

CASEREVIEW

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Notice of Independent Review Decision

DATE OF REVIEW: December 8, 2011

IRO CASE #:

DESCRIPTION OF THE SERVICE OR SERVICES IN DISPUTE:

Lumbar Laminectomy with Fusion and Instrumentation L4-5 x 1D LOS, DME Pur Back Brace

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

This physician is Board Certified in Neurological Surgery with over 40 years of experience.

REVIEW OUTCOME:

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

Upheld (Agree)

Provide a description of the review outcome that clearly states whether or not medical necessity exists for each of the health care services in dispute.

INFORMATION PROVIDED TO THE IRO FOR REVIEW:

05/03/05: Operative Report by
10/21/05: Designated Doctor Report by
07/14/06: Treating Physician MMI/IR report by
09/10/07: Lumbar Myelogram interpreted by
09/10/07: CT Lumbar Spine interpreted by
08/28/08 – 04/27/09: Daily notes from
11/05/08: History and Physical by
11/05/08: Operative Report by
01/21/09: History and Physical by
01/21/09: Operative Report by
02/13/09: Peer Review by

04/27/09: X-ray of the Lumbar Spine interpreted by
04/27/09: X-ray of the Thoracic Spine interpreted by
05/21/09 – 11/23/09: Daily notes from
02/04/10: X-ray of the lumbar spine interpreted by
02/04/10: X-ray of the right hip interpreted by
04/15/10: Evaluation by
07/15/10: Evaluation by
08/02/10: Pain Management notes from
10/11/10: Evaluation by
01/13/11: Evaluation by
03/01/11: Pain Management notes from
03/23/11: Operative Report by
03/28/11: Pain Management notes from
04/14/11: Evaluation by
06/16/11: Evaluation by
06/27/11: CT Lumbar Spine interpreted by
07/28/11: Evaluation by
08/19/11: Lumbar Myelogram interpreted by
08/19/11: CT Lumbar Spine interpreted by
09/26/11: Evaluation by
10/20/11: UR performed by
10/28/11: UR performed by

PATIENT CLINICAL HISTORY [SUMMARY]:

The claimant is a male who was injured on xx/xx/xx. It was also reported that the following week he was injured lifting three gallons of water, which caused a pop in his right buttock and down his leg. He has been treated with epidural steroid injections, percutaneous discectomy at the right L5/S1 (10/29/04), sacroiliac joint injections, facet injections, an L5-S1 decompression and fusion (05/23/05), physical therapy, chiropractic treatment, additional epidural steroid injections, individual psychotherapy, additional injections, intrathecal narcotic trial, spinal cord stimulator trial, spinal cord stimulator implantation with T10-11 laminectomy (11/05/08), and thoracic laminectomy with removal and replacement of spinal cord stimulator (01/21/09).

On May 3, 2005, Operative report by. Postoperative diagnosis: 1. Status postoperative right L5-S1 laminectomy for disc. 2. Large recurrent L5-S1 herniated disc. 3. Chronic mechanical low back disorder. 4. Lumbar radiculopathies. Procedures: 1. Decompressive L5/S1 laminectomy, recurrent on the right. 2. Bilateral L5 and bilateral S1 root decompression with opening of lateral recesses and foraminotomies, recurrent on the right. 3. Bilateral excision of recurrent herniated disc with root decompression. 4. Bilateral L5-S1 anterior spinal column arthrodesis, interbody technique. 5. Bilateral L5-S1 interbody cage implants. 6. Bilateral L5 and S1 pedicle screws and plates. 8. Bilateral L5-S1 posterolateral fusion.

On September 10, 2007, Lumbar Myelogram interpreted by Impression: Anterior posterior fusion L5-S1. No Myelographic abnormality. CT to follow.

On September 10, 2007, CT Lumbar Spine interpreted by Impression: Essentially negative. Previous anterior posterior fusion L5-S1. No significant change since 06/1/06.

On August 28, 2008, the claimant was evaluated by who noted he was seen by and the spinal cord stimulator trail gave him excellent pain relief, particularly in his legs and feet and he wanted to proceed with implantation.

On September 18, 2008, the claimant was evaluated by who noted the spinal cord stimulator was denied. It was also noted that the claimant relied on large amounts of narcotics and was basically incapacitated by his pain.

On November 5, 2008, Operative Report by. Postoperative diagnosis: 1. Status post operative lumbar surgery. 2. Severe chronic mechanical low back disorder with residual radiculopathies. 3. Excellent response to trial spinal cord stimulator. Procedures: 1. T10-T11 laminectomy with placement of T9-T10 Medtronic epidural spinal cord stimulator. 2. Placement of a thoracic epidural octad lead. 3. Right gluteal incision with placement of Medtronic generator battery.

On December 1, 2008, the claimant was evaluated by who noted he was 3 weeks status post-op placement of a spinal cord stimulator and was receiving some benefit from it. He was still taking Hydrocodone occasionally.

On January 21, 2009, Operative Report by Postoperative diagnosis: 1. Status postoperative lumbar surgery. 2. Persistent chronic mechanical low back disorder and residual radiculopathies. 3. Previous placement of spinal cord stimulator. 4. Malposition of spinal cord stimulator. Procedures: 1. Thoracic laminectomy with removal and replacement of Medtronic spinal cord stimulator paddle. 2. Removal and replacement of extension leads. 3. Removal of spinal cord stimulator battery.

On February 9, 2009, the claimant was evaluated by who noted he was 19 days after his removal and replacement of a Medtronic spinal cord stimulator with thoracic laminectomy. He was receiving good pain relief.

On April 27, 2009, Lumbar Spine, single view, interpreted by Findings: Postop changes again noted lower lumbar spine. The patient has four lumbar-type vertebrae with large laminectomy defect at the L4-S1 level. Posterior rods and pedicle screws at L4 and S1. Neurostimulator-type device projects over the right side of the upper sacrum and pelvis. Bone graft material laterally at L4-S1. Remainder of the lumbar spine and visualized lower thoracic spine appears unremarkable. Pedicles intact and vertebral body heights are maintained. The neurostimulator leads extend superiorly off the superior aspect of this film. SI joints are maintained. Visualized sacrum grossly unremarkable.

On April 27, 2009, Thoracic Spine, single view, interpreted by Findings: Twelve thoracic-type vertebrae. Neurostimulator leads in place with the superior tip of the lead projecting at the level of the superior endplate of T8. Spinal alignment is normal.

Vertebral body heights are maintained. Pedicles intact and paravertebral soft tissue stripes are unremarkable. Visualized portions of the chest clear. Nonspecific bowel gas pattern.

On September 21, 2009, the claimant was evaluated by who noted he was not getting very much relief from the spinal cord stimulator. He was to be seen by a Medtronic representative.

On November 23, 2009, the claimant was evaluated by who noted he was still not getting much benefit from the spinal cord stimulator despite being seen by a representative and everything was in correct position. There were no differences on his spinal or neurological examination.

On February 4, 2010, Lumbar Spine, single view, interpreted by Findings: Again noted are 4 lumbar type vertebrae. Postoperative changes including a large laminectomy defect at the L4-S1 level with bilateral posterior rods and pedicle screws at L4 and S1. Neurostimulator-type device projects over the right side of L4 and the upper sacrum with 2 lead wires again noted. These neurostimulator leads appear to enter at the T12 level but this cannot be determine with certainty without a lateral projection. The neurostimulator leads extend beyond the superior extent of this film. Pedicles intact. SI joints are maintained. Vertebral body heights otherwise appear maintained. There is bone graft material bilaterally at L4-S1.

On February 4, 2010, Right Hip, two views, interpreted by Findings: Degenerative changes right hip with joint space narrowing and some osteophyte formation. Contour of the femoral head is maintained. Negative for acute fracture or dislocation, or other acute osseous abnormalities. Visualized portion of the pelvis is grossly unremarkable, although there are some degenerative changes at the level of the right SI joint.

On October 11, 2010, the claimant was evaluated by who noted he was not getting great relief from the spinal cord stimulator. could not find any differences on his spinal or neurological examination.

On January 13, 2011, the claimant was evaluated by who noted he prescribed Soma 350 mg q.i.d. PRN and informed him not to take Zanaflex when taking the Soma.

On March 23, 2011, Operative Report by. Postoperative diagnosis: 1. Chronic pain syndrome, lumbar. 2. Postlumbar laminectomy with fusion, remote. 3. Failed back surgery syndrome. 4. Malfunctioning spinal cord stimulator paddle lead system, tripole. 5. Radicular pain, right worse than left leg. Procedures: Percutaneous insertion of dual-lead trial spinal cord stimulation, 16 contacts, thoracolumbar spine, Medtronic system, model # 3776-60 for trial SCS.

On March 28, 2011, the claimant was evaluated by who assessed he failed trail SCS dual leads. He recommended trial morphine epidural infusion and removal IPG & pocket cap leads.

On June 16, 2011, the claimant was evaluated by who noted he was not using his spinal cord stimulator. It was also noted that the intrathecal morphine pump trial had been denied. Because of increasingly severe lumbar pain and bilateral hip and leg pain with numbness, dysesthesias, and weakness in the legs, recommended a CT scan of the lumbar spine.

On June 27, 2011, CT Lumbar Spine interpreted by. Findings: L3-4 disk space: Mild broad-based bulging of disk noted causing mild encroachment upon the anterior aspect dural sac and neural foramina. Mild degenerative changes are present involving the facet joints. L4-L5 disk space: Mild broad-based bulging of the disk noted causing mild encroachment upon the anterior aspect dural sac and neural foramina. Mild degenerative changes are present involving the facet joints. Mild thickening of the ligamentum flavum noted posteriorly. The findings cause mild spinal canal stenosis. L5-S1 disk space: Postoperative change secondary to PLIF procedure noted. Bilateral pedicle screws are present at L5 and S1 transfixing posterior compression plates extending from L5 through S1. Bilateral posterior bony fusion processes extend from L5 through S1. Bilateral interdisk spacers are present. The dural sac and neural foramina are maintained.

On July 28, 2011, the claimant was evaluated by who reported on examination he walked with a flexed posture at the low back. Straight leg raising was positive bilaterally at around 45 degrees recommended a lumbar myelogram with flexion-extension views during the myelogram.

On August 19, 2011, Lumbar Myelogram, interpreted by Impression: Thecal sac deformity as described above. There is translational motion of L4 at L5 between flexion and extension with decreased filling of the left L5 nerve root sleeve in the spinal canal when compared to the right which could be due to impingement.

On August 19, 2011, CT Lumbar Spine, interpreted by Impression: Degenerative disk and facet disease at L4-L5. Postoperative changes at L5-S1.

On September 26, 2011, the claimant was evaluated by who noted he had very severe lumbar pain with bilateral radiating hip and leg pain with numbness, dysesthesias, and weakness in the legs, worse with walking, standing, and activities. stated that he definitely had L4-5 instability in addition to his radiculopathies and chronic mechanical low back disorder. He recommended posterior L4-5 decompression, fusion, and instrumentation.

On October 20, 2011, performed a UR on the claimant. Rationale for Denial: As per the medical records, the patient has failed back syndrome. He had several lumbar spine procedures. In the clinical report date 09/26/11, the patient complains of severe lumbar pain with bilateral radiating hip and leg pain with numbness. The CT scan of the lumbar spine on 06/27/11 showed at the level of L4-5 disc space, mild broad-based bulging of the disc causing mild encroachment upon the anterior aspect dural sac and

neural foramina. However, there is no clear documentation of the recent comprehensive clinical evaluation that would specifically correlate with the diagnosis of lumbar radiculopathy. Based on the submitted clinical information, the documentations of failure of conservative management including physical therapy progress notes, adequate pain medications and official report of the injections were not provided for review. There was no psychological assessment done to the patient regarding post surgical outcomes. Furthermore, there was no rationale for the requested surgery. As such, the clinical documentation submitted for review does not support the certification of the request at this time. As the surgical request is not indicated for this patient, the accompanying request for one-day length of stay and DME purchase of TLSO Back Brace is neither warranted nor necessary at this time.

On October 28, 2011 performed a UR on the claimant. Rationale for Denial: Treatment has included injections, chiropractic treatment, and psychotherapy. However, there is no clear, recent documentation of associated clinical findings such as loss of relevant reflexes, muscle weakness and/or atrophy of appropriate muscle groups, loss of sensation in the corresponding dermatome(s) and imaging showing lumbar inter-segmental movement of more than 4.5 mm. Therefore, the medical necessity of the request has not been substantiated.

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

The previous decisions have been upheld. Based on the ODG guidelines, there are no objective clinical findings of radiculopathy documented that warrant surgery. Also, there are no imaging studies that demonstrated spinal instability of lumbar inter-segmental movement of more than 4.5mm. Therefore, there is not enough documentation to authorize the surgical request of Laminectomy with Fusion and instrumentation L4-5. As the surgical request is not authorized, the request for 1D LOS and the DME Pur Back Brace is not warranted and therefore no authorized.

ODG:

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. ([Gibson-Cochrane, 2000](#)) ([Savolainen, 1998](#)) ([Wetzel, 2001](#)) ([Molinari, 2001](#)) ([Bigos, 1999](#)) ([Washington, 1995](#)) ([DeBarard-Spine, 2001](#)) ([Fritzell-Spine, 2001](#)) ([Fritzell-Spine, 2002](#)) ([Deyo-NEJM, 2004](#)) ([Gibson-Cochrane/Spine, 2005](#)) ([Soegaard, 2005](#)) ([Glassman, 2006](#)) ([Atlas, 2006](#)) 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. (Airaksinen, 2006) For chronic LBP, exercise and cognitive intervention may be equivalent to lumbar fusion without the potentially high surgical complication rates. (Ivar Brox-Spine, 2003) (Keller-Spine, 2004) (Fairbank-BMJ, 2005) (Brox, 2006) 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-Spine, 2004) (Shah-Spine, 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. (Devo-Spine, 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) This study showed that fusion for chronic lower back pain was the least successful common orthopaedic surgery. The study compared the gains in quality of life achieved by total hip replacement, total knee replacement, surgery for spinal stenosis, disc excision for lumbar disc herniation, and arthrodesis for chronic low back pain. For chronic lower back pain, improvements were statistically significant but clinically negligible. Although pain was reduced and function improved slightly, outcomes remained in the moderately affected range, quality of life was not improved and rendered worse, on average. While surgery for spinal stenosis and for disc herniation compare well with archetypical orthopaedic operations, the outcomes of surgery for chronic lower back pain do not even approach those of other orthopaedic procedures, and the data show that patients with back pain are rendered worse off by surgery. (Hansson, 2008) Recent studies document a 220% increase in lumbar spinal fusion surgery rates, without demonstrated improvements in patient outcomes or disability rates. (Devo, 2009) In a study of 2,378 Washington State workers' compensation claimants who underwent fusion to assess the frequency, timing, and causes of death, the 3-year cumulative mortality rate post-fusion was 1.93% and analgesic-related deaths were responsible for 21% of all deaths and 31.4% of all potential life lost. (Juratli, 2009) A study to compare the surgical

experience, clinical outcomes, and effect on body weight between obese and morbidly obese patients undergoing lumbar spine fusion surgery concluded that clinical outcomes were independent of the BMI of the patient, but the incidence of postoperative complications was significant in 45% of morbidly obese and 44% of obese patients. The authors proposed that morbidly obese patients should undergo bariatric surgery before spine surgery in nonemergent situations. ([Vaidya, 2009](#)) For nonradicular low back pain with common degenerative changes, there is fair evidence that fusion is no better than intensive rehabilitation with a cognitive-behavioral emphasis for improvement in pain or function, and less than half of patients experience optimal outcomes (defined as no more than sporadic pain, slight restriction of function, and occasional analgesics) following fusion. ([Chou, 2009](#)) Posterolateral bone-grafting fusion is not necessary when a Denis type-B thoracolumbar burst fracture associated with a load-sharing score of ≤ 6 is treated with short-segment pedicle screw fixation. ([Dai, 2009](#)) Discography (and not merely the fusion) may actually be the cause of adjacent segment disc degeneration. This study suggested that the phenomenon of accelerated adjacent segment degeneration adjacent to fusion levels may be, in part, explained by previous disc puncture if discography was used in segments adjacent to the fusion. ([Carragee, 2009](#)) Among Medicare recipients, the frequency of complex fusion procedures for spinal stenosis increased 15-fold in just 6 years. The introduction and marketing of new surgical devices and financial incentives may stimulate more invasive surgery. ([Deyo-JAMA, 2010](#)) Results of this study suggest that postmenopausal female patients who underwent lumbar spinal instrumentation fusion were susceptible to subsequent vertebral fractures within 2 years after surgery (in 24% of patients). ([Toyone, 2010](#)) A four-year follow-up of an RCT of instrumented transpedicular fusion versus cognitive intervention and exercises for disc degeneration with chronic low back pain concluded that this invasive and high-cost procedure does not afford better outcomes compared with the conservative treatment approach to low back pain, and this study should give doctors pause when recommending lumbar fusion surgery without compelling indications, particularly when strong back rehabilitation programs are available. ([Brox, 2010](#)) The ECRI health technology assessment concluded that the evidence is insufficient to support lumbar fusion being more effective (to a clinically meaningful degree) than nonsurgical treatments (intensive exercise and rehabilitation plus cognitive behavioral therapy) in patients with and without prior surgery. ([ECRI, 2007](#)) 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. See also [Adjacent segment disease/degeneration](#) (fusion) & [Iliac crest donor-site pain treatment](#).

Lumbar fusion in workers' comp patients: 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. Until further research is conducted there remains insufficient evidence to recommend fusion for chronic low back pain in the absence of stenosis and spondylolisthesis, and this treatment for this condition remains "under study." It appears that workers' compensation populations require particular scrutiny when being considered for fusion for chronic low back pain, as there is evidence of poorer outcomes in subgroups of patients who were receiving compensation or involved in litigation. ([Fritzell-Spine, 2001](#)) ([Harris-JAMA, 2005](#)) ([Maghout-Juratli, 2006](#)) ([Atlas, 2006](#)) Despite poorer outcomes in workers' compensation patients, utilization is much higher in this population than in group health. ([Texas, 2001](#)) ([NCCI, 2006](#)) Presurgical biopsychosocial variables predict patient outcomes from lumbar fusion, which may help improve patient selection. Workers' compensation status, smoking, depression, and litigation were the most consistent presurgical predictors of poorer patient outcomes. Other predictors of poor results were number of prior low back operations, low household income, and older age. ([DeBerard-Spine, 2001](#)) ([DeBerard, 2003](#)) ([Deyo, 2005](#)) ([LaCaille, 2005](#)) ([Trief-Spine, 2006](#)) Obesity and litigation in workers' compensation cases predict high costs associated with interbody cage lumbar fusion. ([LaCaille, 2007](#)) A recent study of 725 workers' comp patients in Ohio who had lumbar fusion found only 6% were able to go back to work a year later, 27% needed another operation, and over 90% were in enough pain that they were still taking narcotics at follow-up. ([Nguyen, 2007](#)) A recent case-control study of lumbar fusion outcomes in worker's compensation (WC) patients concluded that only 9% of patients receiving WC achieved substantial clinical benefit compared to 33% of those not receiving WC. ([Carreon, 2009](#)) This large historical cohort study suggests that lumbar fusion may not be an effective operation in workers' compensation patients with disc degeneration, disc herniation, and/or radiculopathy, and it is associated with significant increase in disability, opiate use, prolonged work loss, and poor RTW status. ([Nguyen, 2011](#)) After controlling for covariates known to affect lumbar fusion outcomes, patients on workers' comp have significantly less improvement. ([Carreon, 2010](#)) The presidents of AAOS, NASS, AANS, CNS, and SAS issued a joint statement to BlueCross BlueShield recommending patient selection criteria for lumbar fusion in degenerative disc disease. The criteria included at least one year of physical and cognitive therapy, inflammatory endplate changes (i.e., Modic changes), moderate to severe disc space collapse, absence of significant psychological

comorbidities (e.g. depression, somatization disorder), and absence of litigation or compensation issues. The criteria of denying fusion if there are compensation issues may apply to workers' compensation patients. ([Rutka, 2011](#)) On the other hand, a separate policy statement from the International Society for the Advancement of Spine Surgery disagrees that worker's compensation should be a contraindication for lumbar fusion. ([ISASS, 2011](#))

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](#)) A comparison of surgical and nonoperative outcomes between degenerative spondylolisthesis and spinal stenosis patients from the SPORT trial found that fusion was most appropriate for spondylolisthesis, with or without listhesis, and decompressive laminectomy alone most appropriate for spinal stenosis. ([Pearson, 2010](#)) The latest SPORT study concluded that leg pain is associated with better surgical fusion outcomes in spondylolisthesis than low back pain. ([Pearson, 2011](#))

Lumbar fusion for Scheuermann's kyphosis: Recommended as an option for adult patients with severe deformities (e.g. more than 70 degrees for thoracic kyphosis), neurological symptoms exist, and pain cannot be adequately resolved non-operatively (e.g. physical therapy, back exercises). Good outcomes have been found in a relatively large series of patients undergoing either combined anterior-posterior or posterior only fusion for Scheuermann's kyphosis. ([Lonner, 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 - Spondylolytic 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 discectomy, with 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. Spinal instability criteria includes 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, 2002](#))

For average hospital LOS after criteria are met, see [Hospital length of stay](#) (LOS).

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. ([Ronnberg, 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 crucial aspect of the recovery process. ([Burnett, 2006](#)) According to a major recent trial, early surgery (microdiscectomy) in patients with 6-12 weeks of severe sciatica caused by herniated disks is associated with better short-term outcomes, but at 1 year, disability outcomes of early surgery vs conservative treatment with eventual surgery if needed are similar. The median time to recovery was 4.0 weeks for early surgery and 12.1 weeks for prolonged conservative treatment. The authors concluded, "Patients whose pain is controlled in a manner that is acceptable to them may decide to postpone surgery in the hope that it will not be needed, without reducing their chances for complete recovery at 12 months. Although both strategies have similar outcomes after 1 year, early surgery remains a valid treatment option for well-informed patients." ([Peul-NEJM, 2007](#)) ([Deyo-NEJM, 2007](#)) 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](#)) A recent British study found that lumbar discectomy improved patients' self-reported overall physical health more than other elective surgeries. ([Guilfoyle, 2007](#)) Microscopic sequestrectomy may be an alternative to standard microdiscectomy. In this RCT, both groups showed dramatic improvement. ([Barth, 2008](#)) There is consistent evidence that for patients with a herniated disk, discectomy is associated with better short-term outcomes than continued conservative management, although outcomes begin to look similar after 3 to 6 months. This is a decision to be made with the patients, discussing the likelihood that they are going to improve either way but will improve faster with surgery. Similar evidence supports the use of surgery for spinal stenosis, although the outcomes look better with surgery out to about 2 years. ([Chou, 2008](#)) Standard open discectomy is moderately cost-effective compared with nonsurgical treatment, a new Spine Patient Outcomes Research Trial (SPORT) study shows. The costs per quality-adjusted life-year gained with surgery compared with nonoperative treatment, including work-related productivity costs, ranges from \$34,355 to \$69,403, depending on the cost of surgery. It is wise and proper to wait before initiating surgery, but if the patient continues to experience pain and is missing work, then the higher-cost option such as surgery may be worthwhile. ([Tosteson, 2008](#)) Note: Surgical decompression of a lumbar nerve root or roots may include the following procedures: discectomy or microdiscectomy (partial removal of the disc) and laminectomy, hemilaminectomy, laminotomy, or foraminotomy (providing access by partial or total removal of various parts of vertebral bone). Discectomy is the surgical removal of herniated disc material that presses on a nerve root or the spinal cord. A laminectomy is often involved to permit access to the intervertebral disc in a traditional discectomy.

Patient Selection: Microdiscectomy for symptomatic lumbar disc herniations in patients with a preponderance of leg pain who have failed nonoperative treatment demonstrated a high success rate based on validated outcome measures (80% decrease in VAS leg pain score of greater than 2 points), patient satisfaction (85%), and return to

work (84%). Patients should be encouraged to return to their preinjury activities as soon as possible with no restrictions at 6 weeks. Overall, patients with sequestered lumbar disc herniations fared better than those with extruded herniations, although both groups consistently had better outcomes than patients with contained herniations. Patients with herniations at the L5-S1 level had significantly better outcomes than did those at the L4-L5 level. Lumbar disc herniation level and type should be considered in preoperative outcomes counseling. Smokers had a significantly lower return to work rate. In the carefully screened patient, lumbar microdiscectomy for symptomatic disc herniation results in an overall high success rate, patient satisfaction, and return to physically demanding activities. ([Dewing, 2008](#)) Workers' comp back surgery patients are at greater risk for poor lumbar discectomy outcomes than noncompensation patients. ([DeBerard, 2008](#)) In workers' comp it is recommended to screen for presurgical biopsychosocial variables because they are important predictors of discectomy outcomes. ([DeBerard, 2011](#))

Spinal Stenosis: For patients with lumbar spinal stenosis, standard posterior decompressive laminectomy alone (without discectomy) offers a significant advantage over nonsurgical treatment. Discectomy should be reserved for those conditions of disc herniation causing radiculopathy. (See Indications below.) Laminectomy may be used for spinal stenosis secondary to degenerative processes exhibiting ligamentary hypertrophy, facet hypertrophy, and disc protrusion, in addition to anatomical derangements of the spinal column such as tumor, trauma, etc. ([Weinstein, 2008](#)) ([Katz, 2008](#)) A comparison of surgical and nonoperative outcomes between degenerative spondylolisthesis and spinal stenosis patients from the SPORT trial found that fusion was most appropriate for spondylolisthesis, with or without listhesis, and decompressive laminectomy alone most appropriate for spinal stenosis. ([Pearson, 2010](#)) See also [Laminectomy](#).

Recent Research: Four-year results for the Dartmouth Spine Patient Outcomes Research Trial (SPORT, n= 1244) indicated that patients who underwent standard open discectomy for a lumbar disc herniation achieved significantly greater improvement than nonoperatively treated patients (using recommended treatments - active physical therapy, home exercise instruction, and NSAIDs) in all primary and secondary outcomes except work status (78.4% for the surgery group compared with 84.4%). Although patients receiving surgery did better generally, all patients in the study improved. Consequently, for patients who don't want an operation no matter how bad their pain is, this study suggests that they will improve and they will not have complications (e.g., paralysis) from nonoperative treatment, but those patients whose leg pain is severe and is limiting their function, who meet the ODG criteria for discectomy, can do better with surgery than without surgery, and the risks are extremely low. ([Weinstein2, 2008](#)) In most patients with low back pain, symptoms resolve without surgical intervention. ([Madigan, 2009](#)) This study showed that surgery for disc herniation was not as successful as total hip replacement but was comparable to total knee replacement in success. Pain was reduced to within 60% of normal levels, function improved to 65% normal, and quality of life was improved by about 50%. The study compared the gains in quality of life achieved by total hip replacement, total knee replacement, surgery for spinal stenosis, disc excision for lumbar disc herniation, and arthrodesis for chronic low back pain. ([Hansson, 2008](#)) For radiculopathy with herniated lumbar disc, there is good evidence that standard open discectomy and microdiscectomy are moderately superior to nonsurgical therapy for improvement in pain and function through 2 to 3 months, but patients on average experience improvement either with or without surgery, and benefits associated with surgery decrease with long-term follow-up. ([Chou, 2009](#)) According to a new study, surgery provides better results than non-surgical treatment for most patients with back pain related to a herniated disk, but not for those receiving workers' compensation. ([Atlas, 2010](#)) Use of appropriateness criteria to guide treatment decisions for each clinical situation involving patients with low back pain and/or sciatica, with criteria based upon literature evidence, along with shared decision-making, was observed in one prospective study to improve outcomes in low back surgery. ([Danon-Hersch, 2010](#)) An updated SPORT trial analysis confirmed that outcomes of lumbar discectomy were better for patients who have symptoms of a herniated lumbar disc for six months or less prior to treatment. Increased symptom duration was related to worse outcomes following both operative and nonoperative treatment, but the relative increased benefit of surgery compared with nonoperative treatment was not dependent on the duration. ([Rihn, 2001](#))

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
4. CT myelography & X-Ray

III. Conservative Treatments, requiring ALL of the following:

- A. Activity modification (not bed rest) after patient education (≥ 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)

For average hospital LOS after criteria are met, see Hospital length of stay (LOS).

ODG hospital length of stay (LOS) guidelines:

Discectomy (*icd 80.51 - Excision of intervertebral disc*)

Actual data -- median 1 day; mean 2.1 days (± 0.0); discharges 109,057; charges (mean) \$26,219

Best practice target (no complications) -- 1 day

Laminectomy (*icd 03.09 - Laminectomy/laminotomy for decompression of spinal nerve root*)

Actual data -- median 2 days; mean 3.5 days (± 0.1); discharges 100,600; charges (mean) \$34,978

Best practice target (no complications) -- 1 day

Lumbar Fusion, posterior (*icd 81.08 - Lumbar and lumbosacral fusion, posterior technique*)

Actual data -- median 3 days; mean 3.9 days (± 0.1); discharges 161,761; charges (mean) \$86,900

Best practice target (no complications) -- 3 days

Lumbar Fusion, anterior (*icd 81.06 - Lumbar and lumbosacral fusion, anterior technique*)

Actual data -- median 3 days; mean 4.2 days (± 0.2); discharges 33,521; charges (mean) \$110,156

Best practice target (no complications) -- 3 days

Lumbar Fusion, lateral (*icd 81.07 - Lumbar fusion, lateral transverse process technique*)

Actual data -- median 3 days; mean 3.8 days (± 0.2); discharges 15,125; charges (mean) \$89,088

Best practice target (no complications) -- 3 days

Back Support/Brace:

Under study, but given the lack of evidence supporting the use of these devices, a standard brace would be preferred over a custom post-op brace, if any, depending on the experience and expertise of the treating physician. There is conflicting evidence, so case by case recommendations are necessary (few studies though lack of harm and standard of care). There is no scientific information on the benefit of bracing for improving fusion rates or clinical outcomes following instrumented lumbar fusion for degenerative disease. Although there is a lack of data on outcomes, there may be a tradition in spine surgery of using a brace post-fusion, but this tradition may be based on logic that antedated internal fixation, which now makes the use of a brace questionable. For long bone fractures prolonged immobilization may result in debilitation and stiffness; if the same principles apply to uncomplicated spinal fusion with instrumentation, it may be that the immobilization is actually harmful. Mobilization after instrumented fusion is logically better for health of adjacent segments, and routine use of back braces is harmful to this principle. There may be special circumstances (multilevel cervical fusion, thoracolumbar unstable fusion, non-instrumented fusion, mid-lumbar fractures, etc.) in which some external immobilization might be desirable. ([Resnick, 2005](#))

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 KNOWLEDGEBASE**
- 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 FOCUSED GUIDELINES (PROVIDE A DESCRIPTION)**