Cycle 1: Disability due to back pain despite conservative therapy

Measurement of Disability


Abstract

We utilized several CAT instruments available through PROMIS and correlated these with the results obtained from patients complaining of back or leg pain, visiting a university-based spine clinic. All questionnaires were collected electronically using a tablet computer. OBJECTIVE: The aim of this study was to compare the psychometric properties of the PROMIS PF CAT with the ODI and SF36 Physical Function Domain in the same patient population. SUMMARY OF BACKGROUND DATA: Evidence-based decision-making is improved by using high-quality patient-reported outcome measures. Prior studies have revealed the shortcomings of the ODI and SF36, commonly used in spine patients. The PROMIS network has developed measures with excellent psychometric properties. The Physical Function domain, delivered by Computerized Adaptive Testing (CAT), performs well in the spine patient population, though to-date direct comparisons with common measures have not been performed. METHODS: Standard Rasch analysis was performed to directly compare the psychometrics of the PF CAT, ODI, and SF36-PI. Spearman correlations were computed to examine the correlations of the five instruments. RESULTS: One thousand six hundred seven patients were administered all assessments. The time required to answer all items in the PF CAT, ODI, and SF36-PI was 44, 60, and 130 seconds. The ceiling and floor effects were excellent for the ODI (5.85% and 46.64%) and SF36-PI (5.97% and 23.65%). All instruments significantly correlated with each other. CONCLUSION: The PROMIS PF CAT supports the ODI and SF36-PI in the spine patient population and is highly correlated. It has better coverage, while taking less time to administer with fewer questions to answer.


Abstract

PROMIS Physical Function CAT (PF CAT) questionnaires were prospectively collected from 807 patients complaining of back or leg pain, visiting a university-based spine clinic. All questionnaires were collected electronically using a tablet computer. OBJECTIVE: The aim of this study was to show that PROMIS CAT assessments of physical function and pain interference can be efficiently collected in a standard office visit and evaluate these scores with scores from previously validated Oswestry Disability Index (ODI) and Neck Disability Index (NDI) providing evidence of convergent validity for use in patients with spine pathology. SUMMARY OF BACKGROUND DATA: Chronic low back pain is a serious clinical problem that has an immense impact on society. The Oswestry Disability Index (ODI) and the Neck Disability Index (NDI) are currently the most widely used outcome measures for patients undergoing surgery for lumbar or cervical spine pathology. Convergent validity for use in patients with spine pathology remains untested for the ODI and NDI. METHODS: All measurements were collected at a routine clinical visit. The ODI and the NDI assessments were used as "gold standard" comparisons for the PROMIS CATs. Results: PRELIMINARY RESULTS: The PF CAT, ODI, and NDI mean scores were 35 ± 16 seconds, compared with ODI/NDI requiring 10 questions and taking 188 ± 85 seconds when administered electronically. Lower regression analysis of retrospective scores involving a primary back complaint revealed moderate to strong correlations between ODI and PROMIS physical function with values ranging from 0.598 to 0.697 depending on the specific assessment and patient subsets examined. CONCLUSION: Routine collection of physical function outcome measures in clinical practice offers the ability to inform and improve patient care. We have shown that several PROMIS CAT instruments can be efficiently administered during routine clinical visits. The moderate to strong correlations found validate the utility of computer adaptive testing when compared with the gold standard "static" legacy assessments.

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Measurement of disability


Objective: To examine the relationship between the Patient Reported Outcome Measurement Information System (PROMIS) Pain Interference (PI) and Physical Function (PF) scales in patients with spinal pain at a university spine center. Design: Retrospective analysis of prospectively collected patient-reported outcomes data in a university spine center. Pearson correlation coefficient was used to estimate the relationship of the PROMIS PI and PF scores. Age, gender, and race were analyzed by subgroups on the PROMIS Physical Function and Pain Interference score. Linear regression analyzed predictive relationships. Statistical significance was set at P < 0.05. Results: A total of 1,962 participants completed an assessment, with 1,923 completing the PI CAT and 1,927 the PF CAT. Participants' mean age was 52.9 years (range = 18-94 years, SD = 6.5 years). Correlation analysis of the PROMIS PI with the PROMIS Physical Function showed a Pearson correlation value of 0.717 (P < 0.01). There was a strong linear relationship with a high negative correlation between BSF and PI CAT. The PI CAT predicted PI CAT scores (r = 0.723, P < 0.001). Conclusions: For patients with pain from spinal origin, there is a strong negative correlation between self-reported physical function and pain interference related to physical, social, and mental health. The predictive relationship of function from pain scores supports the PROMIS PI being used as an important adjunct measure of physical function in patients with spinal pain.


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Measurement of disability


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Measurement of disability


BACKGROUND: Preference-based health index scores provide a single summary score assessing overall health related quality of life and can use as an outcome measure in clinical trials. Methods: A study of 209 patients with medical conditions including heart disease, cancer, rheumatoid arthritis, osteoarthritis, psychologic disorders, COPD, spinal injury, and other conditions. A subset of PROMIS questions can be used to measure the effect of pain on interfering with outcomes reported by patients. Study correlated selected PROMIS domains with EQ-SD that feature a single numeric score for quality of life that has been applied to economic analyses. Cohort included a broad array of medical conditions including heart disease, cancer, rheumatoid arthritis, osteoarthritis, psychologic disorders, COPD, spinal injury, and other conditions.

METHODS: This was a secondary analysis of health outcome data collected in an internet survey as part of the PROMIS Wave 1 field testing. For this study, we included the 10 global items and the physical function, fatigue, pain impact, anxiety, and depression item banks. Linear regression analyses were used to predict EQ-SD index scores based on the global items and selected domain banks. RESULTS: The regression models using eight of the PROMIS global items (quality of life, physical activities, mental health, emotional problems, social activities, pain, fatigue and either general health or physical health items) explained 65% of the variance in the EQ-SD. When the PROMIS domain scores were included in a regression model, 54% of the variance was explained in EQ-SD scores. Comparisons of predicted to actual EQ-SD scores by sex and gender groups showed that they were similar. CONCLUSIONS: EQ-SD preference scores can be predicted accurately from either the PROMIS global items or selected domain banks. Domain of the derived regression model is the most appropriate measure of health preference scores from the PROMIS health measure for use in economic evaluations.

Measurement of disability


BACKGROUND: Preference-based health index scores provide a single summary score assessing overall health related quality of life and can use as an outcome measure in clinical trials. Methods: A study of 209 patients with medical conditions including heart disease, cancer, rheumatoid arthritis, osteoarthritis, psychologic disorders, COPD, spinal injury, and other conditions. The results indicated that the PROMIS PI items constitute a psychometrically sound bank. The reliability was excellent, Cronbach's alpha ranged from 0.92 to 0.98. The authors concluded that PROMIS PI items constitute "psychometrically sound bank" that can be used in computerized adaptive testing.

Measurement of disability


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Measurement of disability

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Computerized adaptive testing and short forms are available.

Anger was low compared with other patient-reported outcome measures. Single regression using a simple number of predictors with back pain is in which function scores were correlated with self-reported pain and Oswestry disability index. Questionnaire is rapidly completed by patients and in wide use.

--> In this study statistical validation was less robust than for some other patient-reported outcome measures.

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Measurement of disability


UC

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This two-phase study was conducted to identify measure domains of patient-reported outcomes from the perspective of people who experience chronic pain. In Phase I, focus groups were conducted to generate a list of outcome domains that respondents believe are important to evaluate the efficacy and effectiveness of treatments. In Phase II, 1525 people with chronic pain were asked to rate the importance of 33 domains identified by the focus groups on a scale of 0 to 10 (i.e., 0 = "not at all important" and 10 = "extremely important"). The survey was completed by 1033 individuals. The results indicate that all 15 aspects of daily life were identified by the focus groups. The domains were considered important with a majority of respondents indicating a score of 8 or higher. In addition to pain intensity, the most important aspects were employment, emotional well-being, fatigue, social supports, and sleep-related problems. Chronic pain clearly impacts health-related quality of life. The results of the two phases of the study indicate that people with chronic pain consider functioning and well-being as important areas affected by the presence of symptoms and as appropriate targets of treatment. These multiple outcomes should be considered when evaluating the efficacy and effectiveness of chronic pain treatments.

Measurement of disability

Tuck RL, Sperry JL, Spader K, Spader E, Use of development of physical and mental health summary scores from the patient-reported outcomes measurement information system (PROMIS) global items. Qual Life Res. 2009 Sep;18(8):783-9. PMID: 19041903

UC

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1767368/

This study aimed to develop physical and mental health summary scores based on PROMIS global items. These items are completed by people with chronic pain and the therefore have been used for assessing health status at the population level. The results of this study can be used to assess change in interventions where physical function or mental health is expected to change. The results of this study indicate that the PROMIS global items can be used to efficiently summarize physical and mental health in patient-reported outcome studies.

Measurement of disability


UC

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4670474/

OBJECTIVES: To evaluate the validity of the PROMIS Physical Function Computerized Adaptive Test and fixed-length short form in chronic health conditions (E1 DESIGN AND SETTING: Individuals with rheumatoid arthritis (RA), major depressive disorder (MDD) back pain, chronic obstructive pulmonary disease (COPD), chronic heart failure (CHF), and cancer completed the PROMIS Physical Function computerized adaptive test or fixed-length short form at baseline and at the end of usual care. Follow-up intervals. Anchor items were also administered to assess change in physical function and general health. Linear mixed-effects models and standardized regression weights were estimated at baseline and follow-up. RESULTS: 4476 incident participants (COPD n = 213, CHF n = 736, back pain n = 176, MDD n = 434, RA n = 644, cancer n = 506). The PROMIS Physical Function scores improved significantly with treatment of COPD. The patients’ back pain patients but not for patients with MDD or COPD. Most of the patient samples that reported improvement in pain intensity. The results provide evidence that the PROMIS Physical Function scores are sensitive to change in interventions where physical function is expected to change and are able to distinguish between different clinical samples. The results of this study indicate that the PROMIS Physical Function computerized adaptive test or fixed-length short form is a reliable and valid measure of change in physical function.

A survey of 109 patients with chronic pain was used to determine categories of impact on daily activities. Separation bias may be a shortcoming of the method used related to those who choose to take the survey.

"Authors conclude that "people with chronic pain consider functioning and well-being as important areas affected by the presence of symptoms and as appropriate targets of treatment. These multiple outcomes should be considered when evaluating the efficacy and effectiveness of chronic pain treatments."
### Decision pending

- **Nonsurgical Treatment**
  - **Sacroplasty**
  - **Kyphoplasty and Vertebroplasty**

**Findings and Decision on Clinical Committee**

- **Spinal Cord Stimulation**
- **Facet Neurotomy**
- **Discography**
- **Cervical Spinal Fusion**

### Comprehensive recommendations for evaluation of nonsurgical therapy for adult patients with low back pain and sciatica.

### Document lists decision rules for coverage for cervical spinal fusion.

### Document lists decision rules for coverage for discography.

### Document does not support coverage for deformity.
Nonsurgical Treatment versus Surgery


BACKGROUND: Management of degenerative spondylolisthesis with spinal stenosis is controversial. Surgery is widely used, but its effectiveness in comparison with that of nonsurgical treatment has not been demonstrated in controlled trials. METHODS: Surgical candidates from 13 centers in 11 U.S. states who had at least 12 weeks of symptoms and imaging-confirmed degenerative spondylolisthesis were offered enrollment in a randomized cohort or an observational cohort. Treatment was standard decompressive laminectomy (with or without fusion) or usual nonsurgical care. The primary outcome measures were the Medical Outcomes Study 12-Item Short-Form General Health Survey (SF-12) bodily pain and physical function scores (100-point scales, with higher scores indicating less severe symptoms) at 6 weeks, 3 months, 6 months, 1 year, and 2 years. RESULTS: We enrolled 304 patients in the randomized cohort and 303 in the observational cohort. The baseline characteristics of the two cohorts were similar. The one-year crossover rates were high in the randomized cohort (approximately 40% in each direction) but moderate in the observational cohort (15% crossover to nonsurgical care). The intention-to-treat analysis showed no statistically significant effects for the primary outcomes. The as-treated analysis for both cohorts combined showed a significant advantage for surgery at 3 months that increased at 1 year and diminished only slightly at 2 years. The treatment effects at 2 years were 18.1 for bodily pain (95% confidence interval [CI], 14.5 to 21.7), 18.3 for physical function (95% CI, 14.4 to 23.0), and -16.7 for the Oswestry Disability Index (95% CI, -19.5 to -13.9). There was little evidence of harm from either treatment. CONCLUSIONS: In nonrandomized as-treated comparisons with careful control for potentially 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 nonsurgically. (ClinicalTrials.gov number, NCT00000640 [ClinicalTrials.gov]).

Two-year study of lumbar decompression and fusion versus non-surgical care for degenerative lumbar spondylolisthesis and spinal stenosis. A combination of randomized and observational study with substantial crossover and inconsistent control care. No difference reported to the four-year Weinstein/JBJS article cited elsewhere. Cohort had neurogenic claudication or radiating leg pain with associated neurologic signs for at least 12 weeks and degenerative spondylolisthesis on lateral radiographs with patient standing position. Non-surgical care not prescribed. 94% of group randomized to surgery (158/168) had fusion. The RCT portion of the trial showed no difference in surgery vs no surgery but this is 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 receiving surgery, the intraoperative complication rate was 13%, postop complication rate was 13%, and rate of major surgery within one year was 6%.

In the nonrandomized as-treated comparisons, of symptomatic 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 nonsurgically. (But with high complication rate).

Nonsurgical Treatment versus Surgery


Weinstein JN, et al. Surgical compared with nonoperative treatment for lumbar degenerative spondylolisthesis. Four year results in the Spine Patient Outcomes Research Trial (SPORT) randomized and observational cohorts. Journal of Bone and Joint Surgery. American Volume, 2009 Jul 1; 91(7):1259-304. The SF-36 bodily pain and physical function scores showed no significant differences between patients treated surgically and patients treated nonsurgically. At four years, patients treated surgically had on average 18.3 points better physical function scores (95% CI, 14.4 to 23.0) and 18.1 points better bodily pain scores (95% CI, 14.5 to 21.7) compared to those treated nonsurgically. The Oswestry Disability Index scores showed a similar pattern of improvement.

RESULTS: We enrolled 304 patients in the randomized cohort and 303 in the observational cohort. The baseline characteristics of the two cohorts were similar. The one-year crossover rates were high in the randomized cohort (approximately 40% in each direction) but moderate in the observational cohort (15% crossover to nonsurgical care). The intention-to-treat analysis showed no significant differences in treatment outcomes between the operative and nonoperative groups at three or four years. An as-treated analysis combining the randomized and observational cohorts, that adjusted for potential confounders demonstrated that the clinically relevant advantages of surgery that had been previously reported through two years were maintained at four years, with treatment effects of 15.3 (95% confidence interval, 11.5 to 19.7) for bodily pain, 18.9 (95% confidence interval, 14.8 to 23.0) for physical function, and -16.2 (95% confidence interval, -17.5 to -15.2) for the Oswestry Disability Index. Early advantages (at two years) of surgical treatment in terms of the secondary measures of bothersomeness of back and leg symptoms, overall satisfaction with current symptoms, and self-rated progress were also maintained at four years.

CONCLUSIONS: Compared with patients who are treated nonoperatively, patients in whom degenerative spondylolisthesis and associated spinal stenosis are treated surgically maintain substantially greater pain relief and improvement in function for four years.

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Nonoperative Treatment versus Surgery


STUDY DESIGN: Randomized trial and concurrent observational cohort study. OBJECTIVE: To compare 4-year outcomes of nonoperative care to nonoperative care for spinal stenosis. METHODS: Surgical candidates (15 centers) were randomized in 1:1 US states with at least 12 weeks of symptoms and confirming 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 289 patients enrolled in the RC and 363 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], 8.6-16.7); physical function 8.6 (95% CI, 4.6-12.6); and Oswestry Disability Index -9.4 (95% CI, -12.6 to -6.2). Early advantages for surgical treatment for secondary measures such as bothersomeness, satisfaction with improvements, and self-rated progress were also maintained. CONCLUSION: Patients with symptomatic spinal stenosis treated surgically compared to those treated nonoperatively maintain substantially greater improvement in pain and function through 4 years.

Favor standard decompressive laminectomy versus conservative care for patients with spinal stenosis.

Document Disability


Validates minimum detectable change on ODI as ODI+55 points. In setting minimum difference of 10.5 points on ODI to be 80% certain that change has occurred.

Document Disability


Validates minimum detectable change on ODI as ODI+55 points. In setting minimum difference of 10.5 points on ODI to be 80% certain that change has occurred.
The purpose of this guideline is to provide utilization review staff with the information necessary to make recommendations about the medical necessity and clinical appropriateness of lumbar fusions. Washington State standard dealing with conservative care (including use of Structured Intensive Multidisciplinary Program, SIMP), surgical criteria, and contraindications for lumbar fusion. Refers to Health Technology Clinical Committee decision of November 2007. L&I guideline development process outlined here: http://www.lni.wa.gov/ClaimsIns/Files/OMD/MedTreat/Guidelinehistoryprocess.pdf → Defines L&I imaging standards for reimbursement for lumbar fusion

Abstract: OBJECT: It is not known whether adding fusion to lumbar decompression is necessary for all patients undergoing surgery for degenerative grade I lumbar spondylolisthesis with symptomatic stenosis. Determining specific radiographic traits that might predict delayed instability following decompression surgery might guide clinical decision making regarding the utility of up-front fusion in patients with degenerative Grade I spondylolisthesis. METHODS: Patients with Grade I degenerative lumbar spondylolisthesis (3-14 mm) with symptomatic stenosis were prospectively enrolled from a single site between May 2002 and September 2009 and treated with decompressive laminectomy without fusion. Patients with mechanical back pain or with gross motion (>3 mm) on flexion-extension lumbar radiographs were excluded. The baseline radiographic variables measured included amount of slippage, disc height, facet angle, motion at spondylolisthesis (flexion-extension), and sagittal rotation angle. Data were analyzed using multivariate forward selection stepwise logistic regression, chi-square tests, Student t-test, and ANOVA. → Presents preoperative imaging findings that predict instability following decompression.

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 confirmed. Slippage can be further categorized into five grades. Grade I indicates slippage from 0% 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." → Defines grades of spondylolisthesis to assist in interpreting Labor and Industries imaging standards
A retrospective cohort study assessing the correlation of preoperative facet joint effusion with ≥5% slip on upright X-ray on supine MRI. Study established a correlation between effusion and slip of vertebrae. Authors acknowledge the difficulty in achieving consistent imaging planes. Did not include functional measures pre- or post-operatively.

- Supports the conclusion that sensitivity of conventional imaging techniques may be sub-optimal and additional or alternative imaging studies may help in decision making regarding the optimal surgical treatment to be applied (decompression alone or combined with fusion).
Early PT


OBJECTIVE: To evaluate whether early physical therapy (manipulation and exercise) is more effective than usual care in improving disability for patients with LBP fitting a decision rule. METHODS: All patients (n = 220) from 21 US centers were randomly assigned to early physical therapy manipulation and exercise (n = 108) or usual care (n = 112). The primary outcome was change in Oswestry Disability Index score (range, 0-100) at 4 weeks, 3 months, and 1 year. Secondary outcomes included changes in all-cause and spine-related health care utilization at 4 weeks, 3 months, and 1 year follow-up. RESULTS: One-year follow-up was completed by 207 participants (94.5%). Using analysis of covariance, early physical therapy showed improvement relative to usual care in disability at 3 months (mean [95% CI]; early physical therapy group, 41.3 [95% CI, 38.7 to 44.0] vs usual care group, 45.3 [95% CI, 42.8 to 47.8]; P = .02). There was no improvement in pain intensity at 4 weeks, 3 months, or 1 year follow-up (between-group difference, -0.42 [95% CI, -0.90 to 0.02] at 4-week follow-up; -0.38 [95% CI, -0.84 to 0.08] at 3-month follow-up; and -0.17 [95% CI, -0.52 to 0.17] at 1-year follow-up). The PCS scores improved at 4 weeks and 3 months but not at 1 year follow-up (between-group difference, -3.7 [95% CI, -5.3 to -2.1] at 4 weeks; -2.8 [95% CI, -5.0 to -0.6] at 3 months; and -0.92 [95% CI, -2.7 to 0.61] at 1 year). There were no differences in health care utilization at any point. CONCLUSIONS AND RELEVANCE: Among adults with recent-onset LBP, early physical therapy resulted in statistically significant improvement in disability, but the effect was attenuated by 1 year, with no difference in pain intensity. Further research with longer follow-up is needed to better understand the impact of early physical therapy on disability and function at 1 year and beyond.


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I / C Nonsurgical Treatment

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Nonsurgical Treatment

Early PT


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Nonsurgical Treatment


Degenrative degenerative lumbar spondylosis is described as lumbar spondylosis or degenerative disc disease and may be associated with radiculopathy (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.

There was a particular lack of long-term outcomes beyond two to three years. Seven heterogeneous trials on spinal fusion/stenosis, spinal stenosis and spondylolisthesis, 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.

Reasonably well-detailed methods section re: evidence grading and guidelines development.

Society guidelines with robust search strategy.

Note publication date of 2005. Heterogeneity, difference in clinical outcomes was marginal. Does not provide strong evidence for benefit from surgery.


randomly allocated patients with acute low-back pain in a 1:1 ratio to receive up to 4 weeks of regular doses of paracetamol (three times per day; equivalent to 3900 mg paracetamol per day), as-needed doses of paracetamol (taken when needed for pain relief; maximum 4000 mg paracetamol per day), or placebo. Randomisation was done according to a centrally randomised schedule prepared by a researcher who was not involved in patient recruitment or data collection. Patients and staff at all sites were masked to treatment allocation. All participants received best-evidence advice and were followed up for 3 months. The primary outcome was time until recovery from low-back pain, with recovery defined as a pain score of 0 or 1 (on a 0–10 pain scale) sustained for 7 consecutive days. All data were analysed by intention to treat. This study is registered with the Australian and New Zealand Clinical Trial Registry, number ACTRN1260000662019. Findings (548 analysed), and 553 were assigned to the placebo group (547 analysed). Median time to recovery was 17 days (IQR 10–21) in the regular group, 17 days (15–20) in the as-needed group, and 16 days (14–20) in the placebo group. Regular vs. placebo hazard ratio 0.89, 95% CI 0.71–1.14; as-needed vs. placebo 0.95, 0.78–1.17; regular vs. as-needed 1.05, 0.86–1.27. We recorded no differences between treatment groups for time to recovery (adjusted p=0.78). Adherence to regular tablets (median tablets consumed per participant per day of treatment 4: 1.0 [IQR 1.6–5.7] in the regular group, 3.9 [1.5–5.6] in the as-needed group, and 4.0 [1.5–5.7] in the placebo group), and number of participants reporting adverse events (98 [18.7%] in the regular group, 99 [18.5%] in the as-needed group, and 98 [18.5%] in the placebo group) were similar between groups.

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 ISRCTN37113406. FINDINGS: 851 patients were assigned to the intervention (n=568) and control groups (n=283). Overall, adjusted mean changes in RMDQ scores were significantly lower in the intervention group than in the control group at 4 months (3.0 [95% CI 2.2–3.9] vs 3.2 [1.4–5.0], 1.86 [95% CI 1.06–2.57]), and at 12 months (4.3 [6.4] vs 3.3 [6.2], 1.06 [0.25–2.46]), equating to effect sizes of 0.32 (0.19–0.45) and 0.19 (0.04–0.33), respectively. At 12 months, stratified care was associated with a mean increase in generic health benefit (0.039 additional QALYs) and cost savings ($240 [CI $274–$206]) 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.
I / C / Nonsurgical Treatment  


Department of Labor and Industries, effective July 1, 2013.  

services provided to injured workers and crime victims. Washington State Payment policies for healthcare holders/Billing/Fee Sched/2013/MARFS/2013PDFs/Chapter34.pdf

http://www.lni.wa.gov/ClaimsIns/Provid

ers/Billing/FeeSched/2013/MARFS/2013

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Cohort study featuring a requirement for physiatry consultation prior to back surgery.  

→ Rate of back surgery decreased 25% with this requirement.  

→ 74% of patients responding to a telephone survey were satisfied or very satisfied with the physiatry consultation.

I / C / Nonsurgical Treatment  

Chronic pain management, chapter 34. In: Payment policies for healthcare providers to injured workers and crime victims. Washington State Department of Labor and Industries, effective July 1, 2013.

reference standard measures were acceptable (r40.7) for all subscales. MCID for the cervical subscale¼7 points, change questionnaire. Minimal clinically important differences (MCID) were calculated via receiver operator

body region were enrolled. Subject's rated their perceived improvement based on the 15-point Global Rating of Disabilities of the Arm, Shoulder and Hand and the Lower Extremity Functional Scale. One hundred subjects per

ability. Reference standards included the Neck Disability Index; Modified Oswestry Disability Index; Quick Reference Standards were acceptable (r40.7) for all subscales. MCID for the cervical subscale¼7 points, change questionnaire. Minimal clinically important differences (MCID) were calculated via receiver operator

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 with low back pain lasting longer than 1 year and evidence of disc degeneration at L1-L4 and/or L1-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 bend. It 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, 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 45 to 26 after surgery, compared with 42 to 30 after cognitive intervention and exercise. The mean difference between groups was 2.1 (95% CI -7.6 to 12.8). Improvements in pain, use of analgesics, emotional distress, life satisfaction, and return to work were not different. Four patients believed that fatigue from walking was reduced more after nonoperative treatment, and lower back pain was reduced more after surgery. The success rate according to an independent observer was 78% after surgery and 76% after cognitive intervention and exercises. The conclusion of the study was that lumbar fusion offers no greater benefit than non-surgical care for patients with low back pain and disc degeneration. Complication rate of 18% (9/53) included wound infection, bleeding, venous thrombosis and bowel tear.

L4–L5 and/or 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

fear avoidance beliefs and fingertip-floor distance were reduced more after nonoperative treatment, and lower lumbar pain was reduced more after surgery. The success rate according to an independent observer was 78% after surgery and 76% after cognitive intervention and exercises. The early complication rate in the surgical group was 18%. Conclusion. 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.

Mandatory physiatrist consultation prior to surgical consultation resulted in decreased surgical rates and continued patient satisfaction across a large region.

Relaxing comprehensive conservative therapy for chronic pain, including lumbar pain. Includes graded exercise, cognitive behavioral therapy, and coordination of health services.  

9 Washington State L&I reimbursement standard

I / C / Nonsurgical Treatment; Measure of treatment response  


I / C / Nonsurgical Treatment; Measure of treatment response  


This study established the criterion validity, test-retest reliability and responsiveness of the CareConnections Functional Index (CCI). The CCI 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 as receiver operator characteristic curve. Test-retest reliability coefficients were good to excellent. Validity correlations with the reference standard measures were acceptable (r40.7) for all subscales. MCID for the cervical subscale¼7 points, lumbar back points, upper extremity¼5 points and lower extremity¼11 points. The results of this study support the use of the CCI as outpatient physical therapy practice as a responsive tool with good reliability and validity. The authors also indicate that future work should focus on the impact of baseline patient factors that may affect future outcome.

Diagnosis study looking the value of CareConnections Functional Index for estimating patient I / C / I Nonsurgical Treatment and nonurgent spine surgery consultations in a paraplegic region to find a single visit with a physiatrist, who received extra compensation for the assessment. Surgical consultation and surgical rates results were compared between 2006-2007 and 2008-2010. An automated telephone survey of patients evaluated by physiatrists was performed to assess patient satisfaction. RESULTS:Physiatry referrals increased 70%, surgical referrals decreased 48%, and the total number of spine operations dropped 25%, with concomitant decreased overall cost. Although spinal fusion rates dropped, the percentage of fusion operations increased from 55% to 62% of all surgical procedures. Of 765 patients surveyed (84% response rate), 74% were satisfied or very satisfied with the physiatry consultation. Only 40% of patients who underwent previous spine surgery were satisfied. Although surgical rates decreased at all regional hospitals and all surgical groups, there were substantial shifts in market share. CONCLUSION: Mandatory physiatrist consultation prior to surgical consultation resulted in decreased surgical rates and continued patient satisfaction across a large region.

The early complication rate in the surgical group was 18%. Conclusion. 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.

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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 as receiver operator characteristic curve. Test-retest reliability coefficients were good to excellent. Validity correlations with the reference standard measures were acceptable (r40.7) for all subscales. MCID for the cervical subscale¼7 points, lumbar back points, upper extremity¼5 points and lower extremity¼11 points. The results of this study support the use of the CCI as outpatient physical therapy practice as a responsive tool with good reliability and validity. The authors also indicate that future work should focus on the impact of baseline patient factors that may affect future outcome.

This study evaluated the effectiveness of lumbar instrumented fusion with cognitive intervention and exercises 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 with low back pain lasting longer than 1 year and evidence of disc degeneration at L1-L4 and/or L1-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 bend. It 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, 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 45 to 26 after surgery, compared with 42 to 30 after cognitive intervention and exercise. The mean difference between groups was 2.1 (95% CI -7.6 to 12.8). Improvements in pain, use of analgesics, emotional distress, life satisfaction, and return to work were not different. Four patients believed that fatigue from walking was reduced more after nonoperative treatment, and lower lumbar pain was reduced more after surgery. The success rate according to an independent observer was 78% after surgery and 76% after cognitive intervention and exercises. The early complication rate in the surgical group was 18%. Conclusion. 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.

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The results also indicate that future work should focus on the impact of baseline patient factors that may affect future outcome.
Nonsurgical Treatment; Cognitive Behavioral Therapy


INTRODUCTION: One objective of the present research was to examine the degree to which psychological risk factors could be reduced through 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 0-110 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 follow: catastrophizing (25%), depression (26%), fear of movement/injury (11%), and perceived disability (20%). Logistic regression indicated that elevated pretreatment scores on fear of movement and re-injury (OR = 0.18, 95% CI = 0.03-0.95) and pain severity (OR = 0.64, 95% CI = 0.43-0.94) were associated with a lower probability of return to work. A second logistic regression addressing the relationship between risk factor reduction and return to work revealed that only reductions in pain catastrophizing (OR = 0.17, 95% CI = 0.07-0.44) 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 disorders.

Nonsurgical Treatment; Prognostic factors


OBJECTIVE: To assess the clinical effectiveness of surgical stabilization (spinal fusion) compared with intensive rehabilitation for patients with chronic low back pain. DESIGN: Multicentre randomised controlled trial (MRC spine stabilization trial). SETTING: 21 secondary care orthopaedics and rehabilitation centres across the United Kingdom. PARTICIPANTS: 449 participants aged 18-55 with chronic low back pain at least one year's duration who were considered suitable for surgical fusion. INTERVENTIONS: 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 273 to rehabilitation. 286 (63%) provided follow-up data at 24 months. The mean Oswestry disability index changed favourably from 44.5 (SD 14.6) to 34.0 (SD 21.1) in the surgery group and from 44.8 (SD 14.7) to 36.1 (SD 20.6) in the rehabilitation group. The estimated mean difference between the groups was 4.1 (95% confidence interval: 0.1 to 8.1, P = 0.05) in favour of surgery. No significant differences between the treatment groups were observed in the shuttle walking test or any of the other outcome measures. CONCLUSIONS: Both groups reported 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.

Cortis 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 (15 days/week, 5-7 hours/day, for 3 cycles), followed by 24-months community-based psychosocial intervention return 63% of patients to work.

Supports use of behavior therapy in patients with workers' compensation claims.
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 to 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 = 6070), 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 is small, statistically significant but not clinically relevant, short-term effect on pain relief (MD: -0.16, 95% CI -0.49 to -0.16) and functional status (SMD: 0.02, 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 when added to another intervention. There is very low quality evidence that SMT is not statistically significantly more effective than inert interventions or sham SMT for short-term pain relief or 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.

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.
No: 1 / C / 3
Noninvasive Treatment: Acupuncture


BACKGROUND: Acupuncture is a popular complementary and alternative treatment for chronic back pain. Recent European trials suggest similar short-term benefits from needling and sham acupuncture needle insertion. 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 438 adults with chronic back pain were randomized to traditional acupuncture, standard-combined acupuncture, or usual care. Two treatments were provided over 7 weeks by experienced acupuncturists. The primary outcomes were back-related dysfunction (Roland-Morris Disability Questionnaire score; range, 0-23) and symptom bothersomeness (5-5 scale). Outcomes were assessed at baseline and after 8, 26, and 52 weeks. RESULTS: 46 weeks, mean dysfunction scores for the individualized, standardized, and simulated acupuncture groups improved by 4.4, 4.5, and 4.4 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 experience statistically meaningful improvements on the dysfunction scale (69% vs 39%; P < .001). Symptoms improved by 1.6 to 1.9 points in the treatment groups compared with 0.7 points in the usual care group (P < .001). After 5 year, participants in the treatment groups were more likely than those receiving usual care to experience statistically meaningful improvements in function (59% vs 69% vs 59%, respectively; P < .001) but not in terms of symptoms (P = .06). CONCLUSIONS: Although acupuncture was found effective for chronic low back pain, tailoring needle sites to each patient and penetration of the skin appear to be unnecessary in eliciting therapeutic benefits. 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.

No: 1 / C / 3
Noninvasive Treatment: Acupuncture


OBJECTIVE: To provide an extensive systematic review of evidence for the effectiveness and safety of these injections. METHODS: In a double-blind, multisite 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 glucocorticoids plus lidocaine or lidocaine alone. The patients received one or two injections of either the glucocorticoid-lidocaine group and the glucocorticoid-lidocaine group and the usual care (see below). The primary outcomes were the score on the Roland-Morris Disability Questionnaire (in which scores range from 0 to 24, 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 imagine"). RESULTS: At 4 weeks, there were no significant differences between groups in the RMDQ score (between-group adjusted difference in the average treatment effect between the glucocorticoid-lidocaine group and the usual care group, 0.0 points; 95% confidence interval [CI], 0.6 to 0.1; P = .007) or the intensity of leg pain (between-group adjusted difference in the average treatment effect, -0.2 points; 95% CI, -0.8 to 0.4; P = .46). A nonsignificant secondary subgroup analysis stratified according to type of injection (intrathecal vs. transforaminal) showed significant differences in improvement at 4 weeks. CONCLUSIONS: In the treatment of lumbar spinal stenosis, epidural injection of glucocorticoids plus lidocaine offered minimal or no short-term benefit as compared with epidural injection of lidocaine. (Funded by the Agency for Healthcare Research and Quality, ClinicalTrials.gov number, NCT01338516.)

No: 1 / C / 3
Injection therapy

Spinal injections: Health Technology Clinical Committee findings and coverage


For patients with chronic low back pain, randomized controlled trial found that glucocorticoid injections yielded minimal or no short-term benefit as compared with lidocaine alone. The conventional therapy regimen for the control group was not well defined.

High quality randomized controlled trial of patients with chronic low back pain, allocated to three acupuncture groups and one control group with conventional therapy only. The three acupuncture groups exhibited similar improvement in terms of function. Simulated injection was effective as an intervention in all acupuncture treatments. The conventional therapy regimen for the control group was not well defined.

Trials comparing acupuncture with sham acupuncture or with usual care showed similar improvement in terms of pain and function. Authors conclude that acupuncture is better than usual care, but not better than sham acupuncture.

Systematic review of use of acupuncture in the treatment of low back pain, concluding that both sham and conventional acupuncture methods are effective.

No: 1 / C / 3
Injection therapy


Cohen’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 non-specific effects of manipulation.

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Injection therapy

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Systematic review of use of acupuncture in the treatment of low back pain, concluding that both sham and conventional acupuncture methods are effective.
Epidural injection

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Objectives: Lumbar epidural steroid injections (LESIs) are performed for both diagnostic and therapeutic purposes for a variety of indications, including low-back pain, the leading cause of disability and expense due to work-related conditions in the US. The steroid agent used in epidural injections is reported to relieve nerve root inflammation, local ischemia, and resultant pain, but the injection may also have an adverse impact on spinal surgery performed thereafter. In particular, the possibility that preoperative epidural injections may increase the risk of surgical site infection after lumbar spinal fusion has been reported but has not been studied in depth. The goal of the present study was to use a large national insurance database to evaluate the association of preoperative LESIs with surgical site infection after lumbar spinal fusion. METHODS A nationwide insurance database of patient records was used for this retrospective analysis. Current Procedural Terminology codes were used to query the database for patients who had undergone 422 and 3 or 4-level lumbar posterior spine fusion procedures. The rate of postoperative infection after 3- or 2-level posterior lumbar fusion was analyzed. Three study patients were then divided into 3 separate cohorts: 1) lumbar spinal fusion performed within 1 month after LESI; 2) fusion performed between 1 and 3 months after LESI; and 3) fusion performed between 1 and 6 months after LESI. The study patients were compared with a control cohort of patients who underwent lumbar fusion without pre-existing LESIs. RESULTS The overall 3-month infection rate after lumbar spinal fusion procedure was 1.6% (411 of 8,649 patients). The infection risk increased in patients who received LESI within 1 month (OR 2.6, p < 0.0001), 1-3 months (OR 1.4, p = 0.0002) prior to surgery compared with controls. The infection risk was not significantly different from controls in patients who underwent lumbar fusion more than 3 months after LESI. CONCLUSIONS Lumbar spinal fusion performed within 3 months after LESI may be associated with an increased rate of postoperative infection. This association was not found when lumbar fusion was performed more than 3 months after LESI.

Cycle 2: Fitness for Surgery

Objective: Lumbar epidural steroid injections (LESIs) are performed for both diagnostic and therapeutic purposes for a variety of indications, including low-back pain, the leading cause of disability and expense due to work-related conditions in the US. The steroid agent used in epidural injections is reported to relieve nerve root inflammation, local ischemia, and resultant pain, but the injection may also have an adverse impact on spinal surgery performed thereafter. In particular, the possibility that preoperative epidural injections may increase the risk of surgical site infection after lumbar spinal fusion has been reported but has not been studied in depth. The goal of the present study was to use a large national insurance database to evaluate the association of preoperative LESIs with surgical site infection after lumbar spinal fusion. METHODS A nationwide insurance database of patient records was used for this retrospective analysis. Current Procedural Terminology codes were used to query the database for patients who had undergone 422 and 3 or 4-level lumbar posterior spine fusion procedures. The rate of postoperative infection after 3- or 2-level posterior lumbar fusion was analyzed. Three study patients were then divided into 3 separate cohorts: 1) lumbar spinal fusion performed within 1 month after LESI; 2) fusion performed between 1 and 3 months after LESI; and 3) fusion performed between 1 and 6 months after LESI. The study patients were compared with a control cohort of patients who underwent lumbar fusion without pre-existing LESIs. RESULTS The overall 3-month infection rate after lumbar spinal fusion procedure was 1.6% (411 of 8,649 patients). The infection risk increased in patients who received LESI within 1 month (OR 2.6, p < 0.0001), 1-3 months (OR 1.4, p = 0.0002) prior to surgery compared with controls. The infection risk was not significantly different from controls in patients who underwent lumbar fusion more than 3 months after LESI. CONCLUSIONS Lumbar spinal fusion performed within 3 months after LESI may be associated with an increased rate of postoperative infection. This association was not found when lumbar fusion was performed more than 3 months after LESI.

A claims-based retrospective cohort study comparing 30,683 patients over 65 years of age receiving epidural steroid injections compared to 70,857 of the same age range who did not receive epidural steroid injections began to follow from 2010 to 2013. The study had two main results. First, the rate of infection was greater in patients who received epidural steroid injections compared to those who did not. Second, the rate of infection was greater in patients who received epidural steroid injections within 3 months of surgery compared to those who received the injection after 3 months. These results are consistent with previous studies that have shown that epidural steroid injections can increase the risk of infection in patients undergoing lumbar fusion surgery. However, the present study is the first to use a large national insurance database to evaluate the association of preoperative LESIs with surgical site infection after lumbar spinal fusion. The results of this study are significant because they suggest that preoperative epidural injections may increase the risk of surgical site infection after lumbar spinal fusion. This finding has important implications for patients and surgeons, as it suggests that preoperative epidural injections may not be the best choice for patients who are undergoing lumbar fusion surgery. In addition, the results of this study may help to guide future research on the effects of epidural injections on surgical outcomes.
Background context: Prior studies on the impact of obesity on spine surgery outcomes have focused mostly on lumbar fusions, do not examine lumbar discectomy or decompressions, and have shown mixed results regarding complications. Differences in sample sizes and body mass index (BMI) thresholds for the definition of the obese versus comparison cohorts could account for the inconsistencies in the literature. Purpose: The purpose of the study was to analyze whether different degrees of obesity influence the complication rates in patients undergoing lumbar spine surgery. Study design/setting: This was a retrospective cohort analysis of prospectively collected data using the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database from 2005 to 2010. Patient sample: Patients in the de-identified, risk-adjusted, and multi-institutional ACS NSQIP database undergoing lumbar anterior fusion, posterior fusion, transforaminal lumbar interbody fusion/posterior lumbar interbody fusion (TLIF/PFIL), discectomy, or decompression were included. Outcome measures: Primary outcome measures were 30-day postsurgical complications, including pulmonary embolism and deep vein thrombosis, death, system-specific complications (wound, pulmonary, primary, central nervous system, and cardiac), reoperation, and having one or more complications overall. Secondary outcomes were time spent in the operating room, length of stay, and reoperation within 30 days. Methods: Patients undergoing lumbar anterior fusion, posterior fusion, TLIF/PFIL, discectomy, or decompression in the ACS NSQIP (2005 to 2010) were categorized into four BMI groups: nonobese (18.5-29.9 kg/m²), Obese I (30-34.9 kg/m²), Obese II (35-39.9 kg/m²), and Obese III (greater than or equal to 40 kg/m²). Obese I to III patients were compared with patients in the nonobese category using chi-square test and analysis of variance. Multivariate binary logistic regression models were used to adjust for preoperative risk factors. Results: Data were available for 10,387 patients undergoing lumbar surgery. Of these, 4% underwent anterior fusions, 6% underwent posterior fusions, 6% underwent TLIF/PFIL, and 3% had discectomy or decompression. Among all patients, 25.6% were in the Obese I group, 11.5% in Obese II, and 5.5% in Obese III. On multivariate analysis, Obese I and III had a significantly increased risk of urinary complications, and Obese II had a significantly increased risk of wound complications. Only Obese III patients, however, had a statistically increased risk of having increased time spent in the operating room, an extended length of stay, reoperation, and having one or more complications overall. Conclusions: Patients with high BMI appear to have higher complication rates after lumbar surgery than patients who are nonobese. However, the overall rate of complications is still low.

OBJECTIVE: The purpose of this study was to analyze whether obesity affects treatment outcomes for lumbar stenosis (SpS) and degenerative spondylolisthesis (DS). SUMMARY OF REPORT: Obesity is thought to be associated with increased complications and potentially less favorable outcomes after the treatment of degenerative conditions of the lumbar spine. This, however, remains a matter of debate in the existing literature. METHODS: An as-treated analysis was performed on patients enrolled in the Spine Patient Outcomes Research Trial for the treatment of SpS or DS. A comparison was made between patients with a body mass index (BMI) of less than 30 (“nonobese”, n = 373 SpS and 376 DS) and those with a BMI of 30 or more (“obese”, n = 361 SpS and 225 DS). Baseline patient characteristics, intraoperative data, and complications were documented. Primary and secondary outcomes were measured at baseline and regular follow-up time intervals up to 4 years. The difference in improvement over baseline between surgical and nonoperative treatment (i.e., treatment effect) was determined at each follow-up interval for the obese and nonobese groups. RESULTS: At 4-year follow-up, operative and nonoperative treatment provided improvement in all primary outcome measures over baseline in patients with BMI of less than 30 and 30 or more. For patients with SpS, there were no differences in the surgical complication or reoperation rates between groups. Patients with DS with BMI of 30 or more had a higher postoperative infection rate (10.8% vs. 0.9%) and twice the reoperation rate at 4-year follow-up (20% vs. 11%, P = 0.01) than those with BMI of less than 30. At 4 years, surgical treatment of SpS and DS was equally effective in both BMI groups in terms of the primary outcome measures, with the exception that obese patients with DS had less improvement from baseline in the 36-Item Short Form Health Survey (SF-36) physical function score than nonobese patients (22.6 vs. 27.8, P = 0.02). With nonoperative treatment, patients with SpS with BMI of 30 or more did worse in regard to all 3 primary outcome measures, and patients with DS with BMI of 10 or more had similar SF-36 bodily pain scores but less improvement over baseline in the SF-36 physical function and Oswestry Disability Index scores. Treatment effects for SpS and DS were significant within each BMI group for all primary outcome measures in favor of surgery. Obese patients had a significantly greater treatment effect than nonobese patients with SpS (Oswestry Disability Index, P = 0.037) and DS (SF-36 PF, P = 0.004) largely due to the relatively poor outcome of nonoperative treatment in obese patients. CONCLUSION: Obesity does not affect the clinical outcome of treatment received. 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.

BACKGROUND: Inconsistent results have been reported in the literature on the association between obesity, measured as increased body mass index (BMI), and risk of surgical site infection (SSI) following spine surgery. The objective of this review was to examine and quantify the association between increased BMI and risk of SSI in adults.

METHODS: We performed a comprehensive search for relevant studies using PubMed, Embase, and reference lists of published manuscripts. Study-specific risk measures were transformed into slope estimates and combined using random-effects meta-analysis to evaluate the risk of SSI associated with every 5-unit increase in BMI.

RESULTS: Thirty-four articles underwent full-text review. Variations were noted among these studies in relation to BMI cut points used to define obesity. Data from 12 retrospective studies were included in the analyses. Results showed that BMI was significantly positively associated with the risk of SSI. Unadjusted risk estimates demonstrated a 5-unit increase in BMI was associated with a 12% increased risk of SSI (Crude-odds ratio (OR) 1.13, 95% CI 1.07-1.21, p = 0.002). Pooling of risk estimates adjusted for diabetes and other confounders resulted in a 7% increase in risk of SSI for every 5-unit increase in BMI (Crude OR (1.13; 95% CI 1.13-1.29; p = 0.0001).

CONCLUSION: Higher BMI is associated with the increased risk of SSI following spine surgery. Prospective studies are needed to confirm this association and to determine whether other measures of fat distribution are better predictors of risk of SSI.

PMID: 23828507


OBJECTIVES: The aim of this review was to assess the effect of preoperative smoking intervention on smoking cessation at the time of surgery and 12 months postoperatively 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 (0) or smoking intervention (0.5) group. Smoking intervention was smoking cessation and nicotine replacement therapy, and either smoking cessation or at least 50% smoking reduction. An assessor, who was masked to the intervention, recorded 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 final analysis because their operations were either postponed or cancelled. Thus, 31 and 56 patients, respectively, were analysed for outcome. The overall complication rate was 18% in the smoking intervention group and 12% in controls (p=0.008). The most significant effects of intervention were seen for wound-related complications (14% vs 5%; p=0.01), cardiovascular complications (0% vs 4%, p=0.01), and secondary surgery (4% vs 15%, p=0.07). The median length of stay was 11 days (range 7-20) in the intervention group and 12 days (8-65) in the control group. INTERPRETATION: An effective smoking intervention programme 6 weeks before surgery reduces postoperative morbidity, and we recommend, on the basis of our results, this programme be adopted by hospitals.

PMID: 24671929

A meta-analysis of 12 retrospective studies that included variable cutoff standards for BMI. A significant but CIs do not rule out a clinically significant effect (RR 0.96 (95% CI 0.74 to 1.25) for any complication). Supports the conclusion that smoking intervention prior to surgery reduces postoperative morbidity.


BACKGROUND: Smoking intervention may be an effective opportunity for smoking 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 12 months postoperatively and on the incidence of postoperative complications. 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 (0) or smoking intervention (0.5) group. Smoking intervention was smoking cessation 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 final analysis because their operations were either postponed or cancelled. Thus, 31 and 56 patients, respectively, were analysed for outcome. The overall complication rate was 18% in the smoking intervention group and 12% in controls (p=0.008). The most significant effects of intervention were seen for wound-related complications (14% vs 5%; p=0.01), cardiovascular complications (0% vs 4%, p=0.01), and secondary surgery (4% vs 15%, p=0.07). The median length of stay was 11 days (range 7-20) in the intervention group and 12 days (8-65) in the control group. INTERPRETATION: An effective smoking intervention programme 6 weeks before surgery reduces postoperative morbidity, and we recommend, on the basis of our results, this programme be adopted by hospitals.

PMID: 24671929


BACKGROUND: Smoking cessation found a significant effect; pooled RR 1.61 (95% CI 1.12 to 2.33). However, when pooling trials that included baseline smokers and used a minimal dose of NRT alone, and RR 1.41 (95% CI 1.22 to 1.63, five trials) respectively. Four trials evaluating the effect on long-term smoking cessation found a significant effect; pooled RR 0.96 (95% CI 0.74 to 1.25) for any

METHODS: We performed a comprehensive search for relevant studies using PubMed, Embase, and reference lists of published manuscripts. Study-specific risk measures were transformed into slope estimates and combined using random-effects meta-analysis to establish the risk of SSI associated with every 5-unit increase in BMI.

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CONCLUSION: Higher BMI is associated with the increased risk of SSI following spine surgery. Prospective studies are needed to confirm this association and to determine whether other measures of fat distribution are better predictors of risk of SSI.

PMID: 24671929

Supports the conclusion that smoking intervention prior to surgery reduces postoperative morbidity.

Cohort in patients undergoing hip or knee replacement.
Objective: To determine whether an intervention with smoking cessation starting 4 weeks before general and orthopedic surgery would reduce the frequency of postoperative complications. Summary Background: Complications are a major concern after elective surgery and smokers have an increased risk. There is insufficient evidence concerning how the duration of preoperative smoking intervention affects postoperative complications. Methods: A randomized controlled trial, conducted between February 2006 and December 2008 at a university-affiliated hospital in the Stockholm region, Sweden. The outcome assessment was videoed. The follow-up period for the primary outcome was 30 days. Eligibility criteria were active daily smokers, aged 18 to 79 years. Of the 238 patients assessed, 76 refused participating, and 157 men and women undergoing surgery for primary hernia repair, laparoscopic cholecystectomy, or a hip or knee prosthesis were enrolled. Intervention: Smoking cessation therapy with individual counseling and nicotine substitution started 4 weeks before surgery and continued 4 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 43%, and in the intervention group, it was 23% (P = 0.00). Relative risk reduction for the primary outcome of any postoperative complication was 49% and number needed to treat was 5 (95% CI, 3-49). As an analysis per protocol showed that abeters had fewer complications (15%) than those who continued to smoke or only reduced smoking (31%), although this difference was not statistically significant. Conclusion: Preoperative smoking cessation seems to be an effective tool to reduce postoperative complications even if it is introduced as late as 4 weeks prior to surgery.
Hikata T, Iwanami A, Hosogane N, Watanabe K, Ishii K, Nakamura M, Kamata M.

OBJECTIVE: To evaluate the prevalence of depressive symptoms and disability pre- and post-operatively in patients undergoing lumbar fusion surgery. METHODS: Data was extracted from the dedicated lumbar spine fusion register, giving 232 patients (mean age 62 years, 158 females) who had undergone lumbar spine fusion. The frequency of depressive symptoms and disability was evaluated using the Depression Scale (DEPS) 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 ODI values pre-operatively, at 3 months and at 1 year after surgery were 53, 30, and 23, respectively, in patients with pre-operative depressive symptoms. The differences between the groups were 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 decreased 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.

Smith PC, Schmidt SM, Allensworth-Davies D, Saitz R.  

Validates use of MoCA as an instrument for screening for cognitive impairment.

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 patient's cognitive profile. The diagnostic accuracy of MoCA for bv-FTD was extremely high (area under the curve AUC [MoCA] = 0.934, 95% confidence interval [CI] = 0.866-.974; AUC [MMSE] = 0.772, 95% CI = 0.677-.865). With a cutoff below 19 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.

Toyama Y, Matsumoto M. 

Retrospective cohort study of only 36 patients undergoing instrumented spine surgery with a 3-year follow-up. Patients with preoperative A1c values less than 7% had no surgical site infections. Patients with A1c values greater than 7% had a rate of surgical site infections of 30%. Perioperative serum glucose was not related to surgical site infections.

Supports the benefit of optimal preoperative control of diabetes.
Depression screening


The objective of this observational prospective study was to investigate the effect of depression on short-term outcome of patients older than 50 years undergoing lumbar surgery. Depression was defined as a score of 17 or higher of the Beck Depression Inventory, as assessed before surgery. One year postoperatively, depression was assessed with the Beck Depression Inventory, Body Mass Index and Disease Severity Index and Stucki quality of life score. Preoperatively, the patients with depression had significantly higher Beck Depression Inventory scores (13.8 vs 8.5, p < 0.01). At one year postoperatively, depression was associated with a lower score of physical functioning (Oswestry Disability Index, Stucki Questionnaire, self-reported walking ability, visual analogue scale (VAS) and pain drawing). A smaller percentage of the patients with depression had radiologically defined LSS, representing ordinary LSS patients treated at the tertiary care level. They also complained more of pain and symptoms of depression and had a higher disease severity index. Depression was associated with a higher rate of re-operation, a lower percentage of patients with successful fusion, and a lower rate of patients with successful fusion and cervical spine surgery. CONCLUSION: Preoperatively, depression can have a substantial impact on the quality of life and surgical outcome of LSS patients. Prospective cohort study measuring recovery in lumbar spine surgery patients with preoperative depression. Patients remaining with persistent depression had the highest improvement following surgery. Small "n". Follow-up limited to three months. Type of surgery not specified and follow-up not specified.

Screen for Osteoporosis


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 complications following spine surgery and potentially influences success of intervertebral spinal fusion. QUESTION/PURPOSE: The purpose of this study was to investigate the association between HU 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 IF were evaluated as 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 IF levels, 72% were assessed as fused and 28% were nonunited at the time of evaluation. The successful fusion levels had significantly higher HU measurements than 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 < 0.001). 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 nonunion.

Screen for Osteoporosis

Schneider H, Hughes AP, Paper F, Gerard AF. An association could be found between CT evidence of nonunion and the nonunion level was associated with higher bone density, as measured at minimum 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 IF levels, 72% were assessed as fused and 28% were nonunited at the time of evaluation. The successful fusion levels had significantly higher HU measurements than 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 < 0.001). 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 nonunion.

Screen for Osteoporosis


The purpose of this study was to investigate the incidence of osteoporosis in patients requiring spine surgery. The incidence of nonunions in males was 14.5% and the rate osteoporosis in males was 11.3%. Among patients older than 50 years, the rate of osteoporosis in males was 14.5% and the rate osteoporosis in females was 13.1%. We strongly recommend an evaluation and treatment for osteoporosis in the patients undergoing spine surgery, especially in females over 50 years old. INTRODUCTION: Because Osteoporosis is increasing, there is an increase in the incidence of osteoporosis in patients undergoing spine surgery. The asymptomatic patient may adversely influence the fusion rate and the surgical outcome. The purpose of this study was to evaluate the incidence of osteoporosis in patients requiring spine surgery. METHODS: A total of 1,321 patients underwent spine surgery at our institute from January 1, 2005 to December 31, 2005. Among them, there were 562 patients (42.5%) younger than 50 years old, and 759 patients (57.6%) older than 50 years old. Prior to operation, we evaluated the patients for osteoporosis on both the femur head and lumbar spine by measuring the bone mineral density (BMD) by the dual-energy X-ray absorptiometry (DXA). Based on the World Health Organization (WHO) criteria for osteoporosis, we chose the T-score to determine normal (=1), osteopenia (-1< T-score < -2.5), and osteoporosis (T-score < -2.5). Among the 562 patients younger than 50 years old, DXA was performed in 411 (11.9%) patients and there were 123 (2.2%) cases of osteoporosis and 210 (0.3%) cases of osteopenia. 121 (2.2%) cases of osteoporosis and 759 patients older than 50 years old, 101 males and 323 females. Among the male patients, there were 88 (46.1%) patients with osteoporosis and 28 (14.5%) with osteopenia. Among the female patients, there were 346 (54.4%) with osteoporosis and 166 (25.3%) with osteopenia. The incidence of osteoporosis was higher in female patients than in male patients and significantly increased with increasing age. Among 759 patients older than 50 years old, 67% patients underwent a major spine operation with or without fusion. Among these patients, DXA was performed in 466 (66.4%) patients and there were 207 (44.4%) patients with osteoporosis and 129 (21.1%) with osteopenia. CONCLUSION: The patients over 50-year-old who need spine operation have osteoporosis often. In conclusion, the number of spine operations in elderly patients is increasing and the incidence of osteoporosis in spine surgery patients 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.
I / A / 4

**Opioids to treat pain in injured workers.** Effective July 1, 2013. The Washington State Department of Labor & Industries (L&I, or the department) is officially adopting the IIMAC’s primary goal is to provide standards on chronic non-cancer pain. This guideline is a supplement to both the AMDG Guideline and the Department of Directors’ Group (AMDG Guideline) and revised in June 2010 [1]. The AMDG Guideline represents the best practices and universal precautions necessary to safely and effectively prescribe opioids to treat patients with chronic non-cancer pain. **The IIMAC’s primary goal is to provide standards on chronic non-cancer pain. This guideline is a supplement to both the AMDG Guideline and the Department of Directors’ Group (AMDG Guideline) and revised in June 2010 [1].**

**Nutritional status, reduced serum albumin.** Focus is pre-operative nutritional status as a risk factor for complications in patients 60 years of age or older. The conclusion that reduced serum albumin and weight loss over previous six months predicts postoperative complications for elderly general surgery patients.

**Surgical risks and perioperative complications of instrumented lumbar surgery in patients with liver cirrhosis.** Background: Patients with liver cirrhosis have high surgical risks due to malnutrition, impaired immunity, coagulopathy, and encephalopathy. However, there is no information in English literature about the results of liver cirrhotic 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 28 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, fourteen other variables and perioperative complications were also collected. To determine the risks, we divided the patients into two groups according to whether or not perioperative complications developed. Results: Of the 28 patients, 22 (79%) belonged to Child class A and 6 (21%) belonged to Child class B. Twenty patients developed one or more complications. Patients with Child class B earned a significantly higher incidence of complications than those with Child class A (p = 0.013). In the Child class A group, patients with 6 points had a significantly higher incidence of complications than those with 5 points (p = 0.031). 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 undergo instrumented lumbar surgery carry a high risk of developing perioperative complications, especially in those with a Child-Turcotte-Pugh score of 6 or more.
Objective: Shared decision making (SDM), an integrative patient-provider communication process emphasizing 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.

We conducted an observational study to examine the associations between introducing decision aids for hip and knee osteoarthritis 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 12.21 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.

Arterburn D. Introducing decision aids at Group Health was linked to sharply lower hip and knee surgery rates and costs. Health Affairs, 2012, Sep; 31(9): 2094-104. PMID: 22949460

Recommendation #7: "It is recommended that shared decision-making regarding surgery for nonspecific low back pain include a specific discussion about moderate average benefits, which appear to decrease over time in patients who undergo surgery." Supports shared decision making.

Recommendation #8: "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.

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Shared Decision Making  


**Background:** It is unclear if advance directives (living wills) are associated with end-of-life expenditures and treatments. OBJECTIVE: To examine regional variation in the associations between treatment-limiting advance directive use, 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 3002 Medicare beneficiaries who died between 1998 and 2007 linked to Medicare claims and the National Death Index. Multivariable regression models examined associations between advance directives, 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 directives specifying limits in care were associated with lower spending in hospital referral regions with high average levels of end-of-life expenditures ($11,048 per decedent; 95% CI: -$17,600 to -$5585) per decedent; 95% CI: -$17,600 to -$5585), 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 spending in hospital referral regions with low or medium levels of end-of-life expenditures (9268; 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 spending in hospital referral regions with low or medium levels of end-of-life expenditures ($11,048 per decedent; 95% CI: $5585 to $5585), but there was no difference in spending in hospital referral regions with low or medium levels of end-of-life expenditures (9268; 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 ($11,048 per decedent; 95% CI: $5585 to $5585), but there was no difference in spending in hospital referral regions with low or medium levels of end-of-life expenditures (9268; 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 (9268; 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 (9268; 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 (9268; 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 (9268; 95% CI: -10,903 to -$267). ADVANCE Directives were associated with lower adjusted probabilities of in-hospital death in high- and medium-spending regions (0.89% vs 0.99% per decedent; 95% CI: 0.07% to 0.17% in high-spending regions; 0.3%; 95% CI: 0.1% to 0.4% in medium-spending regions). Advance directives were associated with higher adjusted probabilities of hospice use in high- and medium-spending regions (21% vs 15% in high-spending regions; 11% vs 6% 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.**

Evidence for Surgery: Cardiopulmonary Fitness  


**Background:** To provide guidelines for the cardiovascular evaluation for patients that will have non cardiac surgery.  

**Objective:** To provide evidence-based recommendations for cardiovascular evaluation and management of patients undergoing noncardiac surgery.  

**Evidence:** This guideline is a comprehensive review of the literature relevant to the perioperative cardiovascular care of patients undergoing noncardiac surgery. The Task Force on Practice Guidelines reviewed this evidence and developed recommendations. A meta-analysis of 105 studies and 31,043 participants evaluating the utility of shared decision making.  

**Supports the use of decision aids in medical and surgical interventions.**

**See below for update to this citation**
75. **Cardiopulmonary Fitness**


High quality society guideline with evidence appraisals. “The focus of this clinical practice guideline is the perioperative cardiovascular evaluation and management of the adult patient undergoing noncardiac surgery.”

76. **Nasal culture; Chlorhexidine**


BACKGROUND: Nasal carriers of Staphylococcus aureus are at increased risk for health care-associated infections with this organism. Decolonization of nasal and extranasal sites on hospital admission may reduce this risk. METHODS: In a randomized, double-blind, placebo-controlled, multi-center 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, reduces the risk of hospital-associated S. aureus infection. RESULTS: From October 2005 through June 2007, a total of 4771 patients were screened on admission. A total of 1251 patients were enrolled in the intention-to-treat analysis, of whom 808 (88.1%) underwent a surgical procedure. All the S. aureus strains identified on PCR assay were susceptible to methicillin and mupirocin. The rate of S. aureus infection was 3.4% (17 of 504 patients) in the mupirocin-chlorhexidine group, as compared with 7.7% (32 of 413 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 0.62). There was no significant difference in all-cause in-hospital mortality between the two groups. The time to the onset of nosocomial infection was shorter in the placebo group than in the mupirocin-chlorhexidine group (P=0.05). 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, ISRCTN56186788.)

Cohort included a variety of surgical procedures, as well as patients hospitalized for medical reasons. Supports treatment of nasal carriers of Staphylococcus aureus to reduce incidence of surgical site infections.

77. **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 = 2284) were patients of surgeons not participating in screening/decolonization. Preintervention controls (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 outpatient patients. Staphylococcal SSIs occurred in no intervention patients (0/321) and 19 concurrent controls. If all SSIs 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) in reintervention controls to 1.2% (17/1440) in intervention patients (P = .009). Preoperative screening/selective decolonization was associated with fewer SSIs after elective TJA.

Cohort is patients undergoing total joint replacement. Supports the use of mupirocin nasal swabs and chlorhexidine bath to reduce surgical site infections after total joint surgery.
Dental screening


Recommendation #1: In the absence of reliable evidence linking poor oral health to prosthesis joint infection, it is the opinion of the work group that patients with prosthesis joint implants or other orthopaedic implants maintain appropriate oral hygiene. Grade of Recommendation: Consensus.

Recommendation #2: In the absence of reliable evidence linking poor oral health to prosthesis joint infection, it is the opinion of the work group that patients with prosthesis joint implants or other orthopaedic implants maintain appropriate peri-implant hygiene. Consensus

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Patient Reported Outcomes


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) provides item banks that offer the potential for efficient (minimizes item number without compromising reliability), flexible (provides optional use of interchangeable items), and precise (has minimal error in estimate) measurement of commonly studied PROs. We report results from the first large-scale testing of PROMIS item banks. STUDY DESIGN AND SETTING: Fourteen item pools were tested in the U.S. general population and clinical groups using online panel and clinic recruitment. A scale-setting subsample was created reflecting demographics proportionate to the 2000 U.S. Census. Using item response theory (graded response model), 11 item banks were calibrated on a sample of 21,133, measuring components of self-reported physical, mental, and social health, along with a 10-item Global Health Scale. Short forms from each bank were developed and compared with the overall bank and with other well-validated and widely accepted legacy measures. All item banks demonstrated good reliability across most of the score distributions. Construct validity was supported by evidence consistent with correlations with key legacy measures. CONCLUSION: PROMIS item banks and their short forms provide evidence that they are reliable and precise measures of generic symptoms and functional reports comparable to legacy instruments. Further testing will continue to validate and test PROMIS items and banks in diverse clinical populations.

Cohort is elderly patients treated in hospital or acute care setting for medical or surgical conditions.
1.1 Current evidence on the safety and efficacy of minimally invasive vertebral column fusion surgery for spinal deformity, lumbar spinal stenosis and the comparative effectiveness between commonly performed surgical techniques to treat this condition on patient-related outcomes. We also aimed to investigate the safety of these surgical interventions by including perioperative surgical data and reoperation rates.

1.2 Patients having this procedure should have a confirmed diagnosis of unilateral or bilateral SI joint dysfunction due to degenerative sacroiliac or SI joint disruption.

1.3 This technically challenging procedure should only be done by surgeons who regularly use image-guided surgery for implant placement. The surgeons should also have had specific training and expertise in minimally invasive SI joint fusion surgery for chronic SI joint pain.

Is this procedure out of scope?

Is this procedure out of scope?

Is this procedure out of scope?
Surgical team

Martin BI, Mirza SK, Franklin IA, Lune JD, MacKenzie TA, Deyo RA. 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: 22716168

Objective: To examine the association between surgical start time and morbidity and mortality for nonemergent procedures. SUMMARY BACKGROUND DATA: Patients require medical services 24 hours a day. Several studies have demonstrated a difference in outcomes over the course of the day for anesthetic adverse events, death in the ICU, and dialysis care. The relationship between operation start time and patient outcomes is yet undefined. METHODS: We performed a retrospective cohort study of 144,740 nonemergent general and vascular surgical procedures performed within the VA Medical System 2000-2004 and entered into the National Surgical Quality Improvement Program Database. Operation start time was the independent variable of interest. Logistic regression was used to adjust for patient and procedural characteristics and to determine the association between start time and morbidity and mortality. RESULTS: Unadjusted analysis indicated higher rates of operative events, death in the ICU, and dialysis care. The relationship between operation start time and patient outcomes is yet undefined.

Overlapping surgeries


Minimize opioids

Dec;103(6):1296-304. PMID: 16306743

acetaminophen, nonsteroidal antiinflammatory drugs, or selective cyclooxygenase-2 inhibitors increased the risk of renal failure in cardiac patients from 0% to 1.4% (number needed to treat, 512). The average reported pain intensity was significantly reduced in the postanesthesia care unit and at 6 weeks. The groups had no differences in known pain-related or opioid-related side effects. CONCLUSIONS: Intraoperative ketamine reduces opiate consumption and pain intensity throughout the postoperative period in this patient population. This finding supports the notion that overlapping provision of surgery should be part of the informed consent process.

10 out of 36 eligible patients were randomized which may limit external validity. Circumstances appear to be a very high quality study. Would feel more confident if findings were replicated in another study. Hard to draw firm safety conclusions from study of this size.Cohort is opioid-dependent patients receiving average of 1-2.0 level lumbar fusions.

2 Offers an option to reduce postoperative opioid consumption in opioid-dependent patients.

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. Little is known regarding its efficacy in opioid-dependent patients with a history of chronic pain. We hypothesized that ketamine would reduce postoperative opioid consumption in the patient population. METHODS: This was a randomized, prospective, double-blinded, and placebo-controlled trial involving opioid-dependent inpatient surgical patients. Fifty-two patients in the treatment group were administered 0.5 mg/kg intravenous ketamine on induction of anesthesia, and a continuous infusion of 10 mcg/kg/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. KSU's total morphine consumption (morphine equivalent) was significantly reduced in the treatment group 48 h after the procedure. It was also reduced at 24 h and at 6 weeks. The average reported pain intensity was significantly reduced in the postanesthesia care unit and at 6 weeks. The groups had no differences in known pain-related or opioid-related side effects. CONCLUSIONS: Intraoperative ketamine reduces morphine use in the 48-h postoperative period in opioid-dependent patients with chronic pain. Ketamine may also reduce opioid consumption and pain intensity throughout the postoperative period in this patient population. This finding supports the notion that overlapping provision of surgery should be part of the informed consent process.

Temporal aspects: @ assumes no default time points associated with procedures.


The authors analyzed data from 12 randomized placebo-controlled trials (4,893 adults) testing acetaminophen, nonsteroidal antiinflammatory drugs, or selective cyclooxygenase-2 inhibitors given in conjunction with opioids after surgery. The median of the average 24-h morphine consumption in controls was 49 mg (range, 12-117 mg); it was significantly decreased with all regimens by 15-50%. There was evidence of a reduction in pain intensity at 24 h (1 cm on the 0- to 10-cm visual analog scale) only with nonsteroidal antiinflammatory drugs. Nonsteroidal antiinflammatory drugs also significantly reduced the incidence of nausea/vomiting from 60% to 14% (number needed to treat, 51). This finding supports the notion that overlapping provision of surgery should be part of the informed consent process.

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Temporal aspects: @ assumes no default time points associated with procedures.
Urinary catheter < 48 hours


Cochrane Central Register of Controlled Trials, and Embase databases.

The SCIP 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 major surgical procedures and separately for the MS-DRG ACE demonstration surgical procedure groups of CABG, Cardiac Valves, and Hip and Knee Replacement.

Cohort is orthopedic patients.

Supports the use of mupirocin nasal swabs and chlorhexidine bath to reduce surgical site infections after total joint surgery.

Cochrane standard for measures to prevent infection and venous thromboembolism for surgical patients.

Cochrane standard for measures to prevent infection and venous thromboembolism for surgical patients.
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-blinded, 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 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 normal saline (normal control). The primary outcome was the total perioperative estimated and calculated blood loss (peruoperative bleeding + 24 h postoperatively). Secondary outcomes were incidence of allogeneic blood exposure, duration, and quality 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 perioperative blood loss was approximately 25% and 30% lower in patients given TXA versus placebo (1592 ± 1315 mL vs 2138 ± 1887 mL; P = 0.019; 3079 ± 2558 vs 4363 ± 3030; P = 0.037), 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 thoracic/lumbar instrumented spinal fusion surgery.

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-emergency 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, 0.72). The RR for RBC transfusion with TXA was 0.61 (95% CI 0.53 to 0.70) and was 0.91 (95% CI 0.67 to 0.99) with EACA. When the pooled estimates from the head-to-head trials of the two lysine analogues were combined and compared to aprotinin alone, aprotinin appeared more effective in reducing the need for RBC transfusion (RR 0.69, 95% CI 0.60 to 0.81). Despite a corresponding reduction in the need for re-operation due to bleeding by a relative 45% (95% CI 0.53 to 0.35), a similar trend was noted for TXA. When the pooled estimates from the head-to-head trials of the two lysine analogues were compared to placebo, aprotinin was more effective in reducing the need for RBC transfusion (RR 0.78, 95% CI 0.68 to 0.90). EACA was 0.81 (95% CI 0.67 to 0.99) with EACA. When the pooled estimates from the head-to-head trials of the two lysine analogues were combined and compared to TXA alone, TXA appeared more effective in reducing the probability of requiring RBC transfusion by a relative 39% (RR 0.61, 95% CI 0.53 to 0.70). The RR for RBC transfusion with TXA was 0.61 (95% CI 0.53 to 0.70) and was 0.91 (95% CI 0.67 to 0.99) with EACA. When the pooled estimates from the head-to-head trials of the two lysine analogues were combined and compared to placebo, TXA was more effective in reducing the need for RBC transfusion (RR 0.69, 95% CI 0.60 to 0.81). This translates into an absolute risk reduction of 2% and a number needed-to-treat (NNT) of 51 (95% CI 33 to 100). A similar trend was noted for EACA.
The article discusses the prevalence of venous thromboembolism (VTE) in the postoperative care and return to function cycle. It supports the conclusion that perioperative hyperglycemia is associated with postoperative complications. It also recommends anticoagulant therapy for elective surgical patients with emphasis on patients undergoing joint surgery.
BACKGROUND CONTEXT: Recovery after spinal fusion continues to be refined through better multidisciplinary care. Various recovery protocols exist, all of 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 spinal 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 impediment ambulating 30 feet, and LOS were recorded. Patients reaching the in-patient unit after 1500 hours were excluded. RESULTS: Seventy percent of patients (320/457) successfully ambulated at least 30 feet on the date of surgery. Forty-seven patients were not evaluated secondary to personal related factors. A total of 35 patients ambulated under 30 feet, citing most commonly: fatigue (8.2%), nausea (15.9%), pain (33.3%), sleep (8.2%), drowsiness (15%), sedation (3.6%), and confusion (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.

We found that specially designed exercise programmes for people who have had back decompression surgery can help to reduce back pain and 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.

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