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| 2   | 1     | Nonsurgical Treatment vs Surgery | Weinstein Jr, L prediction of lumbar degenerative spondylolisthesis. Journal of Bone and Joint Surgery. American Volume. 2009 Oct; 91(10):2395-2404. PMID: 19487505. | http://www.ncbi.nlm.nih.gov/pubmed/19487505 | BACKGROUND: Management of degenerative spondylolisthesis with spinal stenosis is controversial. Surgery is widely used and has been shown to be more effective than nonoperative treatment when the results were followed over two years. Questions remain about the long-term effects of surgical treatment compared to those of nonoperative treatment. METHODS: Surgical candidates from thirteen centers with symptoms of at least twelve weeks' duration as well as confirmatory imaging showing degenerative spondylolisthesis with spinal stenosis were offered enrollment in a randomized cohort or observational cohort. Treatment consisted of standard decompressive laminectomy (with or without fusion) or usual nonoperative care. Primary outcome measures were the Short Form-36 (SF-36) bodily pain and physical function scores at six weeks, three months, six months, 12 months, and yearly up to four years. RESULTS: In the randomized cohort (304 patients enrolled), 66% of those randomized to receive nonoperative care were offered nonoperative care; 34% of those randomized to receive surgery were offered surgery. The one-year crossover rate was 13%, and rate of repeat surgery within one year was 6%. CONCLUSIONS: In nonrandomized as-treated comparisons with careful control for potential confounding baseline factors, patients with degenerative spondylolisthesis and spinal stenosis treated surgically showed substantially greater improvement in pain and function during a period of 2 years than patients treated nonoperatively. (ClinicalTrials.gov number, NCT00000469 [ClinicalTrials.gov](http://clinicaltrials.gov)). | 2/B | Two year study of laminectomy with or without fusion versus non-surgical care for degenerative spondylolisthesis with spinal stenosis. A combination randomized and observational study with substantial cross-over and inconsistent conservative care. Precursor report to the four-year Weinstein/JBJS article cited elsewhere. Cohort had neurogenic claudication or radiculopathy, with postoperative signs for at least 12 weeks and degenerative spondylolisthesis on lateral radiographs with patient in standing position. No surgical care not prespecified. 94% of group randomized to surgery (156/164) had fusion. The CT portion of the trial showed no difference in surgery vs non-surgical care but this was severely limited by substantial crossover. Adjusted cohort analysis (“as-treated”) showed improved pain and function in patients treated surgically compared to those treated without surgery. Of all patients treating surgery, the intraoperative complication rate was 11%, postoperative complication rate was 15%, and rate of repeat surgery one year was 6%.

In the nonrandomized as-treated comparisons with careful control for potential confounding baseline factors, patients with degenerative spondylolisthesis and spinal stenosis treated surgically showed substantially greater improvement in pain and function during a period of 2 years than patients treated nonoperatively. (But with high complication rate). |
This study cohort was limited to patients with spinal stenosis without spondylolisthesis (studied versus Surgery).


STUDY DESIGN: Randomized trial and concurrent observational cohort study. OBJECTIVE: To compare 4-year outcomes of surgery to nonoperative care for spinal stenosis. SUMMARY OF BACKGROUND DATA: Surgery for spinal stenosis has been shown to be more effective compared to nonoperative treatment over 2 years, but longer-term data have not been analyzed. METHODS: Surgical candidates from 13 centers in 11 US states with at least 12 weeks of symptoms and confirmatory imaging were enrolled in a randomized cohort (RC) or observational cohort (OC). Treatment was standard decompressive laminectomy or standard nonoperative care. Primary outcomes were SF-36 bodily pain (BP) and physical function scales and the modified Oswestry Disability Index assessed at 6 weeks, 3 months, 6-months, and yearly up to 4 years. RESULTS: A total of 269 patients enrolled in the RC and 365 patients enrolled in the OC. An as-treated analysis combining the RC and OC and adjusting for potential confounders found that the clinically significant advantages for surgery previously reported were maintained through 4 years, with treatment effects (defined as mean change in surgery group minus mean change in nonoperative group) for bodily pain 12.6 (95% confidence interval [CI], 8.5-16.7), physical function 8.0 (95% CI: 4.6-11.5), and Oswestry Disability Index -8.4 (95% CI: -12.6 to -4.2). Early advantages for surgical treatment for secondary measures such as bothersomeness, satisfaction with symptoms, and self-reported symptoms were also maintained. CONCLUSIONS: Patients with symptomatic spinal stenosis treated surgically compared to those treated nonoperatively maintain substantially greater improvement in pain and function through 4 years.

This study cohort was limited to patients with spinal stenosis without spondylolisthesis (studied separately in Weinstein 2007 and 2009), with neurogenic claudication and/or radicular leg pain of at least 12 weeks duration, treated with standard decompressive laminectomy. As in the related trial (SPORT) of degenerative spondylolisthesis noted above, there was an RCT component and an observational cohort component. The RCT portion had substantial crossover. Results were based on an "as-treated" analysis combining randomized and observational cohorts. Patients treated surgically had less pain, improved physical function, and improved Oswestry scores.

In favor standard decompressive laminectomy versus conservative care for patients with spinal stenosis.
BACKGROUND AND PURPOSE: The aim of this study was to examine 1 community used questionnaires for measuring disability in people with low back pain. The modified Oswestry Disability Questionnaire, the Quebec Back Pain Disability Scale, the Roland-Morris Disability Questionnaire, the Waddell Disability Index, and the physical health scales of the Medical Outcomes Study (MOS). The 16-item Short-Form Health Survey (SF-36) were compared in patients undergoing physical therapy for low back pain. SUBJECTS AND METHODS: Patients with low back pain completed the questionnaires during initial consultation with a physical therapist and again 6 weeks later (n=120). Test-retest reliability was examined for a group of 47 subjects who were classified as "unchanged" and a subgroup of 15 subjects who scored as "about the same." Responsiveness was compared using standard response means, receiver operating characteristic curves, and the proportion of subjects who changed by at least as much as the minimum detectable change (80% confidence interval (CI) of the standard error of measurement). Scale width was judged as adequate if no more than 15% of the subjects had initial scores at the upper or lower end of the scale that were insufficient to allow change to be reliably detected. RESULTS: Intraclass correlation coefficients (2,1) calculated to measure reliability for the subjects who were classified as "unchanged" and those who were self-rated as "about the same" were greater than 0.80 for the Oswestry and Quebec questionnaires and the SF-36 Physical Functioning scale and less than 0.80 for the Waddell and Roland-Morris questionnaires and the SF-36 Role Limitations-Physical and Bodily Pain scales. None of the scales were more responsive than any other. CONCLUSION: The reliability of questionnaires obtained with the modified Oswestry Disability Questionnaire, the SF-36 Physical Functioning scale, and the Quebec Back Pain Disability Scale were the most reliable and had sufficient scale width to reliably detect improvement or worsening in most subjects. The reliability of measurements obtained with the Waddell Disability Index was moderate, but the scale appeared to be insufficient to recommend for clinical application. The Roland-Morris Disability Questionnaire and the SF-36 Role Limitations-Physical and Bodily Pain scales of the SF-36 appeared to lack sufficient reliability and scale width for clinical application.
9 3/B Nonsurgical Treatment

Consider referral for an opinion on spinal fusion for people who: have completed an optimal package of care, including a combined physical and psychological treatment programme and still have severe non-specic low back pain for which they would consider surgery.

Reference
[Textbook]: “The grade of spondylolisthesis is rated by the percentage of slippage of the posterior corner of the vertebral body above over the superior surface of the vertebral body below. At least 5% slippage must be present for a diagnosis of spondylolisthesis to be conferred. Slippage can be further categorized into five grades. Grade I indicates slippage from 5% to 25%; grade II is 26% to 50%; grade III is 51% to 75%; grade IV is more than 75% and grade V is complete dislocation of adjacent vertebrae.”

10 3/C Nonsurgical Treatment

Evidence appraisal concludes lumbar fusion leads to higher rates of adverse events compared with nonsurgical treatment. The ranges of rates of the most frequently reported complications in fusion studies were: reoperation (0% to 46.1%), infection (0% to 9%), device-related complications (0% to 17.8%), neurologic complications (0.7% to 25.8%), thrombosis (0% to 4%), bleeding/vascular complications (0% to 12.8%), and dural injury (0% to 20%).

Reference
[VM Tier 1 Source]: “Among recommended non-surgical care interventions are education, self-management, physical activity, structured exercise programs, cognitive behavioral therapy, NSAIDs (with PPI), tricyclic antidepressants, and manual therapy.”

11 3/C Nonsurgical Treatment

Abstract: We aimed to evaluate the available evidence on the effectiveness of surgical interventions for a number of conditions resulting in low back pain (LBP) or spine-related irradiating leg pain. We searched the Cochrane database and PubMed up to June 2013. We included systematic reviews and randomised controlled trials (RCTs) on degenerative disc disease (DDD), herniated disc, spondylothesis and spinal stenosis due to degenerative osteoarthritis. We included comparisons between surgery and conservative care and between different techniques. The quality of the systematic reviews was evaluated using assessment of multiple systematic reviews (AMSTAR). Twenty systematic reviews were included which covered the following diagnoses: disc herniation (n = 9), spondylothesis (n = 2), spinal stenosis (n = 3), DDD (n = 4) and combinations (n = 2). For most of the comparisons, no significant and/or clinically relevant differences between interventions were identified. In general, surgery is only indicated for relief of leg pain in clear indications such as disc herniation, spondylothesis or spinal stenosis. Does not support surgical intervention for low back pain.

Reference
[VM Tier 2 Source]: “Provides an update to the NASS Guidelines, 2011, cited below.”
### Nonsurgical Treatment

<table>
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<th>Source</th>
<th>Date</th>
<th>Evidence Type</th>
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<tbody>
<tr>
<td>North American Spine Society. Evidence-based clinical guidelines for multidisciplinary spine care: Diagnosis and treatment of degenerative lumbar spinal stenosis. 2011.</td>
<td>September 2014</td>
<td>Evidence-based clinical guidelines</td>
<td>The guideline is intended to reflect contemporary treatment concepts for symptomatic degenerative lumbar spinal stenosis as reflected in the highest quality clinical literature available on the subject as of July 2010. A hierarchy of evidence was used to develop the recommendations: A: Level 1 A: Evidence-based randomized controlled trials; B: Level 2 B: Evidence-based level II prospective controlled clinical trials or level II retrospective studies; C: Level 3 C: Consensus statement by an expert panel.</td>
</tr>
<tr>
<td>Gibson IA, Wedder G. Surgery for degenerative lumbar spondylosis. Cochrane Database of Systematic Reviews 2005 Oct 19, Issue 4. Art. No.: CD001352. PMID: 16235281</td>
<td>September 2014</td>
<td>Systematic review</td>
<td>Degeneration of the lumbar spine is described as lumbar spondylosis or degenerative disc disease and may lead to spinal stenosis (narrowing of the spinal canal), vertebral instability and/or malalignment, which may be associated with back pain and/or leg symptoms. This review considers the available evidence on the procedures of spinal decompression (widening the spinal canal or laminectomy), nerve root decompression (of one or more individual nerves) and fusion of adjacent vertebrae.</td>
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**Conclusion:** The evidence for lumbar spinal fusion does not conclusively demonstrate short-term or long-term benefits compared with non-surgical treatment, especially when considering patients over 65 years of age, for degenerative disc disease, for spondylolisthesis, considerable uncertainty exists due to lack of data, particularly for older patients.

**Note:** This information is based on a draft version of a systematic review. For the most up-to-date information, please refer to the latest published versions available from the respective sources.
Nonsurgical Treatment

**I / C**


**RECOMMENDATION 1:** Clinicians should consider a focused history and physical examination to help place patients with low back pain into 1 of 3 broad categories: nonspecific low back pain, back pain potentially associated with radiculopathy or spinal stenosis, or back pain potentially associated with another specific spinal cause. The history should include assessment of psychosocial risk factors, which predict risk for chronic disabling back pain (strong recommendation, moderate-quality evidence). **RECOMMENDATION 2:** Clinicians should not routinely obtain imaging or other diagnostic tests in patients with nonspecific low back pain (strong recommendation, moderate-quality evidence). **RECOMMENDATION 3:** Clinicians should perform diagnostic imaging and testing for patients with low back pain when severe or progressive neurologic deficits are present or when serious underlying conditions are suspected on the basis of history and physical examination (strong recommendation, moderate-quality evidence). **RECOMMENDATION 4:** Clinicians should evaluate patients with persistent low back pain and signs or symptoms of radiculopathy or spinal stenosis with magnetic resonance imaging (preferred) or computed tomography only if they are potential candidates for surgery or epidural steroid injection (the suspected radiologic pathology) (strong recommendation, moderate-quality evidence). **RECOMMENDATION 5:** Clinicians should provide patients with evidence-based information on low back pain with regard to their expected course, advice patients to remain active, and provide information about effective self-care options (strong recommendation, moderate-quality evidence). **RECOMMENDATION 6:** For patients with low back pain, clinicians should consider the use of medications with proven benefits in conjunction with back care information and self-care. Clinicians should assess severity of baseline pain and functional deficits, potential benefits, risks, and relative lack of long-term efficacy and safety data before initiating therapy (strong recommendation, moderate-quality evidence). For most patients, first-line medication options are aspirin, nonsteroidal anti-inflammatory drugs, acetaminophen, or nonsteroidal anti-inflammatory drugs. **RECOMMENDATION 7:** For patients who do not improve with self-care options, clinicians should consider the addition of nonpharmacologic therapy with proven benefits for acute low back pain, spinal manipulation; for chronic or subacute low back pain, intensive interdisciplinary rehabilitation, exercise therapy, acupuncture, massage therapy, spinal manipulation, yoga, cognitive behavioral therapy, or progressive relaxation (weak recommendation, moderate-quality evidence). **OUTCOME**

Professional society guidelines with robust search strategy.

**I / C**


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Professional society guidelines with robust search strategy.
BACKGROUND: Back pain remains a challenge for primary care internationally. One model that has not been
tested is stratification of the management according to the patient’s prognosis (low, medium, or high risk). We
compared the clinical effectiveness and cost-effectiveness of stratified primary care (intervention) with non-
stratified current best practice (control). METHODS: 1573 adults (aged ≥18 years) with back pain (with or
without radiologic) consultations at ten general practices in England responded to invitations to attend an
assessment clinic. Eligible participants were randomly assigned by use of computer-generated stratified blocks
with a 2:1 ratio to intervention or control group. Primary outcome was the effect of the intervention on the Roland
& Morris Disability Questionnaire (RMDQ) score at 12 months. In the economic evaluation, we focused on
estimating incremental quality-adjusted life years (QALYs) and health-care costs related to back pain. Analysis
was by intention to treat. This study is registered, number ISRCTN17113406. FINDINGS: 851 patients were
assigned to the intervention (158%) and control groups (12%). Overall, adjusted mean changes in RMDQ
scores were significantly higher in the intervention group than in the control group at 4 months (-4.7 95% CI -6.3
to -3.1) and at 12 months (3.3 [95% CI 1.8-5.7]) and at 12 months (3.3 [95% CI 1.8-5.7]) and at 12 months (3.3 [-2.1]
-1.8]). Extending to effect sizes of 0.32 (0.19-0.45) and 0.30 (0.17-0.43), respectively. At 12 months, stratified
care was associated with a mean increase in generic health benefit (£0.03 additional QALY) and cost savings
(£240.01 vs £274.40) compared with the control group. INTERPRETATION: The results show that a stratified
approach, by use of prognostic screening with matched pathways, will have important implications for the
future management of back pain in primary care. FUNDING: Arthritis Research UK.

STUDY DESIGN: Prospective trial with insurance database and survey. OBJECTIVE: This study was developed to
determine whether an insurer rule requiring physiatrist consultation before nonurgent surgical consultation
would affect surgery referrals and surgery rates. SUMMARY OF BACKGROUND DATA: Spine surgery rates are
highly variable by region and increasing without evidence of a concordant decrease in the burden of disease.
Efforts to curb misuse of surgery have not shown large changes, especially across different provider groups. As
nonsurgical spine experts, physiatrists might provide patients with a different perspective on treatment
options. METHODS: In 2007, the insurer required patients with nonurgent spine surgical consultations in a
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satisfaction. RESULTS: Physiatry referrals increased 70%, surgical referrals decreased 48%, and the total number
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increased, the percentage of fusion operations increased from 55% to 60% of all surgical procedures. Of 742
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21 / I / C

RCT of pts age 25-60 w/ chronic LBP and localized disc degeneration, comparing lumbar fusion

Keller AK, Risoe K, Rønnen O. Randomized controlled trial of lumbar instrumented fusion and cognitive intervention and exercise in patients with chronic low back pain and disc degeneration. Spine 2003; 28(17):1913-1921. PMID: 12975114

Study Design. Single blind randomized study. Objectives. To compare the effectiveness of lumbar instrumented fusion with cognitive intervention and exercise in patients with chronic low back pain and disc degeneration.

Summary of Background Data. To the authors’ best knowledge, only one randomized study has evaluated the effectiveness of lumbar fusion. The Swedish Lumbar Spine Study reported that lumbar fusion was better than continuing physiotherapy and care by the family physician. Patients and Methods. Sixty-four patients aged 25-60 years with low back pain lasting longer than 3 year and evidence of disc degeneration at L4-L5 and L5-S1 at radiographic examination were randomized to either lumbar fusion with posterior transpedicular screws and postoperative physiotherapy, or cognitive intervention and exercises. The cognitive intervention consisted of a lecture to give the patient an understanding that ordinary physical activity would not harm the disc and a recommendation to use the back and limb. This was reinforced by three daily physical exercise sessions for 3 weeks. The main outcome measure was the Oswestry Disability Index. Results. At the 1 year follow-up visit, 97% of the patients, including 6 patients who had either not attended treatment or changed groups, were examined. The Oswestry Disability Index was significantly reduced from 43 to 26 after surgery, compared with 42 to 30 after cognitive intervention and exercises. The mean difference between groups was 3.3 (95% CI 1.6-5.0; P<0.01). Improvements in pain, use of analgesics, emotional distress, life satisfaction, and return to work were not different. Fear-avoidance beliefs and finger-foot-distance were reduced more after nonoperative treatment, and lower limb pain was reduced more after surgery. The success rate according to an independent observer was 70% after surgery and 78% after cognitive intervention and exercises. The early complication rate in the surgical group was 38%. Conclusions. The main outcome measure showed equal improvement in patients with chronic low back pain and disc degeneration randomized to cognitive intervention and exercises, or lumbar fusion

L4/C

RCT of pts age 25-60 w/ chronic LBP and localized disc degeneration, comparing lumbar fusion (and post-op PT) vs cognitive intervention w/ individualized goals and exercise plans. Randomized, concealed allocation, single-blinded (outcome assesses), intention-to-treat, new, complete (94), but small cohort and some cross-over of patients between treatment groups. No difference in primary outcome (ODI) w/ moderately wide confidence intervals, though confidence intervals do exclude a statistically meaningful effect on ODI (noted in the paper to be -12 points). Surgical complication rate was 38%. Fear avoidance beliefs and finger-foot-distance were reduced more after nonoperative treatment, and lower limb pain was reduced more after surgery. The success rate according to an independent observer was 70% after surgery and 78% after cognitive intervention and exercises.

J. Supports conclusions that lumbar fusion offers no greater benefit than non-surgical care for patients with low back pain and disc degeneration. Complication rate of 18% (6/33) included wound infection, bleeding, sensory throbbing and dull tears.

22 / I / C

Nonsurgical Treatment

Diagnosis study looking the value of CareConnections Functional Index for estimating patient


This study established the criterion validity, test-retest reliability and clinical responsiveness of the CareConnections Functional Index (CCFI). The CCFI is composed of four body region specific subscales, measuring functional ability. Reference standards included the Neck Disability Index, Modified Oswestry Disability Index, Quick Disabilities of the Arm, Shoulder and Hand and the Lower Extremity Functional Scale. One hundred subjects per body region were enrolled. Subject’s rated their perceived improvement based on the 15-point Global Rating-of-Change questionnaire. Minimal clinically important differences (MCID) were calculated via receiver operator characteristic curve. Test-retest reliability coefficients were good to excellent. Correlation with the reference standard measures were acceptable (HIE-H7) for all subscales. MCID for the cervical subscale 52 points, lumbar 58 points, upper extremity 52 points and lower extremity 52 points. The results of this study support the use of the CCFI in outpatient physical therapy practice as a responsive tool with good reliability and validity.

The results also indicate that future work should focus on the impact of baseline patient factors that may affect future outcome.

1/C

Diagnosis study testing the value of CareConnections Functional Index for estimating patient self-reported improvement. Cohort includes patients in with cervical, lumbar, upper extremity, and lower extremity pain undergoing physical therapy without regard to specific diagnosis. Minimal clinically important differences (MCID) for lumbar condition was 9 points. Supports CCFI as a valid measure of disability related to back pain with 8 points as the MCID.

23 / I / C

Nonsurgical Treatment

Measure of treatment expense


INTRODUCTION: One objective of the present research was to examine the degree to which psychological risk factors could be reduced through participation in a community-based psychosocial intervention for work-related musculoskeletal disorders. A second objective was to examine whether psychosocial risk reduction had an effect on the probability of return to work. METHODS: Participants were 215 Workers Compensation Board claimants with work related musculoskeletal disorders who had been absent from work for an average of approximately 7-months (M = 28.8 weeks, range = 4-100 weeks) and were referred to a community-based multidisciplinary secondary prevention program in Nova Scotia, Canada. RESULTS: In the current sample, 63.7% of participants returned to work within 4 weeks of treatment termination. The percentage reductions in targeted risk factors from pretreatment to posttreatment were as follows: catastrophizing (32%), depression (28%), fear of movement/re-injury (13%), and perceived disability (28%), cognitive-regression indicated a elevated pretreatment scores on fear of movement and re-injury (OR = 0.58, 95% CI 0.35-0.95) and pain sensitivity (OR = 0.84, 95% CI = 0.53-1.35) were associated with a lower probability of return to work. A second logistic regression addressing the relation between risk factor reduction and return to work revealed that only reductions in pain catastrophizing (OR = 0.37, 95% CI = 0.07-0.74) were significant predictors of return to work (CONCLUSIONS: The results of the present study provide further evidence that risk factor reduction can impact positively on short-term return to work outcomes. SIGNIFICANCE: Outcomes of rehabilitation programs for work disability might be improved by incorporating interventions that specifically target catastrophic thinking. Community-based models of psychosocial intervention might represent a viable approach to the management of work disability associated with musculoskeletal disorder.

23 / I / C

Nonsurgical Treatment

K/C

Cognitive Behavioral Therapy


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K/C

Case series of 215 Workers Compensation Board claimants with work-related musculoskeletal disorders with long-term absence from work. 10-week, community-based psychosocial rehabilitation program returned 62% of patients to work.

G. Supports use of behavior therapy in patients with workers’ compensation claims.
24 1/1/1g Nonsurgical Treatment: Prognostic factors


STUDY DESIGN: Prospective population-based cohort study. OBJECTIVE: To identify early predictors of chronic work disability after work-related back injury. SUMMARY OF BACKGROUND DATA: Identification of early predictors of prolonged disability after back injury could increase understanding concerning the development of chronic disability, and aid in secondary prevention. Few studies have examined predictors across multiple domains in a large, population-based sample. METHODS: Workers (N = 1885) were interviewed 3 weeks (average) after submitting a lost work-time claim for a back injury. Sociodemographic, employment-related, pain and function, clinical, health care, administrative/legal, health behavior, and psychological domain variables were assessed via worker interviews, medical records, and administrative databases. Logistic regression analysis identified early predictors of work disability compensation 1 year post claim submission. RESULTS: Significant baseline predictors of 1-year work disability in the final multivariable model were injury severity (rated from medical records), specialty of the first health care provider seen for the injury (obtained from administrative data), and worker-reported physical disability (Roland-Morris disability questionnaire), number of pain sites, "very hectic" job, no offer of a job accommodation (e.g., light duty), and previous injury involving a month or more of off work. The model showed excellent ability to discriminate between workers who were/were not disabled at 1 year (area under the receiver operating characteristic curve = 0.86, 95% CI = 0.86-0.90). CONCLUSION: Among workers with new lost work-time back injury claims, risk factors for chronic disability include radiophobia, substantial functional disability, and to a lesser extent, more widespread pain and previous injury with extended time off work. The roles of employers and health care providers also seem important, supporting the need to incorporate factors external to the worker in models of the development of chronic disability and in disability prevention efforts.

2/8 A large prospective cohort study that identifies factors predicting return to work for patients with workers' compensation claims. Limited to workers covered under State Fund and only 49% completed baseline interview. Treatment interventions not specified and may have influenced return to work.

1) Study identifies possible barriers to return to function.

25 1/1/1g Nonsurgical Treatment: Cognitive Behavioral Therapy


OBJECTIVES: To assess the clinical effectiveness of surgical stabilisation (spinal fusion) compared with intensive rehabilitation for patients with chronic low back pain. DESIGN: Multicentre randomised controlled trial. SETTING: 15 secondary care orthopaedic and rehabilitation centres across the United Kingdom. PARTICIPANTS: 461 participants aged 18-55 with chronic low back pain of at least one year's duration who were considered candidates for spinal fusion. INTERVENTION: Lumbar spine fusion or an intensive rehabilitation programme based on principles of cognitive behaviour therapy. MAIN OUTCOME MEASURE: The primary outcomes were the Oswestry disability index and the shuttle walking test measured at baseline and two years after randomisation. The SF-36 instrument was used as a secondary outcome measure. RESULTS: 176 participants were assigned to surgery and 173 to rehabilitation. 284 (81%) provided follow-up data at 24 months. The mean Oswestry disability index changed favourably from 44.8 (SD 14.8) to 36.1 (SD 20.6) in the rehabilitation group. The estimated mean difference between the groups was -4.1 (95% confidence interval -8.1 to -0.1, P = 0.04) in favour of surgery. No significant differences regarding the treatment groups were observed in the shuttle walking test or any of the other outcome measures. CONCLUSION: Both groups showed reductions in disability during two years of follow-up, possibly unrelated to the interventions. The statistical difference between treatment groups in one of the two primary outcome measures was marginal and only just reached the predefined minimal clinical difference, and the potential risk and additional cost of surgery also need to be considered. No clear evidence emerged that primary spinal fusion surgery was any more beneficial than intensive rehabilitation.

2/8 Cohort is patients with chronic low back pain for which providers and patients were uncertain regarding relative benefit of surgery versus conservative care. Randomised controlled trial of spinal fusion surgery versus intensive non-surgical therapy (3 days/week, 5-7 hours/day, for 3 weeks), but lacking "no treatment" arm. Surgical and non-surgical groups had similar improvement in Oswestry scale and no significant difference between groups on shuttle walking test. No clear evidence emerged that primary spinal fusion surgery was any more beneficial than intensive rehabilitation.

1) Level 2 because: 20% lost to follow-up. Significant crossover in both groups.
2) For patients with mostly non-specific chronic low back pain, there was minimal difference in ODI or shuttle walking in patients receiving spinal fusion vs Intensive non-surgical therapy.
BACKGROUND: Many therapies exist for the treatment of low-back pain including spinal manipulative therapy (SMT), which is a worldwide, extensively practiced intervention. OBJECTIVES: To assess the effects of SMT for chronic low-back pain. SEARCH STRATEGY: An updated search was conducted by an experienced librarian in June 2009 for randomised controlled trials (RCTs) in CENTRAL (The Cochrane Library, 2009, issue 2); MEDLINE, EMBASE, CINAHL, PEDro, and the Index to Chiropractic Literature. SELECTION CRITERIA: RCTs which examined the effectiveness of spinal manipulation or mobilisation in adults with chronic low-back pain were included. No restrictions were placed on the setting or type of pain; studies which exclusively examined sciatica were excluded. The primary outcomes were pain, functional status and perceived recovery. Secondary outcomes were return-to-work and quality of life. DATA COLLECTION AND ANALYSIS: Two review authors independently conducted the study selection, risk of bias assessment and data extraction. GRADE was used to assess the quality of the evidence. Sensitivity analyses and investigation of heterogeneity were performed, where possible, for the meta-analyses. MAIN RESULTS: We included 26 RCTs (total participants = 60,704), nine of which had a low risk of bias. Approximately two-thirds of the included studies (N = 18) were not evaluated in the previous review. In general, there is high quality evidence that SMT has a small, statistically significant but not clinically relevant, short-term effect on pain relief (MD: -4.36, 95% CI: -6.97 to -1.36) and functional status (SMD: -0.22, 95% CI: -0.36 to -0.07) compared to other interventions. Sensitivity analyses confirmed the robustness of these findings. There is varying quality of evidence (ranging from low to high) that SMT has a statistically significant short-term effect on pain relief and functional status. Data were particularly sparse for recovery, return-to-work, quality of life, and costs of care. No serious complications were observed with SMT. AUTHORS’ CONCLUSIONS: High quality evidence suggests that there is no clinically relevant difference between SMT and other interventions for reducing pain and improving function in patients with chronic low-back pain. Determining cost-effectiveness of care has high priority. Further research is likely to have an important impact on our confidence in the estimate of effect in relation to inert interventions and sham SMT, and data related to recovery.

MAIN SOURCES: None.

NONSURGICAL TREATMENT: Chiropractic


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MAIN SOURCES: None.
Nonsurgical Treatment; Acupuncture


BACKGROUND: Acupuncture is a popular complementary and alternative therapy for chronic back pain. Several European trials suggest similar short-term benefits from real and sham acupuncture needling. This trial addresses the importance of needle placement and skin penetration in eliciting acupuncture effects for patients with chronic low back pain. METHODS: A total of 586 adults with chronic mechanical low back pain were randomized to individualized acupuncture, standardized acupuncture, simulated acupuncture, or usual care. Ten treatments were provided over 7 weeks by experienced acupuncturists. The primary outcomes were back-related dysfunction (Roland-Morris Disability Questionnaire score; range, 0-21) and symptom bothersomeness (0-10 scale). Outcomes were assessed at baseline and after 8, 26, and 52 weeks. RESULTS: At 8 weeks, mean dysfunction scores for the individualized, standardized, and simulated acupuncture groups improved by 4.4, 4.5, and 4.6 points, respectively, compared with 2.1 points for those receiving usual care (P < .001). Participants receiving real or simulated acupuncture were more likely than those receiving usual care to report clinically meaningful improvements on the dysfunction scale (60% vs 30%; P = .012). Symptoms improved by 1.6 to 1.9 points in the treatment groups compared with 0.7 points in the usual care group (P = .02). After 1 year, participants in the treatment groups were more likely than those receiving usual care to experience clinically meaningful improvements in dysfunction (50% vs 30%; respectively, P = .007) but not in symptoms (P = .05). CONCLUSIONS: Acupuncture was found effective for chronic low back pain, eliciting needling sites to each patient and penetration of the skin appear to be unimportant in eliciting therapeutic effects. These findings raise questions about acupuncture's purported mechanisms of action. It remains unclear whether acupuncture or our simulated method of acupuncture provide physiologically important stimulation or represent placebo or nonspecific effects. 1/9

Injection therapy


Chronic low back pain is one of the most common reasons that people seek medical treatment, and the consequent disability creates a great financial burden on individuals and society. The etiology of individual low back pain is not clear, which means it is often refractory to treatment. Acupuncture has been reported to be effective in providing symptomatic relief of chronic low back pain. However, it is not known whether the effects of acupuncture are due to the needling itself or nonspecific effects arising from the manipulation. To determine the effectiveness of acupuncture therapy, a meta-analysis was performed to compare acupuncture with sham acupuncture and other treatments. Overall, 2678 patients were identified from thirteen randomized controlled trials. The meta-analysis was performed by a random model (Cochran's test), using the I-square test for heterogeneity and Begg's test to assess for publication bias. Clinical outcomes were evaluated by pain intensity, disability, spinal flexion, and quality of life. Compared with no treatment, acupuncture achieved better outcomes in terms of pain relief, disability recovery and better quality of life, but these effects were not observed when compared to sham acupuncture. Acupuncture achieved better outcomes when compared with other treatments. No publication bias was detected. Acupuncture is an effective treatment for chronic low back pain, but this effect is likely to be produced by the nonspecific effects of manipulation. 1/9

Injection therapy


BACKGROUND: Epidural glucocorticosteroid injections are widely used to treat symptoms of lumbar spinal stenosis, a common cause of pain and disability in older adults. However, rigorous data are lacking regarding the effectiveness and safety of these injections. METHODS: In a double-blind, multicenter trial, we randomly assigned 400 patients who had lumbar central spinal stenosis and moderate-to-severe leg pain and disability to receive epidural injections of glucocorticosteroids plus lidocaine or lidocaine alone. The patients received one or two injections before the primary outcome evaluation, performed 6 weeks after randomization and the first injection. The primary outcomes were the score on the Roland-Morris Disability Questionnaire (MRM), in which score range from 0 to 21, with higher scores indicating greater physical disability and the rating of the intensity of leg pain (on a scale from 0 to 10, with 0 indicating no pain and 10 indicating "pain as bad as you can imagine"). RESULTS: At 6 weeks, there were no significant between-group differences in the MMR score adjusted difference in the average treatment effect between the glucocorticosteroid/lidocaine group and the lidocaine-alone group. -1.0 points; 95% confidence interval [-2.1 to 0.1; P = 0.10] or the intensity of leg pain adjusted difference in the average treatment effect between the glucocorticosteroid/lidocaine group and the lidocaine-alone group. -0.2 points; 95% confidence interval [-1.4 to 1.0; P = 0.4]. A prespecified secondary subgroup analysis with stratification according to type of injection (interlaminar vs. transforaminal) likewise showed no significant differences at 6 weeks. CONCLUSIONS: In the treatment of lumbar spinal stenosis, epidural injection of glucocorticosteroids plus lidocaine offered minimal or no short-term benefit as compared with epidural injection of lidocaine alone. (Funded by the Agency for Healthcare Research and Quality; ClinicalTrials.gov number, NCT01238536.) 1/8

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Prognosis study. Retrospective cohort study. Compared to non-obese patients, those with BMI 30 had a “statistically increased risk of having increased time spent in the operating room, an extended length of stay, pulmonary complications, and having one or more complications (all p<0.05).”

Obesity does not affect the clinical outcome of operative treatment of SpS. There are higher rates of infection and reoperation and less improvement from baseline in the SF-36 physical function score in obese patients after surgery for DS. Nonoperative treatment may not be as effective in obese patients with SpS or DS.”

Differences in sample sizes and body mass index (BMI) thresholds for the definition of obesity does not affect the clinical outcome of operative treatment of SpS. There are higher rates of infection and reoperation and less improvement from baseline in the SF-36 physical function score in obese patients after surgery for DS. Nonoperative treatment may not be as effective in obese patients with SpS or DS.”
Screening for Depression


PURPOSE: The aim of this study was to evaluate the prevalence of depressive symptoms and disability pre-operatively, at 3 months, and 1 year after lumbar spine fusion. METHODS: Data was extracted from a dedicated lumbar spine fusion register, going 232 patients (mean age 62 years, 158 females) who had undergone instrumented lumbar spine fusion. The frequency of depressive symptoms and disability was evaluated using the Depression Scale (IDS) and Oswestry Disability Index (ODI). RESULTS: Depressive symptoms were found in 34, 13, and 15% of the patients pre-operatively, at 3 months and at 1 year after surgery, respectively. The mean IDS score decreased from 16.2 to 6.1 (p < 0.001) in patients with depressive symptoms pre-operatively, and from 6.2 to 3.8 (p < 0.001) in those without pre-operative depressive symptoms. The mean ODI scores pre-operatively, at 3 months and at 1 year after surgery were 53, 30, and 23, respectively, in patients with pre-operative depressive symptoms and 43, 21, and 20 in those without pre-operative depressive symptoms. The difference between the groups was statistically significant at all time points (p < 0.001). CONCLUSIONS: One-third of our patients with chronic back pain undergoing spinal fusion had depressive symptoms pre-operatively. The prevalence of depressive symptoms decreased after surgery. Although disability remained higher in those patients who had reported depressive symptoms pre-operatively, disability did decrease significantly in both groups post-operatively. Thus, there is no need to exclude depressive patients from operation, but screening measures and appropriate treatment practices throughout both pre-operative and post-operative periods are encouraged.

Screening for Cognitive Impairment


The Montreal Cognitive Assessment (MoCA) is a brief instrument developed for the screening of mild forms of cognitive impairment, having surpassed the well-known limitations of the Mini Mental State Examination (MMSE). The aim of the present study was to validate the MoCA as a cognitive-screening test for behavioral-variant frontotemporal dementia (bv-FTD) by examining its psychometric properties and diagnostic accuracy. Three matched subgroups of participants were considered: bv-FTD (n = 50), Alzheimer disease (n = 50), and a control group of healthy adults (n = 50). Compared with the MMSE, the MoCA demonstrated consistently superior psychometric properties and discriminant capacity, providing comprehensive information about the patients' cognitive profiles. The diagnostic accuracy of MoCA for bv-FTD was extremely high [area under the curve (AUC) = 0.994, 95% confidence interval (CI) = 0.986-0.997, AUC (MMSE) = 0.772, 95% CI = 0.677-0.870]. With a cutoff below 27 points, the MoCA results for sensitivity, specificity, positive predictive value, negative predictive value, and classification accuracy were significantly superior to those of the MMSE. The MoCA is a sensitive and accurate instrument for screening the patients with bv-FTD and represents a better option than the MMSE.

Screening for Dementia

Häkkinen A, Dekker J, Marttinen I, Vihtonen K, Neva MH. 2014. The Depression screening Validates use of MoCA as an instrument for screening for cognitive impairment. Screen for Dementia; September 2014

BACKGROUND: Dementia patients often present with concerning medical conditions and potentially has a higher risk of complications during hospitalization. Because the general features of postoperative adverse outcomes among surgical patients with dementia are unknown, we conducted a nationwide, retrospective cohort study to characterize surgical complications among dementia patients compared with age-matched nondementia controls. METHODS: Reimbursement claims from the Taiwan National Health Insurance Research Database were studied. A total of 16,213 surgical patients were enrolled with preoperative diagnosis of dementia for 20,659 persons aged 60 years or older who received inpatient major surgeries between 2004 and 2007. Their preoperative comorbidities were adjusted and risks for major surgical complications were analysed. RESULTS: Dementia patients who underwent surgery had a significantly higher overall postoperative complication rate, adjusted odds ratio (OR) 1.79 (95% confidence interval [CI] 1.72-1.86), with higher medical resource use, and in-hospital expenditures. Compared with controls, dementia patients had a higher incidence of certain postoperative complications that are less likely to be identified in their initial stage, such as acute renal failure, OR = 1.32 (1.19-1.47); pneumonia, OR = 2.16 (2.06-2.31); septicemia, OR = 1.81 (1.69-1.92); stroke, OR = 1.51 (1.43-1.6); and urinary tract infection, OR = 1.62 (1.54-1.74). CONCLUSIONS: These findings have specific implications for postoperative care of dementia patients regarding complications that are difficult to diagnose in their initial stages. Acute renal failure, pneumonia, septicemia, stroke, and urinary tract infection are the top priorities for prevention, early recognition, and intervention of postoperative complications among surgical patients with dementia. Further efforts are needed to determine specific protocols for health care teams serving this population.

Screening for Surgical Patients

Breeze Collaborative Lumbar Fusion Evidence Table

PURPOSE: The aim of this study was to evaluate the prevalence of depressive symptoms and disability pre-operatively, at 3 months, and 1 year after lumbar spine fusion surgery. METHODS: Data was extracted from a dedicated lumbar spine fusion register, going 232 patients (mean age 62 years, 158 females) who had undergone instrumented lumbar spine fusion. The frequency of depressive symptoms and disability was evaluated using the Depression Scale (IDS) and Oswestry Disability Index (ODI). RESULTS: Depressive symptoms were found in 34, 13, and 15% of the patients pre-operatively, at 3 months and at 1 year after surgery, respectively. The mean IDS score decreased from 16.2 to 6.1 (p < 0.001) in patients with depressive symptoms pre-operatively, and from 6.2 to 3.8 (p < 0.001) in those without pre-operative depressive symptoms. The mean ODI scores pre-operatively, at 3 months and at 1 year after surgery were 53, 30, and 23, respectively, in patients with pre-operative depressive symptoms and 43, 21, and 20 in those without pre-operative depressive symptoms. The difference between the groups was statistically significant at all time points (p < 0.001). CONCLUSIONS: One-third of our patients with chronic back pain undergoing spinal fusion had depressive symptoms pre-operatively. The prevalence of depressive symptoms decreased after surgery. Although disability remained higher in those patients who had reported depressive symptoms pre-operatively, disability did decrease significantly in both groups post-operatively. Thus, there is no need to exclude depressive patients from operation, but screening measures and appropriate treatment practices throughout both pre-operative and post-operative periods are encouraged.
II / A / 11  Depression screening


The objective of this observational prospective study was to investigate the effect of depression on short-term outcome after lumbar spinal stenosis (LSS) surgery. Surgery was performed on 99 patients with clinically and radiologically defined LSS, representing ordinary LSS patients treated at the secondary care level. They completed questionnaires before surgery and 3 months postoperatively. Depression was assessed with the 21-item Beck Depression Inventory (BDI). Physical functioning and pain were assessed with Oswestry disability index, Stucki Questionnaire, self-reported walking ability, visual analogue scale (VAS) and pain drawing. Preoperatively, 20% of the patients had depression. In logistic regression analyses, significant associations were seen between preoperative depression and postoperative high Oswestry disability and Stucki severity scores and high intensity of pain (VAS score). In subsequent analyses, the patients with continuous depression, measured with BDI (60% of the patients who had preoperative depression), showed fewer improvements in symptom severity, disability score, pain intensity and walking capacity than the patients who did not experience depression at any phase. In those patients who recovered from depression, according to BDI scores (35% of the patients with preoperative depression), the postoperative improvement was rather similar to the improvement seen in the normal mood group. In the surgical treatment of LSS, we recommend that the clinical practice should include an assessment of depression.

II / A / 13  Screen for Osteoporosis

Schreiber JJ, Hughes AP, Taher F, Girardi FP. An association can be found between hounsfield units and success of lumbar spine fusion. HSS J. 2014 Feb;10(1):25-9. PMID: 24482618

BACKGROUND: Measuring Hounsfield units (HUs) from computed tomography (CT) scans has recently been proposed as a tool for assessing vertebral bone quality, as it has been associated with bone mineral density, compressive strength, and fracture risk. Vertebral bone quality is believed to be an important determinant of outcome and complication rates following spine surgery and potentially influences success of interbody spinal fusion. QUESTIONS/PURPOSES: The purpose of this study was to investigate the association between HUs on CT scans and fusion success in patients with lateral transpsoas surgery for lumbar interbody fusion (LIF). METHODS: The CT scans of 28 patients with a combined 52 levels of stand-alone LIF were evaluated at a minimum of 12 weeks postoperatively. Coronal and sagittal images were evaluated for evidence of fusion, and HU values were collected from axial images. HU measurements were also taken from vertebral bodies proximal to the construct to evaluate global bone quality. RESULTS: Of the 52 LIF levels, 73% were assessed as fused and 27% were nonunion at the time of evaluation. The successful fusion levels had significantly higher HU values compared to the nonunion levels (203.3 vs. 139.8, p < 0.001). Patients with successful fusion constructs also had higher global bone density when vertebral bodies proximal to the construct were compared (133.7 vs. 107.3, p < 0.05). CONCLUSION: With the aging population and increasing prevalence of osteoporosis, preoperative assessment of bone quality prior to spinal fusion deserves special consideration. We found that a successful lumbar fusion was associated with patients with higher bone density, as assessed with HU, both globally and within the fusion construct, as compared to patients with CT evidence of nonfusion.

II / A / 15  Screen for Osteoporosis

Retrospective cohort study of 28 patients with spinal fusion with subsequent measurement of bone quality as judged by CT scans (Hounsfie!d Units). Patients with successful fusion had higher global bone density than patients with nonfusion, as measured at minimum 12 weeks postoperative.

→ Low quality study due to small cohort and retrospective design. Relates successful lumbar fusion to higher bone density.
The purpose of this study is to evaluate the incidence of osteoporosis in patients requiring spine surgery. Among patients older than 50 years, the rate of osteoporosis in males was 14.5% and the rate of osteoporosis in females was 51.3%. We strongly recommend an evaluation and treatment for osteoporosis in the patients requiring spine surgery, especially in females over 50 years old. In conclusion, the number of spine operations in elderly patients is increasing and the incidence of osteoporosis in patients requiring spine surgery is also increasing. We strongly recommend an evaluation for osteoporosis and post-operative treatment for osteoporosis in patients over 50 years old, especially for female patients.

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The Washington State Department of Labor & Industries (L&I, or the department) is officially adopting the AMDG Guideline for perioperative management of patients on chronic opioid therapy. This guideline is a supplement to both the AMDG Guideline and the Department of Health’s (DOH) pain management rules, and provides information specific to treating injured workers covered by Washington workers’ compensation [5]. Both the AMDG Guideline and this guideline are intended for use by health care providers, the department, insurers, and utilization review staff. This guideline was developed in 2011-2012 by the Industrial Insurance Medical Advisory Committee (IIMAC) and its subcommittee on chronic non-cancer pain. It is based on the best available clinical and scientific evidence from a systematic review of the literature and a round of expert opinion. The IIMAC’s primary goal is to provide standards that ensure the highest quality of care for injured workers in Washington State. This guideline recommends postoperative use of opioids should be limited to no longer than six weeks. Observational study of 1,321 Korean patients undergoing spine surgery with bone density measurements was reported to have high prevalence of osteoporosis in patients over 50 years of age. No outcome data reported. May not be applicable to non-Korean populations.

* C-T-P score is composite of five clinical indicators of liver disease: total bilirubin, serum albumin, prothrombin, proteins, and encephalopathy. However, there is no information in English literature about the results of liver cirrhosis patients who underwent instrumented lumbar surgery. The purpose of this study is to report the perioperative complications, clinical outcomes and determine the surgical risk factors in cirrhotic patients. Methods: We retrospectively reviewed data on 29 patients with liver cirrhosis who underwent instrumented lumbar surgery between 1997 and 2009. The hepatic functional reserves of the patients were recorded according to the Child-Turcotte-Pugh scoring system. Besides, four other variables and perioperative complications were also collected. To determine the risk, we divided the patients into two groups according to whether or not perioperative complications developed. Results: Of the 29 patients, 22 (76%) belonged to Child class A and 7 (24%) belonged to Child class B. Two patients developed one or more complications. Patients with Child class A carried a significantly higher incidence of complications than those with Child class A (p < 0.01). In the Child class A group, patients with 0 points had a significantly higher incidence of complications than those with 5 points (p = 0.02). A low level of albumin was significantly associated with higher risk, and a similar trend was also noted for the presence of ascites although statistical difference was not reached. Conclusion: The study concludes that patients with liver cirrhosis who have undergone instrumented lumbar surgery carry a high risk of developing perioperative complications, especially in those with a Child-Turcotte-Pugh score of 6 or more.
BACKGROUND: Smokers are at higher risk of cardiopulmonary and wound-related postoperative complications than non-smokers. Our aim was to investigate the effect of preoperative smoking intervention on the frequency of postoperative complications in patients undergoing hip and knee replacement. METHODS: We did a randomised trial in three hospitals in Denmark. 120 patients were randomly assigned 6-8 weeks before scheduled surgery to either the control (n=60) or smoking intervention (60) group. Smoking intervention was counselling and nicotine replacement therapy, and either smoking cessation or at least 50% smoking reduction. An assessor, who was masked to the intervention, registered the occurrence of cardiopulmonary, renal, neurological, or surgical complications and duration of hospital admittance. The main analysis was by intention to treat. FINDINGS: Eight controls and four patients from the intervention group were excluded from the trial analysis because their operations were either postponed or cancelled. Thus, 52 and 56 patients, respectively, were analysed for outcome. The overall complication rate was 18% in the smoking intervention group and 52% in controls (p=0.0003). The most significant effects of intervention were seen for wound-related complications (5% vs 10%, p=0.01), cardiopulmonary complications (0% vs 10%, p=0.08), and secondary surgery (4% vs 15%, p=0.07). The median length of stay was 11 days (range 7-55) in the intervention group and 13 days (8-65) in the control group. INTERPRETATION: An effective smoking intervention programme 6-8 weeks before surgery reduces postoperative morbidity, and we recommend, on the basis of our results, this programme be adopted for smoking cessation interventions. OBJECTIVES: The objective of this review was to assess the effect of preoperative smoking intervention on smoking cessation at the time of surgery, and whether smoking intervention influences postoperative complications. Although there is controversy about the effectiveness of smoking cessation interventions, most reviewers have shown a significant effect of smoking intervention on smoking cessation at the time of surgery, and some have shown an effect on postoperative complications. EFFECTS: Five trials evaluated the effect of smoking intervention on smoking cessation at the time of surgery; pooled RR 10.76 (95% confidence interval (CI) 4.55 to 25.46, two trials) and RR 7.00 (95% CI 4.18 to 11.59, two trials) respectively. Four trials evaluated the effect of smoking intervention on long-term smoking cessation; pooled RR 1.61 (95% CI 1.12 to 2.33). However, when pooling intensive and brief interventions separately, only intensive intervention retained a significant effect on long-term smoking cessation; RR 2.86 (95% CI 1.57 to 5.23, two trials) vs RR 1.45 (95% CI 0.78 to 2.64, two trials) for brief intervention. Four trials evaluating the effect of smoking intervention on postoperative complications showed a significant effect of intensive intervention on any complications; RR 0.31 (95% CI 0.16 to 0.62). For brief interventions the effect was not statistically significant but CIs did not rule out a clinically significant effect. RR 0.96 (95% CI 0.74 to 1.25) for any complications. RR 0.95 (95% CI 0.27 to 0.45) for wound complications. RR 1.7 (95% CI 0.91 to 3.17) was observed for other complications. A meta-regression analysis showed that the effect on postoperative complications was similar for brief and intensive interventions. AUTHORS’ CONCLUSIONS: There is a significant but CIs do not rule out a clinically significant effect (RR 0.96 (95% CI 0.74 to 1.25) for any complications. RR 0.95 (95% CI 0.27 to 0.45) for wound complications. RR 1.7 (95% CI 0.91 to 3.17) was observed for other complications. A meta-regression analysis showed that the effect on postoperative complications was similar for brief and intensive interventions.
Focus is pre-operative nutritional state as a risk factor for complications for patients 65 years of age or older. 

BACKGROUND: Poor nutrition status is considered a risk factor for postoperative complications in the adult population. In elderly patients, who often have a poor nutrition status, this relationship has not been substantiated. Thus, the aim of this systematic review was to assess the merit of preoperative nutrition parameters used to predict postoperative outcome in elderly patients undergoing general surgery. METHODS: A systematic literature search of 10 electronic databases was performed. Search terms used were nutrition status, preoperative assessment, postoperative outcome, and surgery (hip or general), including their synonyms and MeSH terms. Limits of the search were human studies, published in English, and age (65 years or older). Articles were screened using inclusion and exclusion criteria. All selected articles were checked on methodology and graded. RESULTS: Of 403 articles found, 15 were included. They showed profound heterogeneity in the parameters used for preoperative nutrition status and postoperative outcome. The only significant preoperative predictors of postoperative outcome in elderly general surgery patients were serum albumin and BMI ≥ 20 kg/m² in the previous 6 months. CONCLUSIONS: This systematic review revealed only 2 preoperative parameters to predict postoperative outcome in elderly general surgery patients: weight loss and serum albumin. Both are open to discussion in their use as a predictive parameter. It seems unlikely that a reliable preoperative parameter to identify a patient at risk for nutrition deterioration and related complicated postoperative course.

focus is at 65 years of age or older. 

Supports the conclusion that smoking cessation prior to surgery reduces postoperative complications if smoking discontinued as late as 4 weeks prior to surgery.

Smoking cessation therapy with individual counseling and nicotine substitution started 4 weeks before surgery and continued 6 weeks postoperatively. The control group received standard care. The main outcome measure was frequency of any postoperative complication. RESULTS: An intention-to-treat analysis showed that the overall complication rate in the control group was 45%, and in the intervention group, it was 39% (P = 0.03). Relative risk reduction for the primary outcome of any postoperative complication was 49% and number needed to treat was 5 (95% CI, 3-46). An analysis per protocol showed that abstainers had fewer complications (15%) than those who continued to smoke or were reduced smoking (35%), although this difference was not statistically significant. CONCLUSION: Perioperative smoking cessation seems to be an effective tool to reduce postoperative complications even if it is introduced as late as 4 weeks before surgery.

BACKGROUND: Unhealthy alcohol use is prevalent but under-diagnosed in primary care settings. OBJECTIVE: To validate, in primary care, a single-item screening test for unhealthy alcohol use recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). DESIGN: Cross-sectional study. PARTICIPANTS: Adult English-speaking patients recruited from primary care waiting rooms. MEASUREMENTS: Participants were asked the single screening question, "How many times in the past year have you had six or more drinks in a day?", where 6 is for men and 4 for women, and a response of 1 or greater (corrected) is considered positive. Unhealthy alcohol use was defined as the presence of an alcohol use disorder, as determined by a standardized diagnostic interview, or risky consumption, as determined using a validated 30-day calendar method. MAIN RESULTS: Of 394 eligible primary care patients, 286 (73%) completed the interview. The single-question screen was 81.8% sensitive (95% CI 66.8% to 91.9%) and 79.5% specific (95% CI 72.5% to 84.4%) for the detection of unhealthy alcohol use. It was slightly more sensitive (90.0%, 95% CI 72.5% to 96.2%) but less specific (94.8%, 95% CI 60.0% to 73.2%) for the detection of a current alcohol use disorder. Test characteristics were similar to that of a commonly used three-item screen, and were affected very little by subject demographic characteristics. CONCLUSIONS: The single-screening question recommended by the NIAAA is an accurate and valid short screen for unhealthy alcohol use in this sample of primary care patients. These findings support the use of this brief screen in primary care.
**Shared Decision Making**


**STUDY DESIGN:** Clinical practice guideline. **OBJECTIVE:** To develop evidence-based recommendations on use of interventional diagnostic tests and therapies, surgery, and interdisciplinary rehabilitation for low back pain of any duration, with or without leg pain. **SUMMARY OF BACKGROUND DATA:** Management of patients with persistent and disabling low back pain remains a clinical challenge. A number of interventional diagnostic tests and therapies are available and their use is increasing, but in some cases their utility remains uncertain or controversial. Interdisciplinary rehabilitation has also been proposed as a potentially effective noninvasive intervention for persistent and disabling low back pain. **METHODS:** A multidisciplinary panel was convened by the American Pain Society. Its recommendations were based on a systematic review that focused on evidence from randomized controlled trials. Recommendations were graded using methods adapted from the US Preventive Services Task Force and the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) Working Group. **RESULTS:** Investigators reviewed 348 abstracts. A total of 161 randomized trials were deemed relevant to the recommendations in this guideline. The panel developed a total of 18 recommendations. **CONCLUSION:** Recommendations on use of interventional diagnostic tests and therapies, surgery, and interdisciplinary rehabilitation are presented. Due to important trade-offs between potential benefits, harms, costs, and burdens of alternative therapies, shared decision-making is an important component of a number of the recommendations.

**UM Tier 2 Source**

Well-defined methodology and grading scheme.

**Recommendation #4:** In patients with nonradicular low back pain who do not respond to usual, nondisciplinary interventions, it is recommended that clinicians consider interdisciplinary rehabilitation with a cognitive/behavioral emphasis (strong recommendation, high-quality evidence).

**Recommendation #5:** It is recommended that shared decision-making regarding surgery for low back pain include a specific discussion about intensive interdisciplinary rehabilitation as a similarly effective option, the small to moderate average benefit from surgery versus noninterdisciplinary nonsurgical therapy, and the fact that the majority of such patients who undergo surgery do not experience an optimal outcome (defined as minimization of pain, discontinuation of or occasional pain medication use, and return of high level of function). **Recommendation #6:** It is recommended that shared decision-making regarding surgery include a specific discussion about moderate average benefits, which appear to decrease over time in patients who undergo surgery.

**Supports shared decision making.**

**Unvalidated usual practice with face value.**

**Shared Decision Making**

Antebruni D. Introducing decision aids at Group Health was linked to sharply lower hip and knee surgery rates and costs. Health Affairs, 2002, Sep; 21(5): 2004-10. PMID: 12394660

Decision aids are evidence-based sources of health information that can help patients make informed treatment decisions. However, little is known how decision aids affect health care use when they are implemented outside of randomized controlled clinical trials. We conducted an observational study to examine the associations between introducing decision aids for hip and knee arthroplasty and rates of joint replacement surgery and costs in a large health system in Washington State. Consistent with prior randomized trials, our introduction of decision aids was associated with 26 percent fewer hip replacement surgeries, 38 percent fewer knee replacements, and 12-13 percent lower costs over six months. These findings support the concept that patient decision aids for some health conditions, for which treatment decisions are highly sensitive to both patients' and physicians' preferences, may reduce rates of elective surgery and lower costs.

**Consort patients considering joint replacement surgery.**

**Supports use of shared decision-making to avoid surgery that the patient with otherwise not choose.**

**Advance Directives**


**CONCEPT:** It is unclear if advance directives (living wills) are associated with end-of-life expenditures and treatments. **OBJECTIVE:** To describe regional variation in the associations between treatment-limiting advance directives, end-of-life Medicare expenditures, and use of palliative and intensive treatments. **DESIGN, SETTING, AND PATIENTS:** Prospectively collected survey data from the Health and Retirement Study for 3,382 Medicare beneficiaries who died between 1998 and 2007 linked to Medicare claims and the National Death Index. Multivariable regression models examined associations between advance directive use, end-of-life Medicare expenditures, and treatments by level of Medicare spending in the decedent's hospital referral region. **MAIN OUTCOME MEASURES:** Medicare expenditures, life-sustaining treatments, hospice care, and in-hospital death over the last 6 months of life. **RESULTS:** Advance directive use in 95% of cases was associated with lower spending in hospital referral regions with high average levels of end-of-life expenditures ($10,903 per decedent; 95% CI, -$10,903 to -$267), but there was no difference in spending in hospital referral regions with low or medium levels of end-of-life expenditures. Directives were associated with lower adjusted probabilities of in-hospital death (4.8% vs. 5.5%, 95% CI, -10% to -5% in high-spending regions; 5.3% vs. 5.9%, 95% CI, -10% to -4% in medium-spending regions). Advance directives were associated with higher adjusted probabilities of hospice use in high- and medium-spending regions (37% vs. 35%, 95% CI, 2% to 15% in high-spending regions; 33% vs. 39%, 95% CI, 0% to 16% in medium-spending regions), but not in low-spending regions. **CONCLUSION:** Advance directives specifying limitations in end-of-life care were associated with significantly lower levels of Medicare spending, lower likelihood of in-hospital death, and higher use of hospice care in regions characterized by higher levels of end-of-life spending.

**Supports the use of advance directives to reduce the use of inappropriate and costly end-of-life care.**

**Weak identification of relevant citation for use of lay care partner to support patient through pre-operative care.**

**Care partner**

**Fitness for Surgery: Cardiopulmonary Stress**


**Presents guideline for cardiovascular evaluation for patients that will have non-cardiac surgery.**

**UM Tier 2 Source**

Society guideline.

**Guide to preoperative evaluation for non-cardiac surgery.**
Reducing nasal colonization: Reducing skin colonization; Chlorhexidine


Abstract: We quantified surgical site infections (SSIs) after preoperative screening/selective decolonization before elective total joint arthroplasty (TJA) with 2-year follow-up and 2 controls. Concurrent controls (n = 2086) were patients of surgeons not participating in screening/decolonization. Prevention intention (n = 741) were patients of participating surgeons who underwent TJA the previous year. Staphylococcus aureus nasal carriers (321/1285 [25%]) used intranasal mupirocin and chlorhexidine baths as outpatients. Staphylococci SSI occurred in intervention patients (1/219 [0.5%]) and 19 concurrent controls. If all SSIs occurred in carriers and 20% of controls were controls, staphylococcal SSI rate would have been 3.3% in controls (19/573; P = .001). OverallSSI rate decreased from 2.7% (20/741) in intervention controls to 1.2% (17/1440) in intervention patients (P = .009). Preoperative screening/selective decolonization was associated with fewer SSI after elective TJA.

Chlorhexidine

Glycemic Control


Abstract: HYPOTHESIS: Good preoperative glycemic control (hemoglobin A(1c) [HbA(1c)] levels <7%) is associated with decreased infectious complications across a variety of surgical procedures.

COHORT: Includes only male patients.

BACKGROUND: Nasal carriers of Staphylococcus aureus are at increased risk for health care-associated infections with this organism. Desensitization of nasal and extranasal sites on hospital admission may reduce this risk. METHODS: In a randomized, double-blind, placebo-controlled, multicenter trial, we assessed whether rapid identification of S. aureus nasal carriers by means of a real-time polymerase chain reaction (PCR) assay, followed by treatment with mupirocin nasal ointment and chlorhexidine soap, reduced the risk of hospital-associated S. aureus infection. RESULTS: From October 2005 through June 2007, a total of 671 patients were screened on admission. A total of 1270 nasal swabs from 1251 patients were positive for S. aureus. We enrolled 87 of these patients in the intention-to-treat analysis, of whom 808 (88.1%) underwent a surgical procedure. At the S. aureus strain identified by PCR assay were susceptible to mupirocin and mupirocin. The rate of S. aureus infection was 3.4% (17 of 509 patients) in the mupirocin-chlorhexidine group, as compared with 7.7% (32 of 412 patients) in the placebo group (relative risk of infection, 0.42; 95% confidence interval [CI], 0.23 to 0.75). The effect of mupirocin/chlorhexidine treatment was most pronounced for deep surgical site infections (relative risk, 0.21; 95% CI, 0.07 to 0.61). There was no significant difference in all cause in hospital mortality between the two groups. The time to onset of nosocomial infection was shorter in the placebo group than in the mupirocin/chlorhexidine group (P = .005). CONCLUSIONS: The number of surgical site S. aureus infections acquired in the hospital can be reduced by rapid screening and decolonizing of nasal carriers of S. aureus on admission. (Current Controlled Trials number, GCRG05168788.)
Dental screening
Patient Reported
57
56
55
Cycle 3: Optimal surgical process

OBJECTIVES: Patient-reported outcomes (PROs) are essential when evaluating many new treatments in health care; yet, current measures have been limited by a lack of precision, standardization, and comparability of scores across studies and diseases. The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005-2008. J Clin Epidemiol. 2010 Nov; 63(11): 1179-94. PMID: 20685078

CONTEXT: Delirium is a common and serious complication in elderly patients. Evidence suggests that delirium is associated with long-term poor outcome but delirium often occurs in individuals with more severe underlying disease. OBJECTIVE: To assess the association between delirium in elderly patients and long-term poor outcome, defined as mortality, institutionalization, or dementia, while controlling for important confounders. DATA SOURCES: A systematic search of studies published between January 1982 and April 2010 was conducted using the database of MEDLINE, EMBASE, PsycINFO, and CINAHL. STUDY SELECTION: Observational studies of elderly patients with delirium as a study variable and data on mortality, institutionalization, or dementia after a minimum follow-up of 3 months, and published in the English or Dutch language. Titles, abstracts, and articles were reviewed independently by 2 of the authors. Of 2050 references in the original search, 51 relevant articles were identified. DATA EXTRACTION: Information on study design, characteristics of the study population, and outcome were extracted. Quality of studies was based on elements of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for cohort studies. DATA SYNTHESIS: The primary analyses included only high-quality studies with statistical control for age, sex, comorbid illness or frailty, and baseline dementia. Pooling of data was stratified by cohort size with a high-quality risk estimate and pooled delirium incidence. The sensitivity, trim-and-fill, and secondary analyses with unadjusted high-quality risk estimates stratified according to the study characteristics confirmed the robustness of these results. CONCLUSION: This meta-analysis provides evidence that delirium in elderly patients is associated with poor outcome independent of important confounders, such as age, sex, comorbid illness or frailty, and baseline dementia. C51/74

http://www.aaos.org/research/guideline/STDF/PDF_guideline.pdf
Recommen...#1: In the absence of reliable evidence linking poor oral health to prosthetic joint infection, it is the opinion of the work group that patients with prosthetic joint implants or other orthopaedic implants maintain appropriate oral hygiene. Grade of Recommendation: Consensus.

Guideline and evidence report. 2012
http://www.aaos.org/research/guideline/STDF/PDF_guideline.pdf

→ Validates the PROMIS tool to measure patient-related outcomes.

U/LB

→ Supports the conclusion that delirium is associated with poor outcomes.

U/LB

→ Supports the conclusion that delirium is associated with poor outcomes.

U/LB

→ Supports the conclusion that delirium is associated with poor outcomes.

U/LB

→ Validates the PROMIS tool to measure patient-related outcomes.
Cohort comprised of general and cardiovascular surgery in VA System. 3-level conference, and intraoperative management of coagulopathy. Most patients had 9 to 15 fusions.

- The three interventions were associated with a dramatic reduction in complications-in patients with multilevel fusions.

38 / A / 7

Surgical team

Mahr HB, Minna SK, Frankowiak SM, Lurie JD, Mackenzie TA, Dwyer KA. Hospital and surgeon variation in complications and repeat surgery following incident lumbar fusion for common degenerative diagnoses. Health Serv Res. 2013 Feb; 48(1): 1-25. PMID: 23710588


OBJECTIVE: To identify factors that account for variation in complication rates across hospitals and surgeons. METHODS: This study included patients undergoing lumbar fusion surgery in non-profit, nongovernment hospitals in Washington State from 2004 to 2007. STUDY DESIGN: We identified adults (&gt;60 years) undergoing lumbar fusion surgery and examined complications included in the Medicare and Washington State Surgical Quality Improvement Program Database. Operation start time was the independent variable of interest. Logistic regression models with hospital and surgeon random effects were used to examine complications, controlling for patient characteristics and comorbidity. RESULTS: Complications within 90 days of a fusion occurred in 4.8 percent of patients, and 2.2 percent had a reoperation. Hospital effects accounted for 54.5 percent of the variation in hospital complication rates, and 47.2 percent of the variation in hospital reoperation rates. The discretionary use of operative features, such as the inclusion of bone morphogenic proteins, accounted for 30 and 50 percent of the variation in surgeons' reoperation and complication rates, respectively. CONCLUSIONS: To improve the safety of lumbar spinal fusion surgery, quality improvement measures that focus on preoperative screening of patients undergoing lumbar fusion surgery are unacceptable. System approaches are necessary to increase patient safety.

39 / A / 7

Time of surgery start


Objective: To examine the association between surgical start time and morbidity and mortality for patients undergoing lumbar fusion surgery. METHODS: This study included patients undergoing a lumbar fusion procedure during 2000-2004 and entered into the National Surgical Quality Improvement Program Database. Operation start time was the independent variable of interest. Logistic regression models with hospital and surgeon random effects were used to examine complications, controlling for patient characteristics and comorbidity. RESULTS: Complications within 90 days of surgery occurred in 5.1 percent of patients, and 1.3 percent had a reoperation. Hospital effects accounted for 54.5% of the variation in hospital complication rates, and 47.2% of the variation in hospital reoperation rates. The discretionary use of operative features, such as the inclusion of bone morphogenic proteins, accounted for 30 and 50 percent of the variation in surgeons' reoperation and complication rates, respectively. CONCLUSIONS: To improve the safety of lumbar spinal fusion surgery, quality improvement efforts that focus on surgeons' discretionary use of operative techniques may be more effective than those that target hospitals.

39 / A / 6

Industry reps in OR


- Abstract Study Design: Retrospective consecutive case review pre- and post-intervention. Objectives: Characterize the effects of the intervention. Summary of Background Data: Complication rates in adult spine deformity surgery are unacceptable. System approaches are necessary to increase patient safety. This group reported on the dualeattending surgeon approach, a live multidisciplinary, preoperative screening conference, and the intraoperative protocol for the management of coagulopathy. The outcomes were demonstrated by complication rates before and after the institution of this protocol. Methods: Forty consecutive patients in Group A were managed without the 3-pronged approach. A total of 124 consecutive patients in Group B had a dualeattending surgeon approach, were presented and cleared by a live multidisciplinary preoperative conference, and were managed according to the intraoperative protocol. Results: Group A had an average age of 62 years (range, 39-64 years). Group B had an average age of 64 years (range, 38-64 years). Most patients in both groups had fusions from 9 to 13 levels. Complication rates in Group B were significantly lower (10% vs. 52%) (p &lt; 0.001). Group B showed significantly lower return rates to the operating room during the periperaoperative 90-day period (5.8% vs. 13.2%) (p &lt; 0.001). Group B also had lower rates of wound infection requiring debridement (1.6% vs. 7.5%), lower rates of deep vein thrombosis/pulmonary embolism (2.3% vs. 10%), and lower rates of postoperative neurological complications (0.2% vs. 2.8%) (not significant). Group B had significantly lower rates of utricular tract infection requiring antibiotics (9.7% vs. 32.5%) (p &lt; 0.001). Conclusions: These data suggests that a team approach consisting of a dualeattending surgeon approach in the operating-room, a live preoperative screening conference, and an intraoperative protocol for managing coagulopathy will significantly reduce perioperative complication rates and enhance patient safety in patients undergoing complex spinal reconstructions for adult spinal deformity. 2014 Spine Research Society

39 / A / 5

Surgical Team

Kelz RR, Freeman KM, Hosokawa PW, Asch DA, Spitz FR, Moskowitz M, September 2014

Industry reps in OR


http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3465627/

- Abstract: OBJECTIVE: To examine the association between surgical start time and morbidity and mortality for patients undergoing lumbar fusion surgery. METHODS: This study included patients undergoing a lumbar fusion procedure during 2000-2004 and entered into the National Surgical Quality Improvement Program Database. Operation start time was the independent variable of interest. Logistic regression models with hospital and surgeon random effects were used to examine complications, controlling for patient characteristics and comorbidity. RESULTS: Complications within 90 days of a fusion occurred in 4.8 percent of patients, and 2.2 percent had a reoperation. Hospital effects accounted for 54.5% of the variation in hospital complication rates, and 47.2% of the variation in hospital reoperation rates. The discretionary use of operative features, such as the inclusion of bone morphogenic proteins, accounted for 30 and 50 percent of the variation in surgeons' reoperation and complication rates, respectively. CONCLUSIONS: To improve the safety of lumbar spinal fusion surgery, quality improvement efforts that focus on surgeons' discretionary use of operative techniques may be more effective than those that target hospitals.
Acetaminophen, NSAIDs, and/or COX-2 inhibitors all reduce morphine need after surgery.

September 2014 ➔ CMS standard for measures to prevent infection and venous thromboembolism for perioperative patients.

Chlorhexidine; Reducing antibiotic colonization

101 out of 165 eligible patients were randomized which might limit external validity. Otherwise, the authors analyzed data from 514 patients: placebo-control trials (N=273 subjects) using acetaminophen, nonsteroidal antiinflammatory drugs, or selective cyclooxygenase-2 inhibitors. Two inhibitors given in conjunction with morphine after surgery. The median of the average 24-hour morphine consumption in controls was 49 mg (range, 15-117 mg); it was significantly decreased with all regimens by 15-55%. There was evidence of a reduction in pain intensity at 24 h (1 cm on the 0-10 visual analog scale) only with nonsteroidal antiinflammatory drugs. Nonsteroidal antiinflammatory drugs also significantly reduced the incidence of nausea/vomiting from 18.8% to 22.0% (number needed to treat, 15) and of sedation from 14.5% to 17.7% (number needed to treat, 27) but increased the risk of severe bleeding (from 0% to 1.7% number needed to harm, 59). Selective cyclooxygenase-2 inhibitors increased the risk of renal failure in cardiac patients from 0% to 1.6% (number needed to harm, 79). A decrease in morphine consumption is not a good indicator of the usefulness of a multimodal analgesic. Morbid obesity limits the usefulness of a supplemental analgesic. There is evidence that the combination of nonsteroidal antiinflammatory drugs with patient-controlled analgesia morphine offers some advantages over morphine alone.

Anesthesiology. 2010 Sep;113(3):639-46. PMID: 20693876


BACKGROUND: Ketamine is an N-methyl-d-aspartate receptor antagonist that has been shown to be useful in the reduction of acute postoperative pain and analgesic consumption in a variety of surgical interventions with variable routes of administration. It is known regarding its efficacy in opiate-dependent patients with a history of chronic pain. We hypothesized that ketamine would reduce postoperative opioid consumption in this patient population. METHODS: This was a randomized, prospective, double-blinded, and placebo-controlled trial involving opiate-dependent patients undergoing major lumbar spine surgery. Fifty-two patients in the treatment group were administered 0.5 mg/kg intravenous ketamine on induction of anesthesia, and a continuous infusion at 10-mg/hr kg(-1) for 60 min was begun on induction and terminated at wound closure. Fifty patients in the placebo group received saline of equivalent volume. Patients were observed for 48 h postoperatively and followed up at 6 weeks. The primary outcome was 48-h morphine consumption. RESULTS: Total morphine consumption (morphine equivalents) was significantly reduced in the treatment group 48 h after the procedure. It was also reduced at 24 h and at 6 h. The average reported pain intensity was significantly reduced in the postanesthesia care unit and at 6 weeks. The groups had no differences in known ketamine- or opioid-related side effects. CONCLUSIONS: Intraoperative ketamine reduces opioid consumption in the 48-h postoperative period in opiate-dependent patients with chronic pain. Ketamine may also reduce opioid consumption and pain intensity throughout the postoperative period in this patient population. This benefit is without an increase in side effects.


Introduction: The CMS Surgical Care Improvement Project (SCP) measures are a subset of National Quality Hospital Measures created through the joint efforts of the Centers for Medicare & Medicaid and the Joint Commission. The SCP measures link to National Hospital Quality Measures created through the joint efforts of the Centers for Medicare & Medicaid and the Joint Commission. The SCP measures have been endorsed by the National Quality Forum, and are used by Hospital Compare, the Premier demonstration, and RHQDAPU. Corresponding measures are used by PQRI at the individual physician level. The NQF endorsed measures are calculated across a defined list of projects/DemoProjectsEvalRpts/downlo...00025&LSLINK=80&D=ovft00000542-200512000-S&CSC=Y&NEWS=N&PAGE=fulltext&AN=


September 2014 - Bree Collaborative Lumbar Fusion Evidence Table

Abstract: We quantified surgical site infections (SSIs) after preoperative screening/selective decolonization of Staphylococcus aureus carriers with topical chlorhexidine alcohol. Preintervention carriers (n = 74) were patients of participating surgeons who underwent total joint arthroplasty (TJA) the previous year. Staphylococcus aureus colonization was present in 25% of participating surgeons' patients and 25% of control surgeons' patients. SSI prophylaxis was provided by parenteral antibiotics in 95% of participating surgeons' patients and 95% of control surgeons' patients. Preintervention carriers (n = 74) were patients of participating surgeons who underwent TJA the previous year. Staphylococcus aureus nasal carriers (22/528) (21%) used intraoral myringotomy and cholesteatoma or middle ear disease. Staphylococcal SSI occurred in 19 intervention patients (2022) and 19 control patients (2022). Of all SSI occurred in carriers and 25% of controls were carriers, staphylococcal SSI rate would have been 3.3% in controls (19/571; P = .001). Overall SSI rate decreased from 2.7% (20/741) to 1.2% (17/1440) in intervention patients (P = .001). Preoperative screening/selective decolonization was associated with fewer SSI after tetracycline.

September 2014

Ketamine is an N-methyl-d-aspartate receptor antagonist that has been shown to be useful in the reduction of acute postoperative pain and analgesic consumption in a variety of surgical interventions with variable routes of administration. It is known regarding its efficacy in opiate-dependent patients with a history of chronic pain. We hypothesized that ketamine would reduce postoperative opioid consumption in this patient population. METHODS: This was a randomized, prospective, double-blinded, and placebo-controlled trial involving opiate-dependent patients undergoing major lumbar spine surgery. Fifty-two patients in the treatment group were administered 0.5 mg/kg intravenous ketamine on induction of anesthesia, and a continuous infusion at 10-mg/hr kg(-1) for 60 min was begun on induction and terminated at wound closure. Fifty patients in the placebo group received saline of equivalent volume. Patients were observed for 48 h postoperatively and followed up at 6 weeks. The primary outcome was 48-h morphine consumption. RESULTS: Total morphine consumption (morphine equivalents) was significantly reduced in the treatment group 48 h after the procedure. It was also reduced at 24 h and at 6 h. The average reported pain intensity was significantly reduced in the postanesthesia care unit and at 6 weeks. The groups had no differences in known ketamine- or opioid-related side effects. CONCLUSIONS: Intraoperative ketamine reduces opioid consumption in the 48-h postoperative period in opiate-dependent patients with chronic pain. Ketamine may also reduce opioid consumption and pain intensity throughout the postoperative period in this patient population. This benefit is without an increase in side effects.


Tranexamic acid to reduce bleeding


BACKGROUND: Tranexamic acid (TXA) is well-established as a versatile oral, intramuscular, and intravenous (IV) antifibrinolytic agent. However, the efficacy of IV TXA in reducing perioperative blood transfusion in spinal surgery is poorly documented. METHODOLOGY: We conducted a meta-analysis of randomized controlled trials (RCTs) and quasi-randomized (q-RCTs) trials that included patients for various spinal surgeries, such as adolescent scoliosis surgery administered with perioperative IV TXA according to Cochrane Collaboration guidelines using electronic PubMed, Cochrane Central Register of Controlled Trials, and Embase databases. Additional journal articles and conference proceedings were manually located by two independent researchers. RESULTS: Totally, nine studies were included, with a total sample size of 581 patients. Mean blood loss was decreased in patients treated with perioperative IV TXA by 128.28 ml intraoperatively (ranging from 33.84 to 222.73 ml), 98.49 ml postoperatively (ranging from 83.22 to 113.77 ml), and 389.21 ml combined (ranging from 177.83 to 600.60 ml). The mean volume of transfused packed cells were reduced by 134.55 ml (ranging 51.64 to 217.46) (95% CI; P = 0.0001). Overall, the number of patients treated with TXA who required blood transfusions was lower by 35% than that of patients treated with the comparator and who required blood transfusions (RR 0.65; 95% CI; 0.53 to 0.85; P<0.0001, I(2) = 0%). A dose-independent beneficial effect of TXA was observed, and confirmed in subgroup and sensitivity analyses. A total of seven studies reported DVT data. The study containing only a single DVT case was not combined. CONCLUSIONS: The blood loss was reduced in spinal surgery patients with perioperative IV TXA treatment. Also the percentage of spinal surgery patients who required blood transfusion was significantly decreased. Further evaluation is required to confirm our findings before TXA can be safely used in patients undergoing spine surgery.


BACKGROUND: Spinal reconstructive surgery in adults can be associated with significant blood loss, often requiring allogeneic blood transfusion. The objective of this randomized, prospective, double-blind, multicenter study was to evaluate the efficacy of tranexamic acid (TXA) in reducing perioperative blood loss and transfusion in adult patients having elective posterior thoracic/lumbar instrumented spinal fusion surgery. METHODS: One hundred fifty-one adult patients were randomized to receive either a bolus of 10 mg/kg IV of TXA after induction followed by a maintenance infusion of 1 mg/kg/hr of TXA, or an equivalent volume of placebo (normal saline). The primary outcome was the total perioperative estimated and calculated blood loss intraoperatively and 24 h postoperatively. Secondary outcomes were incidence of allogeneic blood exposure, and duration of hospital stay. RESULTS: Four patients were withdrawn for identifiable surgical bleeding; therefore 147 patients were included in the analysis. The total estimated and calculated blood loss was approximately 10% and 30% lower in patients given TXA versus placebo (1592 +/- 1315 mL vs 2138 +/- 1607 mL, P = 0.026; 3079 +/- 2558 vs 4363 +/- 3030, P = 0.017), respectively. There was no difference in the amounts of blood products transfused, and length of stay between the two groups. TXA, surgical duration, and number of vertebrae fused were independent factors related to perioperative blood loss. Predictors for the need for allogeneic red blood cell transfusion were ASA classification, surgical duration and number of levels fused. CONCLUSIONS: TXA significantly reduced the estimated and calculated total amount of perioperative blood loss in adult patients having elective posterior thoracic/lumbar instrumented spinal fusion surgery.

Meta-analysis of high-quality studies. Heterogeneity of some outcomes. Insufficient safety data. Are blood loss and transfusion needs intermediate or patient-oriented outcomes? → Provides modest support for use of TXA to reduce blood loss and transfusion need in spinal surgery.

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Meta-analysis of high-quality studies. Heterogeneity of some outcomes. Insufficient safety data. Are blood loss and transfusion needs intermediate or patient-oriented outcomes? → Provides modest support for use of TXA to reduce blood loss and transfusion need in spinal surgery.
TRANEXAMIC ACID TO REDUCE BLEEDING


BACKGROUND: Concerns regarding the safety of transfused blood have led to the development of a range of interventions to minimize blood loss during major surgery. Anti-fibrinolytic drugs are widely used, particularly in cardiac surgery, and previous reviews have found them to be effective in reducing blood loss, the need for transfusion, and the need for re-operation due to continued or recurrent bleeding. In the last few years questions have been raised regarding the comparative performance of the drugs. The safety of the most popular agent, aprotinin, has been challenged, and it was withdrawn from world markets in May 2008 because of concerns that it increased the risk of cardiovascular complications and death. OBJECTIVES: To assess the comparative effects of the anti-fibrinolytic drugs aprotinin, tranexamic acid (TXA), and epsilon aminocaproic acid (EACA) on blood loss during surgery, the need for red blood cell (RBC) transfusion, and adverse events, particularly vascular occlusion, renal dysfunction, and death. SEARCH STRATEGY: We searched the Cochrane Injuries Group’s Specialised Register (July 2010), Cochrane Central Register of Controlled Trials (The Cochrane Library 2010, Issue 3), MEDLINE (Ovid SP) 1950 to July 2010, EMBASE (Ovid SP) 1980 to July 2010. References in identified trials and review articles were checked and trial authors were contacted to identify any additional studies. The searches were last updated in July 2010. SELECTION CRITERIA: Randomised controlled trials (RCTs) of anti-fibrinolytic drugs in adults scheduled for non-urgent surgery. Eligible trials compared anti-fibrinolytic drugs with placebo (or no treatment), or with each other. DATA COLLECTION AND ANALYSIS: Two authors independently assessed trial quality and extracted data. This version of the review includes a sensitivity analysis excluding trials authored by Prof. Joachim Boldt. MAIN RESULTS: This review summarises data from 252 RCTs that recruited over 25,000 participants. Data from the head-to-head trials suggest an advantage of aprotinin over the lysine analogues TXA and EACA in terms of reducing perioperative blood loss, but the differences were small. Compared to control, aprotinin reduced the probability of requiring RBC transfusion by a relative 34% [95% CI 0.66 to 0.83, P = 0.0001; 7 trials]. It was more effective in reducing the need for transfusion (RR 0.90; 95% CI 0.81 to 0.99). This translates into an absolute reduction of 3% from a stroke where risk of transfusion of 50% (95% CI 10 to 10). A similar trend was seen with EACA (RR 0.32, 95% CI 0.11 to 0.99) but not TXA (RR 0.80, 95% CI 0.55 to 1.17). The blood transfusion burden, and costs. Grade 2 suggestions imply that individual patient values may lead to different choices (for a full discussion of the grading, see the “Grades of Recommendation” chapter by Guyatt et al). Among the key recommendations in this chapter are the following: we recommend that every hospital develop a formal strategy that addresses the prevention of VTE (Grade 1A). We recommend that all patients be assessed for their risk of VTE, and that most receive thromboprophylaxis (Grade 1A). We recommend that, on admission to the ICU, all patients be assessed for their risk of VTE, and that most receive thromboprophylaxis (Grade 1A).
Glycemic Control

OBJECTIVE: Hospital hyperglycemia, in individuals with and without diabetes, has been identified as a marker of adverse clinical outcome in cardiac surgery patients. However, the impact of perioperative hyperglycemia on clinical outcome in general and noncardiac surgery patients is not known. RESEARCH DESIGN AND METHODS: This was an observational study with the aim of determining the relationship between pre- and post-surgery blood glucose levels and hospital length of stay (LOS), complications, and mortality in 3,184 non-cardiac surgery patients consecutively admitted to Emory University Hospital (Atlanta, GA) between 1 January 2007 and 30 June 2007. RESULTS: The overall 30-day mortality was 2.3%, with nonsurgical having significantly higher blood glucose levels before and after surgery (P < 0.01) than survivors. Perioperative hyperglycemia was associated with increased hospital and intensive care unit LOS (P < 0.001) as well as higher numbers of postoperative complications of pneumonia (P < 0.001), systemic blood infection (P < 0.001), urinary tract infection (P < 0.001), acute necrotic failure (P < 0.001), and acute myocardial infection (P = 0.003). In multivariate analysis (adjusted for age, sex, race, and surgery severity), the risk of death increased in proportion to perioperative glucose levels; however, this association was significant only for patients without a history of diabetes (P = 0.018) compared with patients with known diabetes (P = 0.048). CONCLUSIONS: Perioperative hyperglycemia is associated with increased LOS, hospital complications, and mortality after noncardiac surgery. Further randomized controlled trials are needed to determine whether perioperative diabetes management improves clinical outcomes in noncardiac surgery patients.

Early mobilization
Ferrell J. Obstacles to early mobilization after spinal fusion and effect on hospital length of stay. Spine Journal. 2013; 13(9): suppl, 168S.

BACKGROUND CONTEXT: Recovery after spinal fusion continues to be refined through better multidisciplinary care. Various recovery protocols exist, all which incorporate and emphasize early and immediate postoperative mobilization. Mobilizing patients on the day of surgery is thought to improve functional recovery of range of motion and reduce hospital length of stay (LOS). METHODS: All patients undergoing elective primary or revision spine fusion between August 2010 and June 2011 within a four-hospital health system were retrospectively reviewed. Patients evaluated by physical therapy (PT) the day of surgery were included in the study analysis. Ambulation was attempted the day of surgery with PT, with or without the use of assistive devices. If a distance of at least 30 feet was not reached, a questionnaire indicating the reason(s) was completed. Distance ambulated on the day of surgery, obstacles impeding ambulating 30 feet, and LOS were recorded. Patients reaching the in-patient unit after 1500 hours were excluded. RESULTS: Seventy percent of patients (220/315) successfully ambulated at least 30 feet on the day of surgery. Forty-seven patients were not evaluated secondary to personnel related factors. A total of 85 patients ambulated under 30 feet, citing most commonly: orthostasis/hypotension 29.4% (25/85), drowsiness 25.9% (22/85), nausea (23.5%), pain (17.6%), drowsiness (15%), fatigue (8.2%), and pain (10%), as limiting reasons. The average LOS of patients ambulating at least 30 feet the day of surgery was 1.85 days versus 2.79 days in those ambulating less (p<0.05). CONCLUSIONS: The benefits of early postoperative mobilization are well recognized and this study highlights major obstacles limiting early ambulation after spinal fusion. Focusing continued multidisciplinary efforts towards such factors as postoperative hypotension, nausea, drowsiness, and pain after elective spinal fusion may further improve our development of rapid recovery programs. Furthermore, ambulating a distance of at least 30 feet the day of surgery correlates with a statistically significant shorter LOS.

Discharge Process

"Washington State Care Transitions" is a state-wide initiative to foster safe, timely, effective, and coordinated care as patients move between settings. The six strategies are as follows: consistent plan of care with primary care provider and home health care (if applicable) upon arrival and discharge from the hospital; coordinated follow-up call or visit at discharge; timely visit to primary care provider; reevaluation of medications soon after transition; patient education coordinated between settings; and support through increased care management for high-risk patients.

Cycle 4: Post-operative Care and Return to Function

V Junior Trainee / A Fellow
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<td>BACKGROUND: Emergency department visits and rehospitalization are common after hospital discharge. OBJECTIVE: To test the effects of an intervention designed to minimize hospital utilization after discharge. DESIGN: Randomized trial using block randomization of 6 and 8. Randomly arranged index cards were placed in opaque envelopes labeled consecutively with study numbers, and participants were assigned to a study group by revealing the index cards. SETTING: General medical service at an urban, academic, safety-net hospital. PATIENTS: 748 English-speaking hospitalized adults (mean age: 49.9 years). INTERVENTION: A nurse discharge advocate worked with patients during their hospital stay to arrange follow-up appointments, confirm medication reconciliation, and conduct patient education with an individualized instruction booklet that was sent to their primary care provider. A clinical pharmacist called patients 2 to 4 days after discharge to reinforce the discharge plan and review medications. Participants and providers were not blinded to treatment assignment. MEASUREMENTS: Primary outcomes were emergency department visits and hospitalizations within 30 days of discharge. Secondary outcomes were self-reported preparedness for discharge and frequency of primary care providers' follow-up within 30 days of discharge. Research staff doing follow-up were blinded to study group assignment. RESULTS: Participants in the intervention group (n = 370) had a lower rate of hospital utilization than those receiving usual care (n = 368) (0.314 vs. 0.451 visit per person per month; incidence rate ratio, 0.695 [95% CI, 0.515 to 0.937]; P = 0.009). The intervention was most effective among participants with hospital utilization in the 6 months before index admission (P = 0.014). Adverse events were not assessed; these data were collected but are still being analyzed. LIMITATION: This was a single-center study in which not all potentially eligible patients could be enrolled, and outcome assessment sometimes relied on participant report. CONCLUSION: A package of discharge services reduced hospital utilization within 30 days of discharge. FUNDING: Agency for Healthcare Research and Quality and National Heart, Lung, and Blood Institute, National Institutes of Health.</td>
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<td>We found that specially designed exercise programmes for people who have had back decompression surgery can help to reduce back pain and can improve their ability to carry out everyday tasks. This was true both in the short term (within six months of surgery) and over the long term (at 12 months). Because only three studies were suitable to be included, we cannot be certain that future studies will not change these conclusions.</td>
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