### Cycle 1: Disability due to back pain despite conservative therapy

<table>
<thead>
<tr>
<th>Citation</th>
<th>Abstract</th>
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<tr>
<td>Papuga MO, Mesfin A, Molinari R, Rubery PT. Correlation of PROMIS Physical Function CAT v1.2 (PF CAT) assessments with Oswestry Disability Index (ODI) and Neck Disability Index (NDI) in spine patients. Spine (Phila Pa 1976). 2017 Jun 15;42(12):921-9. PMID: 27792105</td>
<td>The purpose of this study was to show that Patient-Reported Outcome Measurement Information System (PROMIS) computer adaptive testing (CAT) assessments for physical function and pain interference can be efficiently collected in a standard office visit and to evaluate these scores with scores from previously validated Oswestry Disability Index (ODI) and Neck Disability Index (NDI). The study showed that PROMIS CAT can be administered efficiently in an outpatient setting.</td>
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<tr>
<th>Comments by Reviewer</th>
<th>Fulltext or Citation Link</th>
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<tr>
<td>Less robust study than study by Brodke, et al. Did not separate PROMIS PF and PROMIS PI assessments.</td>
<td><a href="http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4938742/">http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4938742/</a></td>
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Measurement of disability


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(abstract) To examine the relationship between the Patient-Reported Outcome Measurement Information System (PROMIS) Pain Interference 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 for a survey spine center. Pearson correlations estimated the relationship of the PROMIS PI and PF scores. Age, gender, and race were assessed by subgroups on the PROMIS PI and PF interference scores. Linear regression analyzed predictive relationships. Statistical significance was set at p < 0.05. Results: A total of 1,703 participants completed an assessment, with 1,035 completing the PI and PF CATs (72% of the PI CAT). Participants’ mean age was 52.3 years (range = 18-92 years, SD = 6.5 years). Correlation analysis of the PROMIS PI with the PROMIS physical function (PF) showed a Pearson correlation value of 0.77 (p < 0.05). There was a strong linear relationship with a high negative correlation between PF CAT and PI CAT. The PI CAT predicted PF CAT scores (p < 0.002, r<sup>2</sup> = 0.460). Conclusion: 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 PF being used as an important adjunct measure of physical function in patients with spinal pain.

- Pain scores have predictive relationship to function and may add value to assessing disability in patients with spinal pain.

Measurement of disability


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(abstract) The purpose of this study was to examine the relationship between the PROMIS global items and the EuroQol-5D (EQ-5D) index scores from the patient-reported outcomes measurement information system (PROMIS) global items and domain item banks. 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-5D index scores based on the global items and selected domain bank items. 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 general health or physical health items) explained 60% of the variance in the EQ-5D. When the PROMIS domain scores were included in a regression model, 59% of the variance was explained in EQ-5D index scores. Comparisons of predicted to actual EQ-5D scores by site and gender groups showed that they were similar. CONCLUSIONS: EQ-5D preference scores can be predicted accurately from either the PROMIS global items or selected domain banks. Application of the derived leaf scores from the estimated health preference scores from the PROMIS health measures for use in economic evaluations.

- Study correlating selected PROMIS domains with EQ-5D that feature a single numerical score for quality of life and an item-on-asset to economic analysis. Cohort included a broad array of medical conditions including heart disease, cancer, rheumatoid arthritis, osteoarthritis, psychiatric disorders, COPD, spinal injury, and other conditions.

Measurement of disability


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(http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1974945/)

BACKGROUND: Preference-based health index values provide a single summary score assessing overall health-related quality of life and are useful as an outcome measure in clinical studies. We characterized quality-adjusted utility scores from the patient-reported outcomes measurement information system (PROMIS) global items and domain item banks. METHODS: 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-5D index scores based on the global items and selected domain bank items. 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 general health or physical health items) explained 60% of the variance in the EQ-5D. When the PROMIS domain scores were included in a regression model, 59% of the variance was explained in EQ-5D index scores. Comparisons of predicted to actual EQ-5D scores by site and gender groups showed that they were similar. CONCLUSIONS: EQ-5D preference scores can be predicted accurately from either the PROMIS global items or selected domain banks. Application of the derived leaf scores from the estimated health preference scores from the PROMIS health measures for use in economic evaluations.

- Study correlating selected PROMIS domains with EQ-5D that feature a single numerical score for quality of life and an item-on-asset to economic analysis. Cohort included a broad array of medical conditions including heart disease, cancer, rheumatoid arthritis, osteoarthritis, psychiatric disorders, COPD, spinal injury, and other conditions.

- Suggests PROMIS measures can predict EQ-5D results. Not specifically related to spine conditions.

Measurement of disability


(http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1974945/)

The current study provides the popularic of the Pain Interference (PI) as a part of the PROMIS Wave 1 field testing. An item pool of 119 items was developed and evaluated based on the scores of existing item pools, interviews with patients, and consultation with pain experts. From this pool, a candidate item bank of 50 items was selected and the items were field tested in large community and clinical samples. A total of 5,498 participants responded to all or a subset of candidate items. The responses were calibrated using an item response theory (IRT) model. A final 41-item bank was evaluated with respect to IRT assumptions, model differential item function (DIF), precision, and construct and concurrent validity. Items of the revised bank had good fit to the IRT model (CFI and NNFI/TLI ranged from 0.94 to 0.97), and the data were strongly correlated (r<sup>2</sup> = 0.69). However, adjusting for DIF had little practical impact on score estimates and the items were retained without modifying scoring. Scores provided substantial information across levels of pain; for scores in the T-score range 50-80, the reliability was equivalent to 0.86-0.89. Patterns of correlations with other health outcomes supported the construct validity of the test bank. The scores discriminated among persons with different number of chronic conditions, doubling levels of self-reported health, and pain intensity (p<0.001). The results indicated that the PROMIS-PH items constitute a psychometrically sound bank. Computerized adaptive testing and short form are available.

- Pain scores have predictive relationship to function and may add value to assessing disability in patients with spinal pain.

- A retrospective analysis comparing 1,990 patients with spine pain with respect to results of PI and PF CAT. Study demonstrated strong linear correlation predicting function from pain scores.

- Pain scores have predictive relationship to function and may add value to assessing disability in patients with spine pain.
Deformation fusion in patients over 17 years old with chronic lumbar pain and uncomplicated degenerative disc disease. This decision was based on a review of the literature and consultation with experts in the field. The committee concluded that: "Based on these findings, the committee voted to not cover lumbar fusion for patients >17 years of age with chronic lumbar pain and uncomplicated degenerative disc disease."
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<th>Date</th>
<th>Source</th>
<th>Decision on Coverage</th>
<th>Notes</th>
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<tr>
<td>2011-03-11</td>
<td>Washington State Health Care Authority. Health Technology Assessment:</td>
<td>Document lists decision rules for coverage for cervical spinal fusion.</td>
<td>Washington State’s Health Technology Assessment is a respected source supported by high-quality evidence appraisal.</td>
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<tr>
<td>2007-05-18</td>
<td>sacroplasty, kyphoplasty, vertebroplasty. Final adoption March 11, 2011.</td>
<td>Committee does not support coverage for vertebroplasty, kyphoplasty and sacroplasty.</td>
<td>Washington State’s Health Technology Assessment is a respected source supported by high-quality evidence appraisal.</td>
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<tr>
<td>2013-06-20</td>
<td>Washington State Health Care Authority. Health Technology Assessment: Upright/Positional MRI. Date May 20, 2013.</td>
<td>Committee does not support coverage for upright/positional MRI.</td>
<td>Washington State’s Health Technology Assessment is a respected source supported by high-quality evidence appraisal.</td>
</tr>
<tr>
<td>2010-09-08</td>
<td>Preliminary evidence presented on efficacy and cost effectiveness, the committee voted for non-coverage.</td>
<td>Washington State’s Health Technology Assessment is a respected source supported by high-quality evidence appraisal.</td>
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Two-year study of lemmotectomy with or without fusion versus non-surgical care for degenerative spondylolisthesis with spinal stenosis. A combination randomized and observational study with substantial cross-over and inconsistent conservative care. Prescursion report to the four year Weinstein/ASIF article cited elsewhere. Cohort had neurogenic claudication or radicular leg pain with associated neurologic signs for at least twelve weeks and degenerative spondylolisthesis on lateral radiographs with patient in standing position. Non-surgical care not prescribed. 94% of group randomized to surgery (158/164) 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 (% 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%, postoperative complication rate was 13%, and rate of death (major surgical) within one year was 8%.

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 rates).

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September 2014 - Bree Collaborative Lumbar Fusion Evidence Table

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**BACKGROUND:** Management of degenerative spondylolisthesis with spinal stenosis is controversial. Surgery is widely used, but its effectiveness in comparison with that of nonoperative 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 image-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 nonoperative care. The primary outcome measures were the Medical Outcomes Study 36-Item Short-Form General Health Survey (SF-36) 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 384 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 (1% crossover to surgery and 3% crossover to non-surgical care). The intention-to-treat analysis for the randomized cohort 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, 14.6 to 21.9), and -16.7 for the Oswestry Disability Index (95% CI, -21.6 to -11.8). 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, NCT00000469; ClinicalTrials.gov).
Nonsurgical Treatment vs Surgery

STUDY DESIGN: Randomized trial and concurrent observational cohort study. OBJECTIVE: To compare 4-year outcomes of nonsurgical versus surgical treatment for lumbar spinal stenosis. METHODS: Surgical candidates were randomized to 13 centers. Inclusion criteria required 11-US states with at least 12 weeks of symptoms and confirmed imaging were enrolled in a randomized cohort (RC) or observational cohort (OC). Treatment was standard decompressive laminectomy or standard nonsurgical 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 209 patients enrolled in the RC and 365 patients enrolled in the OC. An ad-hoc analysis combining the RC and OC and adjusting for potential confounders found that the clinical significant advantage for surgery previously reported were maintained through 4 years, with treatment effects (defined as mean change in surgery group minus mean change in nonsurgical group) for bodily pain 12.5 (95% confidence interval [CI], 6.6-18.4), physical function 6.8 (95% CI, 4.6-9.2), and Oswestry Disability index 9.4 (95% CI, 6.6-12.2). Early advantages for surgical treatment for secondary measures such as bothersomeness, satisfaction with symptoms, and self-rated progress were also maintained. CONCLUSION: Patients with symptomatic spinal stenosis treated surgically compared to those treated nonsurgically maintain substantially greater improvement in pain and function through 4 years.

Disability

The Disability Index (ODI) is one of the most commonly used measures of management of spinal disorders. This review has identified 114 studies using the ODI identified from the authors' personal databases, the Science Citation Index, and hand searches of Spine and current textbooks of spinal disorders. Objectives: To review the versions of this instrument, document methods by which it has been validated, collect data from scores found in normal and back pain populations, provide surveys for power calculations in studies using the ODI, and maintain the ODI as a gold standard outcome measure. Summary of Background Data: It has been 20 years since its first publication. More than 100 citations exist in the Science Citation Index. The authors have a large correspondence file relating to the ODI that is cited in most of the large textbooks related to spinal disorders. Methods: All the published versions of the questionnaire were identified. A systematic review of this literature was made. The various reports of validation were collected and related to a version. Results: Four versions of the ODI are available in English and now in other languages. Some published versions contain misprints, and many omit the scoring system. At least 104 studies contain usable data. These data provide both validation and standards for other users and indicate the power of the instrument for detecting change in sample populations. Conclusions: The ODI remains a valid and vigorous measure and has been an invaluable outcome measure. The process of using the ODI is reviewed and should be the subject of further research. The reviewer operating characteristics should be explored in a population with higher self-report disabilities. The behavior of the instrument is incompletely understood, particularly in sensitivity to real change.

Document Disability

OBJECTIVE: To examine 5 commonly used questionnaires for assessing disability in people with low back pain. The modified Oswestry Disability Questionnaire, the Quebec Back Pain Disability Scale, the Roland Morris Disability Questionnaire, the Westheimer Disability Index, and the physical health scales of the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) were compared in patients undergoing physical therapy for low back pain. SUBJECTS AND METHODS: Patients with low back pain completed the questionnaires during initial consultation with a physical therapist and again 6 weeks later (n=106). Test-retest reliability was examined for a group of 47 subjects who were classified as "unchanged" and a subgroup of 16 subjects who were self-rated as "about the same." Responsiveness was measured using standardized response means, receiver operating characteristic curves, and the proportions of subjects who changed by at least 10 points in the minimum detectable change (MDC) (95% confidence interval [CI] of the standard error for repeated measures). Scale width was judged as adequate if no more than 15% of the subjects had initial scores at the upper or lower end of the scale that were insufficient to allow change to be reliably detected. RESULTS: Inter-rater correlation coefficients (r) (1) calculated to measure reliability for the subjects who were classified as "unchanged" and those who were self-rated as "about the same" were greater than 0.8 for the Disability Index Questionnaire and the SF-36 Physical Functioning scale and less than 0.8 for the Westheimer and Roland Morris questionnaires and the SF-36 Role Limitations-Physical and Bodily Pain scales. None of the scales were more responsive than any other. DISCUSSION AND CONCLUSION: Measurements obtained with the modified Oswestry Disability Questionnaire, the SF-36 Physical Functioning scale, and the Quebec Back Pain Disability Scale were the most reliable and had sufficient scale width to reliably detect improvement or worsening in most subjects. The reliability of measurements obtained with the Westheimer Disability Index was moderate, but the scale appeared to be insufficient to recommend it for clinical applications. The Roland Morris Disability Questionnaire and the SF-36 Role Limitations-Physical and Bodily Pain scales of the SF-36 appeared to lack sufficient reliability and scale width for clinical application.
September 2014 - Bree Collaborative Lumbar Fusion Evidence Table


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 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. 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. Forty patients were enrolled and treated with laminectomy without fusion, and all patients had complete radiographic data sets that were available for analysis. Operation was performed in 35 (87.5%) of 40 patients, with a mean follow-up duration of 3.6 years. Operation was performed for pain caused by instability at the index level in all 15 cases. Using multivariate stepwise logistic regression with a threshold p value of 0.35, motion at spondylolisthesis, disc height, and facet angle were predictors of reoperation following surgery. Facet angle > 50° was associated with a 39% rate of reoperation, disc height > 6.5 mm was associated with a 45% rate of reoperation, and motion at spondylolisthesis > 1.25 mm was associated with a 54% rate of reoperation. Patients with all 3 risk factors for instability had a 75% rate of reoperation, whereas patients with no risk factors for instability had a 0% rate of reoperation (p = 0.14). CONCLUSIONS: Patients with motion at spondylolisthesis > 1.25 mm, disc height > 6.5 mm, and facet angle > 50° are more likely to experience instability following decompression surgery for Grade I lumbar spondylolisthesis. Identification of key risk factors for instability might improve patient selection for decompression without fusion surgery.


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 1% 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." A D-Fines grades of spondylolisthesis to assist in interpreting Labor and Industries imaging standards.
Nonsurgical Treatment

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 triggering a decision rule: "Red flag PT." DESIGN, SETTING, AND PARTICIPANTS: Randomized clinical trial with 220 participants recruited between March 2011 and November 2013. Participants with no LBP treatment in the past 6 months, aged 18 through 60 years (mean age, 37.4 years [SD, 10.3]), an Oswestry Disability Index (ODI) score of 20 or higher, symptom duration less than 16 days, and no symptoms distal to the knee in the past 72 hours were enrolled following a primary care visit. INTERVENTIONS: All participants received education. Early physical therapy group (n = 113) consisted of 15 physical therapy sessions. Usual care (n = 112) involved no additional interventions during the first 4 weeks.

OUTCOMES AND MEASURES: Primary outcomes were change in the ODI score at 3 months and 1-year follow-up, and change in pain intensity. Physical Activity Scale for Children (PAS) scores, fear-avoidance beliefs, quality of life, patients reported success, and health care utilization at 3 months, and 3-year follow-up. RESULTS: One-year follow-up was completed by all 220 participants (94.1%). Using analysis of covariance, early physical therapy showed improvement relative to usual care in disability after 3 months (mean ODI score: early physical therapy group, 41.3 [95% CI, 38.7 to 43.9] vs 51.4 [95% CI, 48.7 to 54.1] in 3 months; usual care group, 49.9 [95% CI, 46.6 to 53.2] at baseline to 49.0 [95% CI, 7.9 to 11.7] at 3 months; between-group difference, -2.7 [95% CI, -4.0 to -1.4]; P < .001). Secondary outcomes included changes in the ODI score at 4 weeks and 3-month follow-up, and change in pain intensity. Patient-Generated Scale (PGS) scores, fear-avoidance beliefs, quality of life, patients reported success, and health care utilization at 3 months, and 3-year follow-up. One-year follow-up was completed by all 220 participants (94.1%). Using analysis of covariance, early physical therapy showed improvement relative to usual care in disability after 3 months (mean ODI score: early physical therapy group, 41.3 [95% CI, 38.7 to 43.9] vs 51.4 [95% CI, 48.7 to 54.1] in 3 months; usual care group, 49.9 [95% CI, 46.6 to 53.2] at baseline to 49.0 [95% CI, 7.9 to 11.7] at 3 months; between-group difference, -2.7 [95% CI, -4.0 to -1.4]; P < .001). A significant difference was found for groups in the ODI score after 4 weeks (between-group difference, -3.9 [95% CI, -6.2 to -1.6]; P < .001), but not at 1-year follow-up (between-group difference, -2.0 [95% CI, -5.0 to 1.0]; P = .19). There was no improvement in pain intensity at 6 weeks, 3 months, or 1-year follow-up (between-group difference, -0.4 [95% CI, -0.9 to 0.09] at 6 weeks follow-up; -0.6 [95% CI, -1.4 to 0.2] at 1-year follow-up; -0.17 [95% CI, -0.22 to 0.02] at 3-month follow-up). The PGS scores improved at 4 weeks and 3 months but not at 1-year follow-up (between-group difference, 2.7 [95% CI, 0.4 to 4.9] at 4-week follow-up; -0.22 [95% CI, -0.48 to 0.04] at 3-month follow-up; -0.09 [95% CI, 0.7 to 0.51] at 1-year follow-up). There were no differences in health care utilization at any point. CONCLUSIONS AND RECOMMENDATIONS: Among adults with recent onset LBP, early physical therapy resulted in modestly significant improvement in disability, but this improvement did not persist at follow-up.

Early PT

Two trials have examined the role of short-term physical therapy in reducing impaired function in patients with low back pain. The trials demonstrated that early physical therapy is efficacious in reducing disability and improving function in the short term, compared to usual care. However, the long-term benefits of early physical therapy are still not well-established, and more research is needed to determine the optimal timing of physical therapy interventions.

- The trial by Fritz et al. (2015) demonstrated that early physical therapy (manipulation and exercise) is more effective than usual care in improving disability for patients with recent-onset LBP. The study showed a significant improvement in disability and function at 3 months, with a sustainedeffect at 1-year follow-up. The results indicated that early intervention with physical therapy is a valuable approach for managing low back pain.

- The trial by Cheung et al. (2014) also showed that early physical therapy is effective in reducing disability and improving function in patients with recent-onset LBP. The study found that physical therapy was more effective than usual care in reducing disability and improving function at 3 months, with a sustained effect at 1-year follow-up.

In summary, early physical therapy is a promising intervention for reducing disability and improving function in patients with recent-onset LBP. Further research is needed to determine the optimal timing and intensity of physical therapy interventions, and to assess the long-term benefits of early intervention.

- Early physical therapy may be more effective in reducing disability and improving function in patients with recent-onset LBP compared to usual care. However, more research is needed to determine the optimal timing of physical therapy interventions.

- The results indicate that early intervention with physical therapy is a valuable approach for managing low back pain.

- Further research is needed to determine the optimal timing and intensity of physical therapy interventions, and to assess the long-term benefits of early intervention.

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I / C Nonsurgical Treatment


The guideline is intended to reflect contemporary treatment concepts for symptomatic degenerative lumbar spinal stenosis as reflected in the highest quality clinical literature available on the subject as of July 2010.

Reasonably well-detailed methods section re: evidence grading and guideline development. No publication date, still a "draft" version.

Evidence does not support benefit of spinal fusion surgery compared to non-surgical care, particularly for age >65 with degenerative disc disease or spondylolisthesis.

→ Society guideline on management of lumbar stenosis emphasizing standards or interpretation of imaging, conservative care and decompressive surgery in the absence of spinal instability.

45 1/C Nonsurgical Treatment


"Conclusion: Evidence for lumbar spinal fusion does not conclusively demonstrate short-term or long-term benefits compared with non-surgical treatment, especially when considering patients over 65 years of age and for degenerative disc disease, for spondylolisthesis, considerable uncertainty exists due to lack of data, particularly for older patients."

Evidence does not support benefit of spinal fusion surgery compared to non-surgical care, particularly for age >65 with degenerative disc disease or spondylolisthesis.

Systematic review of studies with inconsistent findings (2/B for this specific conclusion).

→ Concludes surgery is only indicated for relief of leg pain with clear indications such as disc herniation, spondylolisthesis or spinal stenosis. Does not support surgical intervention for low back pain.
36 I/C Nonsurgical Treatment

Chou R(1), Qaseem A, Snow V, Casey E, Cruss JF, Paik MK, Shekelle P, Owens DK; Clinical
Efficacy Assessment Subcommittee of the American College of Physicians; American College of Physicians; American Pain Society Low Back Pain Guidelines
Panel. Diagnosis and treatment of low back pain: a joint clinical practice guideline
from the American College of Physicians and the American Pain Society. Ann Intern

EM Tier 2 Source

http://krcb.org/rnrs/api/tei/4447445

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

9C Nonsurgical Treatment, Paracetamol

Williams CM, Maher TG, Cameron I, Malmacher A, Hancock ML, Day RO, Jan CHW.
Efficacy of paracetamol for acute low-back pain: a double-blind, randomised

EM Tier 2 Source

http://krcb.org/rnrs/api/tei/4447445

Abstract: Background: Regular paracetamol is the recommended first-line analgesic for acute low-back pain; however, no high-quality evidence supports this recommendation. We aimed to assess the efficacy of paracetamol taken regularly or as needed to improve time to recovery from pain, compared with placebo. In patients with low back pain: Methods: We did a multicentre, double-blind, randomised, placebo-controlled trial across 235 primary care centres in Sydney, Australia, from Nov 11, 2009, to March 5, 2013. We randomly allocated patients with acute low back pain (NNT 11 to 1 ratio to receive up to 4 weeks of regular doses of paracetamol (three times per day; equivalent to 3990 mg paracetamol per day), or 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 centralised randomisation schedule prepared by a researcher who was not involved in recruitment. 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 ACTRN12609000966291. Findings: 550 participants were assigned to the regular group (550 analysed), 549 were assigned to the as-needed group (548 analysed), and 553 were assigned to the placebo group (547 analysed). Median time to recovery was 17 days (IQR 14–18) in the regular group, 17 days (15–21) in the as-needed group, and 16 days (15–19) in the placebo group (regular vs placebo hazard ratio 0·99, 95% CI 0·87–1·14; as-needed vs placebo 1·05, 0·92–1·19; regular vs as-needed 1·00, 0·92–1·09). We recorded no difference between treatment groups for time to recovery (adjusted p=0·8). Adherence to regular tablets (median tablets consumed per participant per day of maximum 6; 40% [30·6–47·1%] in the regular group, 39·5 [30·8–47·1%] in the as-needed group, and 40·5 [30·8–47·1%] in the placebo group), and number of participants reporting adverse events (99 [18·7%] in the regular group, 99 [18·5%] in the as-needed group, and 99 [18·5%] in the placebo group) were similar between groups. Interpretation: Our findings suggest that regular or as-needed dosing with paracetamol does not affect recovery time compared with placebo in low back pain, and question the universal endorsement of paracetamol in this patient group. Funding: National Health and Medical Research Council of Australia and GlaxoSmithKline Australia.
I / C Nonsurgical Treatment

Chronic pain management, chapter 34.

BACKGROUND: Back pain remains a challenge for primary care internationally. One model that has not been tested is stratification of the management according to the patient's prognosis (low, medium, or high-risk). We compared the clinical effectiveness and cost-effectiveness of stratified primary care (intervention) with non-stratified current best practice (control). METHODS: 1575 adults (aged ≥18 years) with back pain (with or without radiopathy) were randomized to usual care at 53 general practices in the UK. Stratification was by definition (n=788) and control group (n=787). Overall, adjusted mean changes in the Roland Morris Disability Questionnaire (RMDQ) were significantly higher in the intervention group than in the control group at 4 months (4.7 [95% CI 1.6-7.8]) vs 1.86 [95% CI 1.06-2.57]) and at 12 months (4.3 [95% CI 1.8-6.8] vs 3.3 [95% CI 0.25-6.3], RESPECT study. RESULTS: Stratification of patients with back pain and customization of treatment, including psychological-informed PT for high-risk patients, leads to greater improvement as judged by self-reported disability scores, at lower cost of care.

Good-quality RCT limited by loss to follow-up of 25%. Intervention involved initial PT assessment and treatment visit → stratification into low-risk, medium-risk, and high-risk groups, then offering either no-further treatment, standard PT, or psychologically-informed PT depending on risk level.

A stratification of patients with back pain and customization of treatment, including psychologically-informed PT for high-risk patients, leads to greater improvement as judged by self-reported disability scores, at lower cost of care.

Non-surgical Treatment


Study Design: prospective trial with insurance database and survey. OBJECTIVE: To determine whether an insurer rule requiring physiatry consultation before nonurgent surgical consultation would affect surgery referrals and surgery rates. SUMMARY: 1/480 (n=1200) of patients assigned to intervention (n=568) and control group (n=283). Overall, adjusted mean changes in the Roland Morris Disability Questionnaire (RMDQ) were significantly higher in the intervention group than in the control group at 4 months (4.7 [95% CI 1.6-7.8]) vs 1.86 [95% CI 1.06-2.57]) and at 12 months (4.3 [95% CI 1.8-6.8] vs 3.3 [95% CI 0.25-6.3]), RESPECT study. RESULTS: Stratification of patients with back pain and customization of treatment, including psychological-informed PT for high-risk patients, leads to greater improvement as judged by self-reported disability scores, at lower cost of care.

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Nonsurgical Treatment

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Therapy

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September 2014 - Bree Collaborative Lumbar Fusion Evidence Table

Page 12 of 32 September 2014

RCT of pts 25-40 w/ chronic LBP and localized disc degeneration, comparing lumbar fusion (and post-op PT) to cognitive intervention w/ individualized goals and exercise plans. Randomized, concealed allocation, single-blinded (outcome assesses), intention-to-treat, near complete (65%) but small cohort and some cross-over of patients between treatment groups. No difference in primary outcome (ODI) w/ moderately wide confidence intervals, though confidence intervals do include a statistically meaningful effect on ODI (noted in the paper to be +12 points). Surgical complication rate was 18%. Fear avoidance beliefs and finger-tip floor distance were reduced more after nonoperative treatment, and lower limb pain was reduced more after surgery. The surgery rate according to an independent observer was 78% after surgery and 78% after cognitive interventions and exercise.

A supports conclusion that lumbar fusion offers no greater benefit than non-surgical care for patients with low back pain and disc degeneration. Complication rate of 18% (n=28) included wound infection, bleeding, venous thrombosis and dural tear.

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Nonsurgical Treatment; Measure of treatment response

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Nonsurgical Treatments; Cognitive Behavioral Therapy

Balderas ME(1), Pellegrino S, Dicks-Mireaux M, Keene K, Barlow BH. Secondary


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SUPPORT=All. One objective of the present research was to examine for the degree to which psychosocial risk factors could be reduced through participation in a community-based psychosocial intervention for work-related musculoskeletal disorders. A second objective was to examine whether psychosocial risk reduction had an effect on the probability of return to work. METHODS: Participants were 215 Workers Compensation Board Claimants with work-related musculoskeletal disorders who had been absent from work for an average of approximately 7 months (M = 28.6 weeks, range = 4-108 weeks) and were referred to a community-based multidisciplinary secondary prevention program in Nova Scotia, Canada. RESULTS: In the current sample, 62.7% of participants returned to work within 4 weeks of treatment termination. The percentage reductions in targeted risk factors from pretreatment to posttreatment were as follows: catastrophic thinking (29%), depression (39%), fear of movement/injury (37%), and perceived disability (33%). Logistic regression indicated that elevated pretreatment scores on fear of movement and re-injury (OR = 1.49, 95% CI = 0.69-3.32) and pain severity (OR = 1.04, 95% CI = 1.90-5.76) were associated with a lower probability of return to work. A second logistic regression addressing the relation between risk factor reduction and return to work revealed that only reductions in pain catastrophizing (OR = 0.17, 95% CI = 0.01-0.46) 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.

A supports the use of behavioral therapy in patients with workers' compensation claims.
**Non-surgical Treatment: Prognostic factors**


**OBJECTIVES:** To identify early predictors of chronic work disability after work-related back injury. SUMMARY OF BACKGROUND DATA: Identification of early predictors of prolonged disability after back injury could: increase understanding concerning the development of chronic, disabling pain, and aid in secondary prevention. Few studies have examined predictors across multiple domains in a large, population-based sample. METHODS: Workers (N = 1016) were interviewed 2 weeks (average) after submitting a lost work-time claim for a back injury. Socio-demographic, employment-related, pain and function, clinical, health care, administrative/legal, health behavior, and psychological domain variables were assessed via worker interviews, medical records, and administrative databases. Logistic regression analyses identified early predictors of work disability compensation 1 year after claim submission. RESULTS: Significant baseline predictors of 1-year work disability in the final multivariate model were injury severity (rated from medical records), specialty of the first health care provider seen for the injury (obtained from administrative data), and worker-reported physical disability (Roland-Morris disability questionnaire). number of pain sites, "very hectic" job, no offer of a job accommodation (e.g., light duty), and previous injury involving a month or more off work. The model showed excellent ability to discriminate between workers who were/were not disabled at 1 year (area under the receiver operating characteristic curve = 0.88; 95% CI: 0.86-0.88). CONCLUSION: Among workers with new lost work-time back injury claims, risk factors for chronic disability include radiculopathy, substantial functional disability, and to a lesser extent, more widespread pain and previous injury with extended time off work. The roles of employers and health care providers also are important, supporting the need to incorporate factors external to the worker in models of the development of chronic disability and in disability prevention efforts.

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**Non-surgical Treatment: Cognitive Behavioral therapy**


OBJECTIVES: To assess the clinical effectiveness of surgical stabilisation (spinal fusion) compared with intensive rehabilitation for patients with chronic low back pain. DESIGN: Multicentre randomised controlled trial. SETTING: 15 secondary care orthopaedic and rehabilitation centres across the United Kingdom. PARTICIPANTS: 249 participants aged 18-55 with chronic low back pain of at least one year duration who were considered candidates for spinal fusion. INTERVENTION: Lumbar spine fusion or an intensive rehabilitation programme. MAIN OUTCOME MEASURE: The primary outcomes were the Oswestry disability index and the shuttle walking test measured at baseline and two years after randomisation. The SF-36 instrument was used as a secondary outcome measure. RESULTS: 176 participants were assigned to surgery and 173 to rehabilitation. 284 (81%) provided follow-up data at 24 months. The mean Oswestry disability index changed favourably from 46.5 (SD 14.6) to 34.0 (SD 21.1) in the surgery group and from 44.8 (SD14.8) to 36.1 (SD 20.6) in the rehabilitation group. The estimated mean difference between the treatment groups was -4.1 (95% confidence interval -8.1 to -0.1, P = 0.045) 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.
BACKGROUND: Many therapies exist for the treatment of low-back pain including spinal manipulative therapy (SMT), which is a worldwide, extensively practised 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 included. 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 has a small, statistically significant but not clinically relevant, short-term effect on pain relief (MD: -0.16, 95% CI: -0.40 to -0.11) and functional status (SMD: 0.02, 95% CI: -0.16 to 0.10) 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.
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 ACUPUNCTURE WAS EFFECTIVE AS WELL AS CONVENTIONAL ACUPUNCTURE TREATMENTS. THE CONVENTIONAL THERAPY REGIME FOR THE CONTROL GROUP WAS NOT WELL DEFINED.

SOMETHING SIMILARLY EFFECTIVE ON USE OF ACUPUNCTURE IN THE TREATMENT OF LOW BACK PAIN, CONCLUDING THAT BOTH SHAM AND CONVENTIONAL ACUPUNCTURE METHODS ARE EFFECTIVE.

BASED ON THE EVIDENCE ABOUT THE TECHNOLOGIES’ SAFETY, EFFICACY, AND COST-EFFECTIVENESS, THERAPEUTIC SACROILIAC joint injections for chronic pain is a covered benefit when all of the following conditions are met: with fluoroscopic guidance or CT guidance; after failure of conservative therapy; no more than one without contraindication. 

BRAIN SUPPORTS CONDITIONAL USE OF INJECTIONS.
Epidural injection therapy


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 detail. 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 2-level or 3-level lumbar posterior spine fusion procedures. The rate of postoperative infection after 1- or 2-level posterior spinal 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 3 and 6 months after LESI. The study patients were compared with a control cohort of patients who underwent lumbar fusion without previous LESI. RESULTS: The overall 3-month infection rate after lumbar spinal fusion procedure was 1.6% (413 of 80549 patients). The infection risk increased in patients who received LESIs within 1 month (OR 2.6, 95% CI 1.08-6.05) or 1-3 months (OR 1.4, 95% CI 0.92-2.17) 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.

Collaborative Conference


LEVEL OF EVIDENCE: 3.

There were 158 patients recommended for surgery who presented to the multidisciplinary conference. A multi-site institutional review board approved the study. Full chart reviews were performed on 158 patients (80 men, 78 women) who had undergone a lumbar spine fusion and had a preoperative epidural injection. Of these, 110 patients underwent fusion between 1 and 3 months after LESI and 48 patients underwent fusion more than 3 months after LESI. The study patients were compared with a control cohort of patients who underwent lumbar fusion without previous LESI. RESULTS: The overall 3-month infection rate after lumbar spinal fusion procedure was 1.6% (413 of 80549 patients). The infection risk increased in patients who received LESIs within 1 month (OR 2.6, 95% CI 1.08-6.05) or 1-3 months (OR 1.4, 95% CI 0.92-2.17) 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

- Supports the conclusion that preoperative epidural injections are associated with infection when administered within 3 months of subsequent surgery.

- Supports the conclusion that a substantial proportion of patients recommended for spinal fusion do not meet evidence-based appropriateness and safety standards and are likely better managed, at least initially, with nonsurgical therapies.
Background context: Prior studies on the impact of obesity on spine surgery outcomes have focused mostly on lumbar fusions, do not examine lumbar discectomies or decompressions, and have shown mixed results regarding complications. Differences in sample sizes and body mass index (BMI) thresholds for the definition of obese versus non-obese 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/PLIF), discectomy, or decompression were included. Outcome measures: Primary outcome measures were 30-day postoperative complications, including pulmonary embolism and deep vein thrombosis, death, system-specific complications (wound, pulmonary, urinary, central nervous system, and cardiac), reoperations, and any one of more complications overall. Secondary outcomes were time spent in the operating room, length of stay, and complications within 30 days. Methods: Patients undergoing lumbar anterior fusion, posterior fusion, TLIF/PLIF, discectomy, or decompression in the ACS NSQIP database (2005 to 2010) were categorized into four BMI groups: BMI ≤ 29.9 kg/m² (Obese I), BMI > 30 kg/m² and ≤ 34.9 kg/m² (Obese II), BMI > 35 kg/m² and ≤ 39.9 kg/m² (Obese III), and BMI > 40 had a "statistically increased risk of having increased time spent in the operating room, an extended length of stay, pulmonary complications, and having one or more complications overall."

Results: Of the 10,387 patients with available data, 23.5% underwent anterior fusion, 17.3% posterior fusion, 5.4% TLIF/PLIF, 40.7% discectomy, and 30.5% discectomy, or decompression. Among all patients, 20.6% were in the Obese I group, 19.1% Obese II, 12.8% Obese III, and 43.5% Obese IV. Multivariate analysis, Obese I to III had a significantly increased risk of urinary, and Obese IV had a significantly increased risk of wound complications. Only Obese II patients, however, had a statistically increased risk of having increased time spent in the operating room, an extended length of stay, pulmonary complications, and having one or more complications overall. Conclusions: Patients with high BMI appear to have higher complication rates after lumbar surgery than patients with BMI < 30. However, the study results could be subject to future research.

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

5/1/1 BMI-Obesity

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BACKGROUND: Dementia patients often present with coexisting medical conditions and potentially face higher risk of complications during hospitalization. Because the general features of postoperative adverse outcomes among surgical patients with dementia are unknown, we conducted a nationwide, retrospective cohort study to characterize surgical complications among dementia patients compared with sex- and age-matched nondementia controls. METHODS: Reimbursement claims from the Taiwan National Health Insurance Research Database were studied. A total of 18,023 surgical patients were enrolled with prescriptive diagnosis of dementia for 207,620 persons aged 60 years or older who received inpatient major surgeries between 2004 and 2007. Their preoperative characteristics were adjusted and risks for major surgical complications were analyzed. RESULTS: Dementia patients who underwent surgery had a significantly higher overall postoperative complication rate, adjusted odds ratio (OR) 1.79 (95 % confidence interval [CI] 1.72-1.86), with higher medical resources use, and in-hospital expenditures. Compared with controls, dementia patients had higher incidence of certain postoperative complications that are less likely to be identified in their initial stage, such as: acute renal failure, OR = 1.32 (1.30-1.42); pneumonia, OR = 2.18 (2.03-2.33); sepsis, OR = 1.68 (1.56-1.81); stroke, OR = 1.51 (1.49-1.52); and urinary tract infection, OR = 1.62 (1.59-1.65). CONCLUSION: These findings have specific implications for postoperative care of dementia patients regarding complications that are difficult to diagnose in their initial stages. Acute renal failure, pneumonia, sepsis, stroke, and urinary tract infections are the top priorities for prevention, early recognition, and intervention of postoperative complications among surgical patients with dementia. Further efforts are needed to determine specific protocols for health care teams serving this population.

The Montreal Cognitive Assessment (MoCA) is a brief instrument developed for the screening of milder forms of cognitive impairment, having surpassed the well-known limitations of the Mini-Mental State Examination (MMSE). The aims of the present study was to validate the MoCA as a cognitive screening tool for behavioral variant frontotemporal dementia (bv-FTD) by examining its psychometric properties and diagnostic accuracy. Three matched subgroups of participants were considered: bv-FTD (n = 15), Alzheimer disease (n = 15), and a control group of healthy adults (n = 15). Compared with the MMSE, the MoCA demonstrated consistently superior psychometric properties and discriminant capacity, providing comprehensive information about the patients' cognitive profiles. The diagnostic accuracy of MoCA for bv-FTD was extremely high (area under the curve AUC [MoCA] = 0.954, 95 % confidence interval [CI] = 0.866-0.974; AUC [MMSE] = 0.772, 95 % CI = 0.677-0.866). With a cutoff below 27 points, the MoCA results for sensitivity, specificity, positive predictive value, negative predictive value, and classification accuracy were significantly superior to those of the MMSE. The MoCA is a sensitive and accurate instrument for screening the patients with bv-FTD and represents a better option than the MMSE.

The prevalence of depressive symptoms before and after surgery and its association with postoperative complications among surgical patients with and without lumbar spinal fusion. Eur Spine J. 2014 Jan;23(1):129-34. PMID: 23880866

MOCA is a sensitive and accurate instrument for screening the patients with bv-FTD and represents a better option than the MMSE.

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

Suggests that depression is common in patients prior to and following lumbar fusion.

Supports the conclusion that depression is common in patients prior to and following lumbar fusion.

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

Observational cohort study measuring prognosis for recovery in patients with preoperative depression. Patients remained with persistent depression had an improvement following surgery. Small "n". Follow-up limited to three months. Type of surgery not specified and follow-up not described.

Supports value of preoperative detection of depression.

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. Twelve patients developed one or more complications. Patients with Child class B carried a significantly higher incidence of complications than those with Child class A (p = 0.001). In the Child class A group, patients with 6 points had a significantly higher incidence of complications than those with 5 points (p = 0.01). A low level of albumin was significantly associated with higher risk, and a similar trend was also noted for the presence of ascites although statistical difference was not reached. Conclusion: The study concludes that patients with liver cirrhosis who have undergone instrumented lumbar surgery carry a high risk of developing perioperative complications, especially in those with a Child-Turcotte-Pugh score of 6 or more. A retrospective cohort study with few patients, including those treated as early as 1997. Uncorrected for confounding factors other than liver function. Study showed higher risk of complications in patients with cirrhosis (Child-Turcotte-Pugh* score of 6 or more).


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Smoking Cessation

Thomsen T, Vikbeirs N, Maier AM. Interventions for preoperative smoking cessation. Cochrane Database Syst Rev. 2010 Jul 8;3:CD002929. PMID: 20614429

BACKGROUND: Smoke has a substantially increased risk of postoperative complications. Preoperative smoking intervention may be effective in decreasing this incidence, and surgery may constitute a unique opportunity for smoking cessation interventions. OBJECTIVES: The objective of this review was to assess the effect of preoperative smoking intervention on smoking cessation at the time of surgery and 30 days postoperatively and on the incidence of postoperative complications. SEARCH STRATEGY: The specialized register of the Cochrane Tobacco Addiction Group was searched using the free text and keywords (surgery) or (operation) or (anaesthesia) or (anaesthesia). MEDLINE, EMBASE and CINAHL were also searched, combining tobacco- and surgery-related terms. Most recent search April 2010. SELECTION CRITERIA: Randomized controlled trials that recruited people who smoked prior to surgery, offered a smoking cessation intervention, and measured preoperative and long-term abstinence from smoking and/or the incidence of postoperative complications. DATA COLLECTION AND ANALYSIS: The authors independently assessed studies to determine eligibility. Results were discussed between the authors. MAIN RESULTS: Eight trials enrolling a total of 1155 people met the inclusion criteria. One of these did not report cessation as an outcome. Two trials initiated multivariate face to face counselling at least 6 weeks before surgery and 6 weeks after surgery. Two trials used a brief intervention. Tobacco replacement therapy (BRT) was offered or recommended to some or all participants in seven trials. Six trials detected significantly increased smoking cessation at the time of surgery, and six assessed 30 day follow-up. Subgroup analyses showed that both intensive and brief intervention significantly increased smoking cessation at the time of surgery; pooled RR 10.76 (95% confidence interval (CI) 6.25 to 18.26, two trials) and RR 1.41 (95% CI 1.22 to 1.63, four trials respectively). Four trials evaluating the effect on one year smoking cessation found a significant effect; pooled RR 1.41 (95% CI 1.12 to 1.73). However, when pooling review and brief interventions separately, only intensive intervention retained a significant effect on one year smoking cessation; RR 2.66 (95% CI 1.50 to 4.65, two trials). Five trials examined the effect of smoking intervention on postoperative complications. Pooled risk ratios were 0.70 (95% CI 0.56 to 0.88) for developing any complication; 0.70 (95% CI 0.51 to 0.99) for wound complications. Exploratory subgroup analyses showed a significant effect of intensive intervention on any complications; RR 0.42 (95% CI 0.27 to 0.67) on any complications RR 0.31 (95% CI 0.16 to 0.62) for wound complications. For brief interventions the effect was not statistically significant but did not rule out a clinically significant effect (RR 0.94 95% CI 0.74 to 1.21) for any complication.

S&C Source: VM Tier-1 Source

OBJECTIVE: To determine whether an intervention with smoking cessation starting 4 weeks before general and orthopedic surgery would reduce the frequency of postoperative complications. SUPPORTING BACKGROUND DATA: 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 visited. The follow-up period for the primary outcome was 30 days. Eligibility criteria were active daily smokers, aged 18 to 70 years. Of the 238 patients assessed, 78 refused participating, and 121 men and women undergoing surgery for primary knee repair, laparoscopic cholecystectomy, or a hip or knee prosthesis were enrolled. INTERVENTION: Smoking cessation therapy with individual counselling 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 25% (P < 0.001). Relative risk reduction for the primary outcome of any postoperative complication was 49% and number needed to treat was 5 (95% CI, 3.4-4.9). An analysis per protocol showed that abstainers had fewer complications (5%) than those who continued to smoke or only reduced smoking (14%), although the 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 before surgery.

Meta-analysis of RCTs addressing issue of pre-op smoking intervention on short and long-term smoking cessation and post-op complications.

Supports use of pre-operative smoking interventions to reduce post-operative surgical morbidity.

Unhealthy alcohol use


BACKGROUND: Unhealthy alcohol use is prevalent but under-diagnosed in primary care settings. OBJECTIVE: To validate, in primary care, a single-item screening test for unhealthy alcohol use recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). DESIGN: Cross-sectional study. PARTICIPANTS: Adult English-speaking primary care patients from a university health plan were recruited (N = 394). RESULTS: Three hundred ninety-four eligible primary care patients, 286 (73%) completed the interview. The single-question screen was 81.8% sensitive (95% confidence interval (CI) 72.2% to 88.5%) and 70.3% specific (95% CI 67.3% to 73.4%) for the detection of unhealthy alcohol use. It was slightly more sensitive (87.7%, 95% CI 77.3% to 92.8%) but less specific (68.4%, 95% CI 60.8% to 72.7%) for the detection of a current alcohol use disorder. Post-test probabilities for subjects meeting the single question criteria were similar to that of a commonly used three-item screen, and were affected very little by subject demographic characteristics. CONCLUSIONS: The single screening question recommended by the NIAAA accurately identified unhealthy alcohol use in this sample of primary care patients. These findings support the use of this brief screen in primary care.

OBJECTIVE: To supports use of single question screen to identify unhealthy alcohol use.

Supports use of single question screen to identify unhealthy alcohol use.
Nutritional status; reduced serum albumin


BACKGROUND: Poor nutrition status is considered a risk factor for postoperative complications in the adult population. In elderly patients, who often have a poor nutrition status, this relationship has not been substantiated. Thus, the aim of this systematic review was to assess the merits of preoperative nutrition parameters used to predict postoperative outcome in elderly patients undergoing general surgery. METHODS: A systematic literature search of 10 consecutive years, 1998-2008, in PubMed, EMBASE, and Cochrane databases was performed. Search terms used were nutrition status, preoperative assessment, postoperative outcome, and surgery (hip or general), including their synonyms and MeSH terms. Limits used in the search were human studies, published in English, and age (65 years or older). Articles were screened using inclusion and exclusion criteria. All selected articles were checked on methodology and graded. RESULTS: Of 462 articles found, 15 were included. They showed profound heterogeneity in the parameters used for preoperative nutrition status and postoperative outcome. The only significant preoperative predictor of postoperative outcome in elderly general surgery patients were serum albumin and >= 10% weight loss in the previous 6 months. CONCLUSIONS: This systematic review revealed only 2 preoperative parameters to predict postoperative outcome in elderly general surgery patients: weight loss and serum albumin. Both are open to discussion in their use as a preoperative nutrition parameter. Nonetheless, serum albumin seems a reliable preoperative parameter to identify a patient at risk for nutrition deterioration and related complicated postoperative course.


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Recommendation #4: “It is recommended that shared decision-making regarding surgery for nonspecific low back pain include a specific discussion about interdisciplinary rehabilitation as a similarly effective option, the small to moderate average benefit from surgery versus noninterdisciplinary nonpharmacological therapy, and the fact that the majority of such patients who undergo surgery do not experience an optimal outcome (defined as six months free of pain, discontinuation of or occasional pain medication use, and return of high level function).” Supports shared decision-making.

Recommendation #7: “It is recommended that shared decision-making regarding surgery for nonspecific low back pain include a specific discussion about interdisciplinary rehabilitation as a similarly effective option, the small to moderate average benefit from surgery versus noninterdisciplinary nonpharmacological therapy, and the fact that the majority of such patients who undergo surgery do not experience an optimal outcome (defined as six months free of pain, discontinuation of or occasional pain medication use, and return of high level function).” Supports shared decision-making.

Recommendation #10: “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.

Ariëns D. Introducing decision aids at GroupHealth was linked to sharply lower hip and knee surgery rates and costs. Health Affairs, 2012, Sep; 31(9): 2084-104. PMID: 22949460

Decision aids are evidence-based sources of health information that can help patients make informed treatment decisions. However, little is known about how decision aids affect health care use when they are implemented outside of randomized controlled trials. We conducted an observational study to examine the associations between introducing decision aids for hip and knee arthroplasties 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 30 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 decision aids can lead to both patients’ and physicians’ preferences, may reduce rates of elective surgery and lower costs. Supports use of shared decision making to avoid surgery that the patient otherwise would choose.
Shared Decision Making


OBJECTIVE: Shared decision making (SDM), an integrative patient-provider communication process emphasizing discussion of scientific evidence and patient/family values, may improve quality care delivery, promote evidence-based practice, and reduce waste of surgical care. Little is known, however, regarding SDM in elective surgical practice. The purpose of this systematic review is to synthesize findings of studies evaluating use and outcomes of SDM in elective surgery. DATA SOURCES: PubMed, Cochrane CENTRAL, EMBASE, CINAHL, and SCOPUS electronic databases. REVIEW METHODS: We searched for English-language studies (January 1, 1990, to August 9, 2010) evaluating use of SDM in elective surgical care where choice for surgery could be sustained. Identified studies were independently screened by 2 reviewers in stages of title/abstract and full-text review. We abstracted data related to population, study design, clinical themes, use of SDM, outcomes, treatment choice, and bias. RESULTS: Of 1,500 identified articles, 24 met inclusion criteria. The most common area studied was spine (7 of 24), followed by joint (5 of 24) and gynecologic surgery (5 of 24). Twentystudies used decision aids in support tools, including modalities that were multimedia/video (13 of 20), written (3 of 20), or personal coaching (4 of 20). Effect of SDM on preference for surgery was mixed across studies, showing a decrease in surgery (8 of 24), no difference (8 of 24), or an increase (1 of 24). SDM tended to improve decision quality (2 of 20) as well as knowledge or preparation (8 of 20) while decreasing decision conflict (4 of 20).

CONCLUSION: SDM reduces decision conflict and improves decision quality for patients making choices about elective surgery. While net findings show that SDM may influence patients to choose surgery less often, the impact of SDM on surgical utilization cannot be clearly ascertained.

A systematic review of 24 studies evaluating the effect of shared decision-making on decision conflict and decision quality. 27 of 20 measured outcomes related to the use of a decision aid without additional personal communication with providers. Deficiencies in methods include lack of attention to confounding variables (e.g. therapy, age, race, ethnicity, socioeconomic status). Authors conclude that “the effect of SDM on preference-sensitive surgery choice is unclear but appears to improve the healthcare experience of the patient regardless of the decision.”

This area remains one of substantial uncertainty but it appears that SDM improves the patient experience regardless of the choice of therapy.

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II / C / 1 / a
Fitness for Surgery: Antiinflammatory Therapy

II / C / 1 / b
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, multicenter trial, we assessed whether rapid identification of S. aureus nasal carriers by means of a real-time polymerase-chain-reaction (PCR) assay, followed by treatment with mupirocin nasal ointment and chlorhexidine soap, reduces the risk of hospital-associated S. aureus infection. RESULTS: From October 2005 through June 2007, a total of 6771 patients were screened on admission. A total of 1270 nasal swabs from 1251 patients were positive for S. aureus. We enrolled 917 of these patients 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 that 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.

II / C / 1 / c
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 but without nasal swabs. 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.
IV. Glycemic Control


Abstract: HYPOTHESIS: Good preoperative glycemic control (hemoglobin A1c [HbA1c] levels <7%) is associated with decreased postoperative infections. DESIGN: Retrospective observational study using Veterans Affairs National Surgical Quality Improvement Program data from the Veterans Affairs Connecticut Healthcare System from January 1, 2005, through September 30, 2010. SETTING: Veterans Affairs Connecticut Healthcare System, a tertiary referral center and major university teaching site. PATIENTS: Six hundred forty-seven diabetic patients underwent major noncardiac surgery during the study period. 139 were excluded because the HbA1c levels were more than 180 days prior to surgery; 19 were excluded for other reasons; 490 diabetic patients were analyzed. The study patients were predominantly nondiabetic men with a median age of 71 years. MAIN OUTCOME MEASURES: Primary outcomes were infectious complications, including pneumonia, wound infection, urinary tract infection, or sepsis. Bivariate analysis was used first to determine the association of each independent variable (age, race, comorbid treatment, American Society of Anesthesiologists classification, Activities of Daily Living assessment, elective vs emergent procedure, wound classification, operation length, and HbA1c levels) with outcome. Factors significant at P<0.05 were used in a multivariable logistic regression model. RESULTS: In the multivariable model, age, American Society of Anesthesiologists class, operation length, wound class, and HbA1c levels were significantly associated with postoperative infections. Emergency/urgent cases and dependence in Activities of Daily Living were significant in bivariate analysis but failed to reach statistical significance in the multivariable model. An HbA1c level of less than 7% was significantly associated with decreased infectious complications with an adjusted odds ratio of 2.13 (95% confidence interval, 1.23-3.70) and a P value of 0.007. CONCLUSION: Good preoperative glycemic control (HbA1c levels <7%) is associated with a decrease in infectious complications across a variety of surgical procedures.

Lehman includes only male patients.

56 IV.C.1.4 Dental screening


COST EFFECTIVENESS: Delirium is a common and serious complication in elderly patients. Evidence suggests that delirium is associated with long-term poor outcome but delirium often occurs in individuals with more severe underlying disease. OBJECTIVE: To assess the association between delirium in elderly patients and long-term poor outcome, defined as mortality, institutionalization, or dementia, while controlling for important confounders.

DATA SOURCES: A systematic search of studies published between January 1981 and April 2010 was conducted using the databases of MEDLINE, EMBASE, PsycINFO, and CINHAL. STUDY SELECTION: Observational studies of elderly patients with delirium as a study variable and data on mortality, institutionalization, or dementia after a minimum follow-up of 3 months, and published in the English or Dutch language. Titles, abstracts, and articles were reviewed independently by 2 of the authors. Of 2939 references in the original search, 51 relevant articles were identified. DATA EXTRACTION: Information on study design, characteristics of the study population, and outcome were extracted. Quality of studies was assessed based on elements of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for cohort studies. DATA SYNTHESIS: The primary analysis included only high-quality studies with statistical control for age, sex, comorbid illness or illness severity, and baseline dementia. Pooled effect estimates were calculated with random-effects models. The primary analysis with adjusted hazard ratios (HRs) showed that delirium is associated with an increased risk of death compared with controls after an average follow-up of 22.7 months (7 studies; 271/714 patients [38.0%] with delirium, 616/2243 controls [27.5%]; HR, 1.95 [95% confidence interval {CI}, 1.51-2.52]; I(2), 52.4%). The sensitivity, trim-and-fill, and secondary analyses with unadjusted high-quality risk estimates stratified according to the study characteristics confirmed the robustness of these results. CONCLUSION: This meta-analysis provides evidence that delirium in elderly patients is associated with poor outcome independent of important confounders, such as age, sex, comorbid illness or illness severity, and baseline dementia.

Cohort is elderly patients treated in hospital or acute care setting for medical or surgical conditions.

57 IV.C.1.7 Delirium & Adverse Outcomes


OUTCOME MEASURES: Primary outcomes were infectious complications, including pneumonia, wound infection, urinary tract infection, or sepsis. Bivariate analysis was used first to determine the association of each independent variable (age, race, comorbid treatment, American Society of Anesthesiologists classification, Activities of Daily Living assessment, elective vs emergent procedure, wound classification, operation length, and HbA1c levels) with outcome. Factors significant at P<0.05 were used in a multivariable logistic regression model. RESULTS: In the multivariable model, age, American Society of Anesthesiologists class, operation length, wound class, and HbA1c levels were significantly associated with postoperative infections. Emergency/urgent cases and dependence in Activities of Daily Living were significant in bivariate analysis but failed to reach statistical significance in the multivariable model. An HbA1c level of less than 7% was significantly associated with decreased infectious complications with an adjusted odds ratio of 2.13 (95% confidence interval, 1.23-3.70) and a P value of 0.007. CONCLUSION: Good preoperative glycemic control (HbA1c levels <7%) is associated with a decrease in infectious complications across a variety of surgical procedures.

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46 IV.C.2.2 Dental screening


Recommen@io.6: In the absence of reliable evidence linking poor oral health to prosthodontic joint infection, it is the opinion of the work group that patients with prosthetic joint implants or other orthopaedic implants maintain appropriate oral hygiene. Grade of Recommendation: Consensus.

Recommen@io.9: In the absence of reliable evidence linking poor oral health to prosthodontic joint infection, it is the opinion of the work group that patients with prosthetic joint implants or other orthopaedic implants maintain appropriate oral hygiene. Consensus

It supports patients with implants maintaining good oral health.
Is this procedure out of scope?

Is this procedure out of scope?

Is this procedure out of scope?

Is this procedure out of scope?

Is this procedure out of scope?

Is this procedure out of scope?

Is this procedure out of scope?
BACKGROUND: Hospital charges for lumbar spinal stenosis have increased significantly worldwide in recent years, with great variation in the costs and rates of different surgical procedures. There have also been significant increases in the rate of complex fusion and the use of spinal spacer implants compared to that of uncomplicated decompression surgery, even though the former is known to incur costs for three times longer. Moreover, the necessity of these new surgical procedures over traditional decompression surgery is still unclear. OBJECTIVES: To determine the efficacy of surgery in the management of patients with symptomatic lumbar spinal stenosis and the comparative effectiveness between the two simultaneous surgical procedures 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.

METHODS: Review performed electronic searches of the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, Embase, CINAHL, and Web of Science. We included two randomized controlled trials that measured the rates of hospital complication and reoperation. The following search terms were used: "lumbar spinal stenosis," "lumbar spinal fusion," "lumbar spinal decompression," and "lumbar spinal surgery." The data were extracted from the included studies and analyzed using the fixed-effects model. The outcomes were compared using the odds ratio (OR) for dichotomous outcomes and the mean difference (MD) for continuous outcomes. We pooled data using the random-effects model. The quality of the included studies was assessed using the Cochrane Back and Neck Review Group criteria. The trial included 2010-2012 patients.

RESULTS: We included a total of 24 randomized controlled trials (reported in 39 published research articles or abstracts) in this review. The trials included a total of 1,585 patients. The pooled estimates showed that the intervention was associated with a dramatic reduction in complications/infections, pain, and disability rates compared to the control group. The most common complications reported were urinary tract infection requiring antibiotics (9.7% vs. 32.5%) (p < .001) and wound infection requiring antibiotics (16.4% vs. 32.0%) (p < .001). Group B also had lower rates of wound infection requiring antibiotics (9.7% vs. 32.5%) (p < .001). Group B also had lower rates of wound infection requiring antibiotics (9.7% vs. 32.5%) (p < .001).

CONCLUSIONS: The interventions that were studied were associated with a dramatic reduction in complications/infections, pain, and disability rates compared to the control group. The most common complications reported were urinary tract infection requiring antibiotics (9.7% vs. 32.5%) (p < .001) and wound infection requiring antibiotics (16.4% vs. 32.0%) (p < .001). Group B also had lower rates of wound infection requiring antibiotics (9.7% vs. 32.5%) (p < .001). Group B also had lower rates of wound infection requiring antibiotics (9.7% vs. 32.5%) (p < .001). Group B also had lower rates of wound infection requiring antibiotics (9.7% vs. 32.5%) (p < .001). In addition, the results of these studies suggest that the interventions were associated with a significant reduction in the rate of complications, pain, and disability compared to the control group. The pooled estimates showed that the intervention was associated with a dramatic reduction in complications/infections, pain, and disability rates compared to the control group.
BACKGROUND: Ketamine is an N-methyl-d-aspartate receptor antagonist that has been shown to be useful in the management of various types of acute and chronic pain. Its use in the perioperative setting has been associated with reduced opioid consumption and pain intensity. However, the optimal route of administration and dosing schedule for pain management remains unclear.

OBJECTIVE: To determine the efficacy and safety of ketamine administered as a continuous infusion in the perioperative setting for the management of pain in patients undergoing major lumbar spine surgery.

METHODS: A prospective, non-randomized, open-label study was conducted at a single academic institution. Eligible patients were admitted for elective major lumbar spine surgery, including decompression, fusion, or both, and were scheduled to undergo a continuous infusion of ketamine. Patients were stratified into two groups: ketamine-infused patients and control patients. Ketamine was administered as a continuous infusion at 10 μg/kg/min for 48 hours postoperatively. The primary outcome was 48-hour morphine consumption.

RESULTS: Fifty-two patients in the ketamine group received ketamine, while 51 patients in the control group received saline. The average reported pain intensity was significantly lower in the ketamine group compared to the control group. Morphine consumption was also significantly lower in the ketamine group. No significant side effects were reported in either group.

CONCLUSIONS: Intraoperative ketamine reduces opioid consumption and pain intensity throughout the postoperative period in this patient population. This study supports the use of ketamine as a pain management strategy in the perioperative setting for patients undergoing major lumbar spine surgery.

Introduction: The CMS Surgical Care Improvement Project (SCIP) measures are a subset of National Quality measures developed through the joint efforts of the Centers of Medicare & Medicaid and the Joint Commission (Specifications Manual for National Hospital Quality Measures Version 2.5 Effective for discharges 10/1-08 through 10/31-10). 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 FOR at the individual physician level. The NQF endorsed measures are calculated across a defined list of major surgical procedures and separately for the NIS-DRG-ACE demonstration surgical procedure groups of CABG, Cardiac Valves, and Hip and Knee Replacement.


CB http://atmango.com/Fulltext/171/3110605/3110605_summary.html

The authors analyzed data from 52 randomized placebo-controlled trials (4,913 adults testing acetaminophen, nonsteroidal anti-inflammatory drugs, or selective cyclooxygenase-2 inhibitors) given in conjunction with morphine after surgery. The median of the average 24-h morphine consumption in controls was 49 mg (range, 7.17-10 mg) was significantly reduced with all regimens by 15-70%. There was evidence of a reduction of a mean intensity of 24-h (1 cm on the 0-10 visual analog scale) only with nonsteroidal anti-inflammatory drugs. Nonsteroidal anti-inflammatory drugs also significantly reduced the incidence of nausea/vomiting from 28.6% to 22.0% (number needed to treat, 15) and of sedation from 16.4% to 12.7% (number needed to treat, 15) but increased the risk of severe bleeding from 0% to 1.4% (number needed to harm, 75). Selective cyclooxygenase-2 inhibitors increased the risk of renal failure in cardiac patients from 0% to 1.4% (number needed to harm, 75). A decrease in morphine consumption is not a good indicator of the usefulness of a supplemental analgesic. There is evidence that the combination of nonsteroidal anti-inflammatory drugs with patient-controlled analgesia morphine offers some advantages over morphine alone.

2013;8(2):e55436. PMID: 23424632

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


Abstract: We quantified surgical site infections (SSI) after thoracic epidural andthoracic epidural; to prevent staphylococcal colonization; to prevent staphylococcal colonization. In a prospective cohort of 1,408 patients with 2-year follow-up. (Thoracol, 2011 Dec; 2089; 1510-7. PMID: 2197004)

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

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Acetaminophen, NSAIDs, and COX-2 inhibitors all reduce morphine need after surgery.

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BACKGROUND: Spinal reconstructive surgery in adults can be associated with significant blood loss, often requiring allogeneic blood transfusion. The objective of this randomized, prospective, double-blind, multicenter study was to evaluate the efficacy of tranexamic acid (TXA) in reducing perioperative blood loss and transfusion in adult patients having elective posterior thoracic/lumbar instrumented spinal fusion surgery. METHODS: One hundred fifty-one adult patients were randomized to receive a bolus of 10 mg/kg IV of TXA after induction followed by a maintenance infusion of 1 mg/kg/hr of TXA, or an equivalent volume of placebo (normal saline). The primary outcome was the total perioperative estimated and calculated blood loss preoperatively and 24 h postoperatively. Secondary outcomes were incidence of allogeneic blood exposure, and duration of hospital stay. RESULTS: Four patients were withdrawn for identifiable surgical bleeding, therefore 147 patients were included in the analysis. The total estimated and calculated perioperative blood loss was approximately 25% and 30% lower in patients given TXA versus placebo (1902 +/- 1305 mL vs. 2518 +/- 1807 mL, P < 0.001; 3079 +/- 2558 mL vs. 4363 +/- 3030 mL, P < 0.001), 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. Predicators 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.

BACKGROUND: Concerns regarding the safety of transfused blood have led to the development of a range of interventions to minimize blood loss during major surgery. Anti-fibrinolytic drugs are widely used, particularly in cardiac surgery, and previous reviews have found them to be effective in reducing blood loss, the need for transfusion, and the need for re-operation due to continued or recurrent bleeding. In the last few years questions have been raised regarding the comparative performance of the drugs. The safety of the most popular agent, aprotinin, has been challenged, and it was withdrawn from world markets in May 2008 because of concerns that it increased the risk of cardiovascular complications and death. OBJECTIVES: To assess the comparative effects of the anti-fibrinolytic drugs aprotinin, tranexamic acid (TXA), and epsilon aminocaproic acid (EACA) on blood loss during surgery, the need for red blood cell (RBC) transfusion, and adverse events, particularly vascular occlusion, renal dysfunction, and death. SEARCH STRATEGY: We searched the Cochrane Injuries Group's Specialised Register (July 2010), Cochrane Central Register of Controlled Trials (The Cochrane Library 2011, 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-emergent 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 TXA and EACA, particularly in reducing the need for RBC transfusion, and the need for re-operation due to bleeding. Intra-arterial aprotinin was associated with an absolute risk reduction of 2% and a number needed-to-treat (NNT) of 51 (95% CI 23 to 100). A similar trend was
The article discusses the prevention of venous thromboembolism (VTE) in high-risk individuals as part of the Antithrombotic and Thrombolytic Therapy: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). Grade 1 recommendations are strong and indicate that the benefits do or do not outweigh risks, benefits, and costs. Grade 2 suggestions imply that individual patient values may lead to different choices. A full discussion of the grading, see the "Grades of Recommendation" chapter by Guyatt et al. Among the key recommendations in this chapter are the following: we recommend that every hospital develop a formal strategy that addresses the prevention of VTE (Grade 1A). We recommend against the use of aspirin alone as thromboprophylaxis for any patient group (Grade 1A), and we recommend that mechanical methods of thromboprophylaxis be used primarily for patients at high bleeding risk (Grade 1A) or possibly as an adjunct to anticoagulant thromboprophylaxis (Grade 2A). For patients undergoing major general surgery, we recommend thromboprophylaxis with a low-molecular-weight heparin (LMWH), low-dose unfractionated heparin (LDUH), fondaparinux (each Grade 1A), or a vitamin K antagonist (VKA); international normalized ratio (INR) target, 2.0 to 3.0 (each Grade 1A). We recommend routine thromboprophylaxis for all patients undergoing major general surgery or major, open, urological procedures (Grade 1A for both groups), with LMWH, LDUH, fondaparinux, or intermittent pneumatic compression (IPC). For patients undergoing elective hip or knee arthroplasty, we recommend one of the following three anticoagulant agents: LMWH, fondaparinux, or a vitamin K antagonist (VKA): international normalized ratio (INR) target, 2.0 to 3.0 (each Grade 1A) for patients undergoing hip fracture surgery (HFS); we recommend the routine use of fondaparinux (Grade 1A) or LMWH (Grade 1A), a VKA (target INR, 2.5), or LDUH (Grade 1A) for patients undergoing hip fracture surgery (HFS); and we recommend continuing thromboprophylaxis ≥ 10 days and up to 30 days for patients after hip arthroplasty and HFS. We recommend that, on admission to the ICU, all patients be assessed for their risk of VTE, and that most receive thromboprophylaxis (Grade 1A). In patients admitted to hospital with an acute medical illness, we recommend thromboprophylaxis with LMWH, LDUH, or fondaparinux (each Grade 1A). We recommend that, on admission to the ICU, all patients be assessed for their risk of VTE, and that most receive thromboprophylaxis (Grade 1A). The committee concluded that the current evidence on Bone Morphogenetic Protein-2 (BMP-2) demonstrates that there is sufficient evidence to cover. The committee concluded that the current evidence on Bone Morphogenetic Protein-2 (BMP-2) is insufficient evidence to cover. The committee concluded that all the evidence and pure greatest weight to the evidence it determined, based on objective factors, is the most valid and reliable. Based on these findings, the committee voted to cover with conditions BMP-2 for use in lumbar fusions. Based on these findings, the committee voted to not cover BMP-7. Washington State’s Health Technology Assessment is a respected source supported by high-quality evidence and evidence-based practice, including a HTSP reimbursement recommendations on Bone Morphogenic Proteins.
9/4/3 Early mobilization

| Name: Ferrel J. | Obstacles to early mobilization after spinal fusion and effect on hospital length of stay. | Spine Journal, 2013; 38(9): suppl, S895. | CB |
| | 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 impeding ambulation 30 feet, and LOS were recorded. Patients reaching the inpatient unit after 180 hours were excluded. RESULTS: Seventy percent of patients (320/457) successfully ambulated at least 30 feet on the day of surgery. Forty-seven patients were not evaluated secondary to personnel-related factors. A total of 19 patients ambulated under 30 feet, citing most commonly: infection/inflammation (20.4% (5/24) of patients), pain (19.0% (28/148)), nausea (23.3% (21/89)), patient refusal (15.4% (9/58)), fatigue (8.2%) and pain (10.4%), as limiting reasons. The average LOS of patients ambulating at least 30 feet on 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, dizziness, 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. |

9/4/6 Hospital Process

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9/4/8 Hospital Process

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9/4/11 Post-operative care / rehab

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