unilateral instrumentation used for the treatment of degenerative lumbar spondylolisthesis is as effective as bilateral instrumentation. (Fernandez-Fairen, 2007) Patients with degenerative spondylolisthesis and spinal stenosis who undergo standard decompressive laminectomy (with or without fusion) showed substantially greater improvement in pain and function during a period of 2 years than patients treated nonsurgically, according to the recent results from the Spine Patient Outcomes Research Trial (SPORT). (Weinstein-spondylolisthesis, 2007) (Deyo-NEJM, 2007) For degenerative lumbar spondylolisthesis, spinal fusion may lead to a better clinical outcome than decompression alone. No conclusion about the clinical benefit of instrumenting a spinal fusion can be made, but there is moderate evidence that the use of instrumentation improves the chance of achieving solid fusion. (Martin, 2007) A recent systematic review of randomized trials comparing lumbar fusion surgery to nonsurgical treatment of chronic back pain associated with lumbar disc degeneration, concluded that surgery may be more efficacious than unstructured nonsurgical care but may not be more efficacious than structured cognitive-behavior therapy. Methodological limitations of the randomized trials prevented firm conclusions. (Mirza, 2007)

Patient Selection Criteria for Lumbar Spinal Fusion:

For chronic low back problems, fusion should not be considered within the first 6 months of symptoms, except for fracture, dislocation or progressive neurologic loss. Indications for spinal fusion may include: (1) Neural Arch Defect - Spondylytic spondylolisthesis, congenital neural arch hypoplasia. (2) Segmental Instability (objectively demonstrable) - Excessive motion, as in degenerative spondylolisthesis, surgically induced segmental instability and mechanical intervertebral collapse of the motion segment and advanced degenerative changes after surgical disectomy. [For excessive motion criteria, see AMA Guides, 5th Edition, page 384 (relative angular motion greater than 20 degrees). (Andersson, 2000) (Luers, 2007)] (3) Primary Mechanical Back Pain (i.e., pain aggravated by physical activity)/Functional Spinal Unit Failure/Instability, including one or two level segmental failure with progressive degenerative changes, loss of height, disc loading capability. In cases of workers' compensation, patient outcomes related to fusion may have other confounding variables that may affect overall success of the procedure, which should be considered. There is a lack of support for fusion for mechanical low back pain for subjects with failure to participate effectively in active rehab pre-op, total disability over 6 months, active psych diagnosis, and narcotic dependence. [For spinal instability criteria, see AMA Guides, 5th Edition, page 379 (lumbar inter-segmental movement of more than 4.5 mm). (Andersson, 2000)] (4) Revision Surgery for failed previous operation(s) if significant functional gains are anticipated. Revision

surgery for purposes of pain relief must be approached with extreme caution due to the less than 50% success rate reported in medical literature. (5) Infection, Tumor, or Deformity of the lumbosacral spine that cause intractable pain, neurological deficit and/or functional disability. (6) After failure of two discectomies on the same disc, fusion may be an option at the time of the third discectomy, which should also meet the ODG criteria. (See ODG Indications for Surgery -- Discectomy.)

Pre-Operative Surgical Indications Recommended: Pre-operative clinical surgical indications for spinal fusion should include all of the following: (1) All pain generators are identified and treated; & (2) All physical medicine and manual therapy interventions are completed; & (3) X-rays demonstrating spinal instability and/or myelogram, CT-myelogram, or discography (see discography criteria) & MRI demonstrating disc pathology; & (4) Spine pathology limited to two levels; & (5) Psychosocial screen with confounding issues addressed. (6) For any potential fusion surgery, it is recommended that the injured worker refrain from smoking for at least six weeks prior to surgery and during the period of fusion healing. (Colorado, 2001) (BlueCross BlueShield,

ODG - Lumbar Chapter (10-30-2009) Discectomy:

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. For unequivocal evidence of radiculopathy, see AMA Guides, 5th Edition, page 382-383. (Andersson, 2000) 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
- 4. CT myelography & X-Ray

III. Conservative Treatments, requiring ALL of the following:

- A. Activity modification (not bed rest) after patient education (\geq 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)
- 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 (Fisher, 2004)