

# CASEREVIEW

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Notice of Independent Review Decision

**DATE OF REVIEW:** November 10, 2011

**IRO CASE #:**

**DESCRIPTION OF THE SERVICE OR SERVICES IN DISPUTE:**

Transforaminal Lumbar Interbody Fusion at L5-S1

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

This physician is Board Certified by American Board of Orthopedic Surgeons 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)
- Overturned (Disagree)
- Partially Overturned (Agree in part/Disagree in part)

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:**

**PATIENT CLINICAL HISTORY [SUMMARY]:**

On xx/xx/xx the claimant, a was pushing/pulling a heavy pallet of xxxx when she heard something pop in her lower back. She was initially evaluated in the ER and diagnosed with muscle spasm and myofascial pain syndrome. She was prescribed Darvocet and Valium. She continued with lower back pain that radiated into bilateral

lower extremities, worse in her right leg. She has been treated with medications including, Vicodin, Soma, Cymbalta, Lyrica, Naprelan and Medrol Dosepak. She has gone to physical therapy without relief and has had four ESIs without relief. She also participated in 20 sessions of a chronic pain management program. There were previous requests for preauthorization of an anterior lumbar fusion of L5-S1 in June of 2010 and May 26, 2011. It was determined by a Decision & Order (D&O) on November 19, 2010 that the L5-S1 herniated disc was the compensable injury.

On xx/xx/xx, X-rays of the pelvis revealed no osseous, articular or soft tissue abnormality. X-rays of the lumbar spine demonstrated spondylosis at the lumbosacral junction. X-rays of the chest were negative.

On July 13, 2007, the claimant was evaluated at MD for pain reported to be 10/10 in her lower back. Physical examination was extremely limited due to the claimant's inability to ascend to the examination table. She was sitting in a regular chair, obviously in great pain. She was slightly bent over at the waist with her left shoulder raised slightly higher than the right shoulder. She had her left hand on her lower back and her right hand was supporting her body weight in the chair. She had extremely limited range of motion of her lower back and neck. Her strength was 1/5 bilaterally. There was tenderness to palpation diffusely over the lower back and right flank. Reflexes were unable to be tested. Diagnosis: Lumbar and shoulder strain. She was instructed to discontinue Darvocet and Valium and prescribed Flexeril and Motrin. Physical therapy was recommended.

On August 21, 2007, MRI of the lumbar spine revealed: 1. At L5-S1 there is a broad right eccentric disc bulge or protrusion which produces moderate right neural foraminal narrowing and effacement of the right exiting L5 nerve root. There is disc desiccation and mild posterior subluxation of L5 relative to S1. 2. The remaining intervertebral discs appear normal. Interpreted by MD.

On January 18, 2008, the claimant was evaluated by MD, a designated doctor. Dr. opined she had not obtained maximal medical improvement. On neurological

examination, Dr. she had an antalgic gait and had difficulty getting on and off the exam table. Her cranial nerves II-XII were intact. Coordination was intact with no evidence of dysmetria or dysdiadochokinesis. Motor exam was decreased in the iliopsoas and quadriceps. Toe extensors were intact at 5/5. All the rest of the muscles were 5/5 except the right lower extremity, which ranged about 4/5. Sensory exam was decreased in the right leg. Reflexes were 1 to 2+. She had decreased ankle jerk on the right. Dr. diagnosed L5-S1 disc with radiculopathy.

On January 21, 2008, MRI of the lumbar spine without contrast revealed: Degenerative changes at L5-S1 causing mild central canal and moderate bilateral neural foraminal narrowing. Interpreted by MD.

On February 8, 2008, operative report by MD. Postoperative diagnosis: Lumbar discogenic pain with lower extremity radiculopathy. Procedures: 1. Fluoroscopic needle localization. 2. Epidurogram with interpretation. 3. Bilateral L5 transforaminal epidural steroid injections (two separate injections). 4. Bilateral S1 transforaminal epidural steroid injections (two separate injections).

On April 25, 2008, a bilateral lower extremity EMG/NCV revealed: Findings are most consistent with a chronic right S1 radiculopathy as noted by the reinnervation potentials recorded. There does not appear to be any ongoing denervation at this time. Interpreted by MD.

On May 6, 2008, the claimant had an orthopedic evaluation by PA for, MD. On physical examination she was tender to palpation in the paraspinous musculature of the lumbosacral region. She had pain with ROM. She lists to the right. She had pain with right straight leg raising. Deep tendon reflexes of the lower extremities were 2+ and symmetric. Motor was 4+ on the right and 5 on the left. She had decreased sensation in the right L5-S1 distribution. Diagnosis: Lumbar diskogenic pain, L5-S1. Recommendation: She has exhausted all conservative measure of care, including physical therapy, medications, and injections, therefore, a fusion at L5-S1 was recommended. Before submitting a request for approval, she would undergo psychological clearance.

On July 31, 2008, the claimant had a follow-up evaluation with MD who recommended a lumbar discogram per ODG for approval of the lumbar fusion. It was noted that her psychosocial screen was completed and she demonstrated no barriers to recovery.

On September 10, 2008, MD performed a RME on the claimant and rendered the following opinions: Based on the medical records provided from my review, Ms. sustained a self-limiting soft tissue injury to the lumbar spine which, within reasonable probability would be expected to resolve within 60 to 90 days without significant residual. I find no evidence of structural injury to the lumbar spine which would require operative intervention. I'm certainly unable to explain the changes reflected in the medical record from the time of Dr. evaluation in September of 2007 to his evaluation in January 2008. The medical records seems to suggest a plateau of her condition by

September 14, 2007 at which time she should have been assessed MMI consistent with a soft tissue injury to the lumbar spine. The findings in the medical record and on my examination today which suggest symptom magnification and non-organic pain behaviors are marked. In my opinion, operative intervention is not indicated. Discograms are not indicated. In my opinion, if surgery is performed, it will fail.

On March 24, 2009, the claimant had a Mental Health Evaluation by, Xxxx. She scored a 23 on the Beck Depression Inventory and 16 on the Beck Anxiety Inventory noting moderate depression and anxiety. She was recommended for comprehensive chronic pain management program.

On July 13, 2009, the claimant was evaluated by MD for a second orthopedic opinion. On physical examination there was marked limitation in range of motion; flexion was only about 15 degrees. There was marked paravertebral spasm. She had back pain with straight-leg raising. There was normal strength in the iliopsoas, quadriceps, and tibialis anterior; but there was weakness in the right gastrocnemius and soleus group. Knee reflexes were normal. The right ankle reflex was absent. X-rays taken in the office showed disc space collapse at L5-S1. There was marked foraminal stenosis on oblique x-rays. There was a retrolisthesis that measured 5 mm, but there was no motion on flexion-extension films. Dr. recommended a decompression at the L5- S1 level.

On February 1, 2010, the claimant was evaluated by, DC, a doctor selected by the treating doctor acting in place of the treating doctor, for MMI and IR determination. Dr. opined the claimant had obtained maximal medical improvement as of February 1, 2010 with a 10% whole person impairment.

On April 5, 2010, the claimant was evaluated by, MD, a designated doctor. Dr. diagnosed a lumbar sprain/strain and opined she obtained maximal medical improvement as of December 25, 2009 with a 0% whole person impairment.

On June 10, 2010, the claimant had an orthopedic evaluation by, MD. On physical examination she ambulated with an antalgic gait. She was unable to heel and toe walk. She had severe restriction in lumbar flexion and extension. There was moderate generalized lower lumbar paraspinal tenderness. Her long tract signs were negative with the bilateral downgoing Babinski and negative clonus. Deep tendon reflexes were 1+ and symmetric bilaterally in the patellar and Achilles tendon. There were no gross motor deficits bilaterally in the iliopsoas, quadriceps, hamstrings, tibialis anterior, extensor hallucis longus and gastrocsoleus. Straight leg raise examination elicited pain into the buttock bilaterally in the seated position at 80 degrees. Sensation to light touch was intact and symmetric in all nerve distributions. Radiographs ordered/reviewed: Plain films of the lumbar spine show decreased disk height at L5-S1. There is 5-6 mm retrolisthesis at L5-S1. MRI of the lumbar spine again shows the retrolisthesis at L5-S1. In addition, there are Modic endplate changes with decreased disk height resulting in foraminal stenosis and nerve root impingement bilaterally. Diagnosis: Disk protrusion L5-S1 and retrolisthesis L5-S1 with decreased disk height and Modic endplate changes.

Plan: Anterior lumbar interbody fusion at L5-S1. He recommended a right hemilaminectomy posteriorly coupled with posterior spinal instrumentation and fusion at L5-S1. He explained that the surgery for this condition was purely an elective, quality of life decision.

On February 7, 2011, the claimant was re-evaluated by MD, a designated doctor. Dr. opined that she had reached maximum medical improvement as of December 25, 2009. He was asked to re-evaluate this because her extent of injury had changed to include an L5-S1 disc herniation. In review of the records he saw that the MRI did not reveal any disc herniation. The MRI was dated August 21, 2007. The MRI at that time revealed a broad right eccentric disc bulge or protrusion, but there was no herniation he could determine. His examination revealed that the claimant exhibited a significant amount of Waddell's signs. Because of the psychological overlay that was quite evident in the claimant, he was unable to change his original opinion concerning her impairment rating. She was rated a DRE Category I for a 0% whole person impairment.

On February 23, 2011, MRI of the lumbar spine without contrast revealed: Bilateral posterolateral 3 mm protrusions at L5-S1 with facet arthropathy creates flattening of the thecal sac with mild stenosis and bilateral lateral recess and inferior foraminal encroachment. Interpreted by MD.

On March 2, 2011, the claimant had a follow-up evaluation with, MD who found on physical examination significant restriction in lumbar flexion and extension. She had 4/5 strength in EHLs and gastrocs bilaterally. She had positive right straight leg raise and decreased sensation to pinprick in the L5 distribution bilaterally and on the right side at S1. X-rays, including flexion and extension views, showed 3 mm of flexion and extension instability with retrolisthesis increasing from 6 to 9 mm. Dr. continued to state she was a candidate for definitive operative treatment. After reviewing the latest denial and per ODG guideline, he referred her for a psychological evaluation.

On March 31, 2011, the claimant had a psychological consultation with, PsyD. Dr. opined that the claimant presented as a psychological stable individual and her testing demonstrates that she is not experiencing significant depression or anxiety. She was highly receptive to the recommended surgical intervention. There was no evidence of psychopathology which would make her a poor surgical candidate. Diagnosis: Axis I: None present. Axis II: None present. Axis III: Chronic pain condition associated with a lumbar spine injury. Axis IV: Problems related to pain and occupational, recreational and social decline in functioning. Axis V: Transient symptoms GAF-75.

On June 1, 2011, Nicholas Tsourmas, MD performed a UR on the claimant. Requested services: Transforaminal lumbar decompression at right L5-S1, spinal fixation device, lumbar spinal prosthetic device, transforaminal lumbar interbody fusion at right L5-S1, additional level, inpatient hospitalization 2-3 days.

On July 18, 2011, the claimant had a follow-up pain management evaluation with MD. On physical examination she was in some mild distress and the lumbosacral spine was

essentially unchanged. Diagnosis: 1. History of lumbar discogenic pain with radiation into the lower extremity. 2. Lumbar myofascial pain syndrome. 3. Chronic pain syndrome. Plan: Refill Vicodin ES, Soma 250 mg and Naprelan 750 mg.

On August 31, 2011, the claimant had a follow-up evaluation with, MD for continued severe low back pain with pain radiation into bilateral lower extremities, worse on the right. On physical examination she had 4/5 strength in the EHL and gastrocs bilaterally. She had decreased sensation of pinprick in the L5 distribution bilaterally. Decreased sensation to pinprick in the S1 distribution on the right side. She had positive straight leg raise on the right side. Dr. specifically tested 5 Waddell signs: He tested for tenderness to light touch in a nonanatomic region, she reported no pain. Responsive to nonanatomic testing was appropriate. She was compliant with orthopedic testing. She showed no overreaction with palpation of the bilateral upper extremities of palpation of the bilateral lower extremities. He did an axial loading test of her spine, as well as passive rotation of the bilateral hips. She reported no pain with those maneuvers. She did have tenderness to palpation of the lower lumbar region, but this was to be expected. She had a positive straight leg raise on the right side in the supine position at 60 degrees. She had a negative test on the left side. In the seated position, straight leg raise tested and she had a positive response in the seated position at 70 degrees on the right and negative on the left side. Cogwheel rigidity was tested. She exhibited no evidence of cogwheel rigidity, nor did she have a global dermatomal loss. X-rays showed a significant advanced loss of disk height at the L5-S1 level with a retrolisthesis at the L5-S1 level. Plan: Resubmit for lumbar fusion at the L5-S1 level.

On September 20, 2011, , MD performed a UR. Rationale for Denial: A review of the records provided show at least 3 physical exams with normal neurological exams of the lower extremities-two by Dr. and on by Dr.. A MRI report for 1-21-08 reveals a Grade I retrolisthesis of L5 on S1 with no specific nerve root compression mentioned. Retrolisthesis is not specifically addressed in ODG. However, ODG does state: 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". The request does not meet ODG criteria and should not be certified.

On October 14, 2011, MD performed a UR. Rational for Denial: The lack of clinical consistency, the difference in medical opinions the non-qualifying 3 mm of mobile spondylolisthesis (retro) which again needs to be over-read before this patient succumbs to surgical intervention is reason to deny the surgery as requested.

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

The previous decisions have been upheld. There is a lack and inconsistency in physical findings, including muscle strength, reflexes, straight leg raise, and sensory. There is also a lack of consistency with the psychological findings. The designated doctor's

findings of positive Waddell's signs versus the treating physician's negative Waddell's signs. The MRI performed on February 23, 2011 revealed bilateral posterolateral 3 mm protrusions at L5-S1 with facet arthropathy creating flattening of the thecal sac with mild stenosis and bilateral lateral recess and inferior foraminal encroachment. The ODG states a lumbar fusion is *not recommended for patients 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.* It also states *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."* Based on different studies referenced in the ODG, it is also unlikely the claimant would improve with the lumbar fusion.

Therefore, based on her clinical findings and ODG criteria, she would not make an appropriate candidate for a transforaminal lumbar fusion and the previous decisions are upheld.

#### ODG:

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](#)) ([Devo-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. ([Deyo-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. ([Deyo, 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  $\leq 6$  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](#)) ([Devo, 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](#)) ([Devo-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).

**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)**