

Guidelines on Occupational and Environmental Medicine

GIN Conference
August 31, 2011

Kurt Hegmann, MD, MPH, FACOEM
Editor in Chief, ACOEM Guidelines



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....A Patient...



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Hip Pain

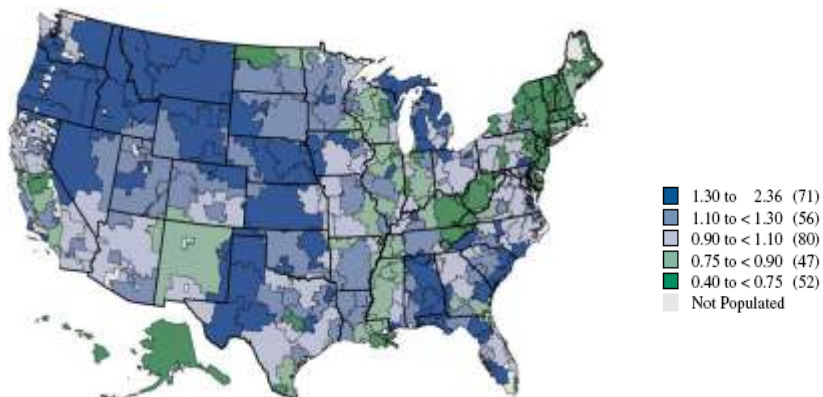
- **33** year old
- Bilateral hip pain
- Osteonecrosis, unclear etiology
- Scheduled for total hip arthroplasty
- Evaluated due to fall, modest increase in hip pain, orthopedist wanted recorded as work-related



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Treatment Varies State by State

Ratio of Total Rates of Spine Surgery to the U.S. Average
by Hospital Referral Region (2002-03)



Source: Spine Surgery. A Report by the Dartmouth Atlas of Healthcare. CMS-FDA Collaborative.



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Isn't All Medicine Evidence-based?

- Too much Evidence
 - ~ 20+ Million Pub Med Citations
- Evidence Accumulating at an Accelerating Pace



- Spectrum of Quality
- Not Enough Time for EBM
- Guidelines Transition the Academic to the Practical



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Types of OM “Guidelines”

- Systematic Reviews
 - Cochrane Reviews
- State-based systems (e.g., Washington, Colorado)
- Official Disability Guidelines (for profit private company)
- Societies
 - ACOEM: 4 vol., 4,000 pp, 2,500 recommendations, 12,000 references
 - Others (e.g., ACP/APS, ASIPP)



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Case Studies in the Criticality of a Robust Methodology: Medications for LBP

“There are few studies of the use of medications in the subacute period (7 to 12 weeks) or chronic period of pain treatment. [sic]” (No references to statement, one reference in paragraph not related to statement, p. 1570)

Facts: There are >50 medication studies of moderate or high quality for subacute or chronic LBP.



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ACOEM Practice Guidelines

APG1 – First Edition	1997
APG2 – Second Edition, online version	2004
UMK – Expanded online version	2006
APG-I – .Net APG version	2008
APG3 – Third Edition	2011
Updates to 3 rd Ed.	Ongoing

Widely used by employers, insurers,
and mandated in some states:
CA, NV and NY (Low Back Disorders)



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Updates to 2nd and 3rd Editions with Enhanced Methodology

2007 and 2008

2009 and 2010

2011

Elbow
Low Back
Chronic Pain

Hip (w/ AAOS)
Hand/Wrist Forearm
Neck
Ankle/Foot
Shoulder
Knee

Respiratory
Eye

√ Elbow
Low Back



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ACOEM Practice Guidelines “Design” Principles

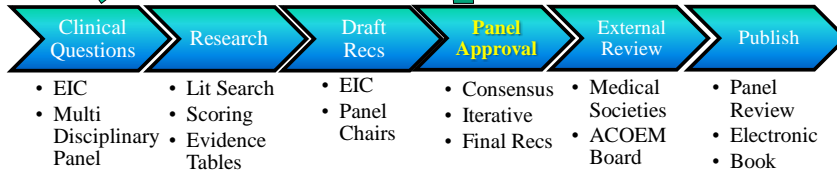
Consistent medical philosophy that emphasizes:

- Return to function and improved outcomes
 - Unfortunately, many RCTs underpowered
- “Early as possible” care
- Efficiency and cost-effectiveness
- Evidence-based medicine



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APG Methodology



Panel Composition and Training:
 Multidisciplinary
 2 hour CME
 Required Methodologist



Methodology to Update the Practice Recommendations in the American College of Occupational and Environmental Medicine's Occupational Medicine Practice Guidelines, Second Edition

Jeffrey S. Harris, MD, MPH, MEd
 Patricia L. Stewart, PT, PhD, MPH
 John P. Holland, MD, MPH
 John Goring, MPH
 Charles Turkeltaub, PhD
 Michael Weiss, MD, MPH
 Kurt T. Hegeman, MD, MPH

Work published here provides an overview of the process of evidence-based practice for occupational and environmental medicine. The authors provide a practical guide to the process of evidence-based practice for occupational and environmental medicine. The authors provide a practical guide to the process of evidence-based practice for occupational and environmental medicine.



Enhanced Methodology Adopted for Third Edition & Revisions

ACOEM Systematic Literature Reviews, RCTs focused

- Medline
- EMB Online
- Cochrane Central Register of Controlled Trials
- TRIP Database
- CINAHL (Nursing, allied health, physical therapy, occupational therapy, social services)
- EMBASE
- PEDro: Physiotherapy Evidence Database



Research - Article Analyses

- Articles Abstracted
- Articles Critiqued: MD, MS/PhD
- Articles Graded (EIC Level, x 2)
- Evidence Tables Compiled
- Articles, analyses, and evidence tables forwarded to the Body Part/System Panel



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RCT Scoring Metrics

1. Randomization (0, 0.5, 1.0 pts.)
2. Allocation concealed (0, 0.5, 1.0)
3. Baseline comparability of groups
4. Blinding of patients
5. Blinding of provider
6. Blinding of assessor
7. Avoid co-interventions
8. Compliance Rate
9. Dropout Rate
10. Timing of Assessments
11. Intention to Treat Analysis

Low Quality:	0 - 3.5 points
Moderate Quality:	4.0-7.5 points
High Quality:	8.0 + points



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Evidence Tables


Low Back Disorders - Opioids

Your Reference for LAD Comparison Studies

Year	Study Page	Specialized	Grade	Q or I	Sample Size	QIS
2019	1025	Specialized	Grade I	Q or I	201	1025
Comparison: Opioid						
Results: Compared to nonopioid therapy with pregabalin (150 mg twice daily plus gabapentin 300 mg twice daily), the pooled population risk ratio for pain at 4 weeks was 0.69 (95% CI 0.58, 0.82) for patients with moderate to severe pain (pain intensity 4 to 7 on a 10 cm visual analog scale). There were statistically significant changes in measures of function, but there were no clear gains that all ranges of median pain levels with any medication compared to the other. Controlled trials appear for most of evidence and described findings also found ranges and 4-week pregabalin. Controlled trials also appear in defining levels of analgesic response for patients and medication response to pregabalin.						
Comments: Most ranges were in favor of up-regulated (statistical) improvement (5.4% vs 3.0% for pregabalin vs 1.1% for placebo).						
2019	1025	Specialized	Grade I	Q or I	201	1025
Comparison: Opioid vs nonopioid						
Results: Compared to nonopioid therapy (150 mg twice daily plus gabapentin 300 mg twice daily), the pooled population risk ratio for pain at 4 weeks was 0.69 (95% CI 0.58, 0.82) for patients with moderate to severe pain (pain intensity 4 to 7 on a 10 cm visual analog scale). There were statistically significant changes in measures of function, but there were no clear gains that all ranges of median pain levels with any medication compared to the other. Controlled trials appear for most of evidence and described findings also found ranges and 4-week pregabalin. Controlled trials also appear in defining levels of analgesic response for patients and medication response to pregabalin.						
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High and Moderate Quality Studies


1. Atlas, S., Ammend, D., Brennan, A., & Hays, R. (2019). Treatment of chronic low-back pain with opioids: a systematic review and meta-analysis. *Clinical Medicine*, 19(1), 20-26.
2. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
3. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
4. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
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14. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
15. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
16. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
17. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
18. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
19. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
20. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
21. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
22. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
23. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
24. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.
25. Brennan, A., & Hays, R. (2019). Systematic review of the effectiveness, safety, and quality of evidence for the management of low back pain. *The BMJ*, 369, g10000.



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ACOEM Evidence-based Recommendations

Strongly Recommended (2+ HQS)	"A" Level Evid.
Moderately Recommended (1 HQS or xMQS)	"B" Level Evid.
Recommended (1 or more MQS)	"C" Level Evid.
Insufficient Quality Evidence Recommended (no or conflicting QS)	"I" Level Evid.
Insufficient Quality Evidence No Recommendation (no or conflicting QS)	"I" Level Evid.
Insufficient Quality Evidence Not Recommended (no or conflicting QS)	"I" Level Evid.
Not Recommended (1 or more MQS)	"C" Level Evid.
Moderately Not Recommended (1 HQS or xMQS)	"B" Level Evid.
Strongly Not Recommended (2+ HQS)	"A" Level Evid.



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Criteria for Consensus “I” Ratings

- Invasiveness
- Adverse effects (and permanency thereof)
- Cost (total for that intervention)
 - Low <\$100
 - Medium 100-500
 - High >\$500



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Selected Medical Societies Invited to Review Chapters

- American Board of Independent Medical Examiners
- American Board of Preventive Medicine
- American Chiropractic Association
- American College of Emergency Physicians
- American College of Radiology
- American College of Physicians
- American College of Preventive Medicine
- American College of Sports Medicine
- American College of Surgeons
- American Industrial Hygiene Association
- American Medical Association



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Evidence-based Recommendations

Distribution of Low Back Recommendations

Strength of the Body of Evidence





	A	B	C	I
Rec	5	9	32	24
No Rec	-	-	-	18
Not Rec	3	9	20	85

Unanimous Panel
Consensus

Low Back Disorders - Antidepressants

[View Evidence Table](#) / [View References](#)

Recommendations

-  **Antidepressants for Low Back Pain (Chronic) - Recommended - Strong Evidence (A)**
 Tricyclic antidepressants (TCAs) (e.g., amitriptyline, nortriptyline, desipramine) are recommended for the treatment of chronic LBP.
[View Full Recommendation](#)
-  **Antidepressants for Radicular Pain Syndromes (Including Sciatica) (Chronic) - Recommended - Limited Evidence (C)**
 Tricyclic antidepressants (TCAs) are recommended as there is indirect evidence that they result in modest reductions in pain ratings in the treatment of radicular pain compared with placebo.
[View Full Recommendation](#)
-  **Antidepressants for Low Back Pain (Chronic) - Not Recommended - Strong Evidence (A)**
 The selective serotonin reuptake inhibitors (SSRIs, paroxetine, set and as lexapro and fluoxetine) are not recommended for treatment of chronic LBP.
[View Full Recommendation](#)
-  **Antidepressants for Low Back Pain (Acute, Sub-Acute) - Not Recommended - Insufficient Evidence (D)**
 Absent other indicators of a need for such treatment, antidepressants are not recommended for managing acute or subacute LBP as there is no quality evidence supporting their efficacy.
[View Full Recommendation](#)



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LOW BACK PAIN



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NSAIDs 28 High or Moderate Quality RCTs

- ACUTE LBP: **Evidence (A)**
- Subacute, chronic, post-op. LBP, sciatica **Evidence (B)**.
- Acute radicular pain syndromes, scheduled dosage, rather than as needed, generally preferable. PRN prescriptions reasonable for mild or moderate, chronic radicular pain. **Evidence (C)**
- Consider concomitant prescriptions of cytoprotective medications for those at risk. No substantial differences between meds. **Evidence (A-C)**
- Acetaminophen for LBP with or without radicular symptoms, particularly for those with contraindications for NSAIDs. Modestly less efficacious. **Evidence (C)**



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Opioids. 22 RCTs

- Quality evidence other medications and treatments are superior. **NOT Recommended, Evidence (C) [routine use]**
- Acute, severe LBP: recommended as adjuncts (especially NSAIDs, muscle relaxants, progressive aerobic exercise, and directional exercise).
- Caution in prescribing opioids for those with history(ies) of depression, personality disorder, substance addiction, or abuse, including alcohol, tobacco.
- Generally at night or when not at work and not > 2 weeks.

Recommended, Evidence (C)

- Post-operative rec. as adjunct to more effective treatments.
- Post-op. management, a brief opioids as adjuncts often required, especially for lumbar fusion and other procedures.
- Limit use to 2 to 3 weeks (or a few months for major surgeries).

Recommended, Evidence (C)



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Manipulation and Mobilization (32 RCTs)

Criteria: <u>Clinical Prediction Rule</u>	Definition of Positive
Duration of current LBP	Less than 16 days
Extent of distal symptoms	Not having symptoms below the knee
FABQ work subscale score	Less than 19 points
Segmental mobility testing	At least one hypomobile segment in the LS Spine
Hip internal rotation range of motion	At least 1 hip with >35 degrees of internal rotation range of motion

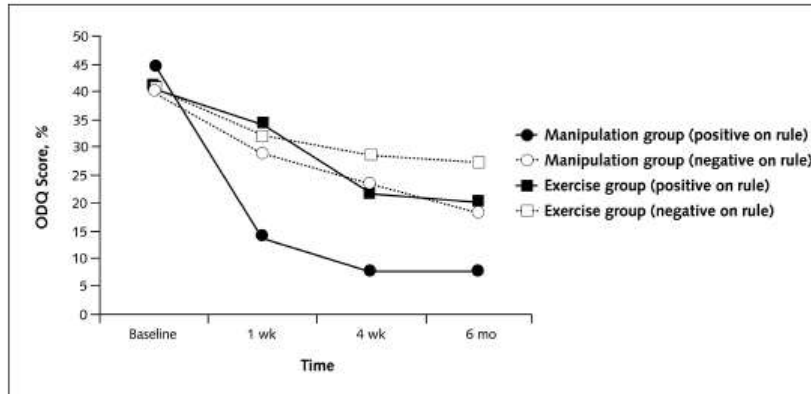
‡ Those patients with a positive Clinical Prediction Rule are considered more likely to respond to manipulation.

Adapted from Childs MJD, et al. *Ann Intern Med.* 2004;141(12):920-8, W-165-166.



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Clinical Prediction Rule versus Oswestry Disability Questionnaire score



*Lower scores represent less disability.

Childs MJD, et al. *Ann Intern Med.* 2004.



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Manipulation and Mobilization

- Acute and subacute LBP: **Manipulation for selective acute LBP patients based on the Clinical Prediction Rule**

Moderately Recommended, Evidence (B)

Manipulation for Acute or Subacute LBP negative for the Clinical Prediction Rule

Recommended, Evidence (C)

- Chronic treatment: no evidence of efficacy
- No evidence for prophylactic treatment

NOT Recommended, Evidence (I)



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Epidural Steroid Injections (12 RCTs)

Epidural glucocorticosteroid injections are an option for second-line treatment for acute flare-ups of spinal stenosis, although the evidence is less robust than it is for herniated discs.

- *Indications* – Symptoms of spinal stenosis of at least 1-2 months (after NSAIDs and progressive exercise).
- *Frequency/Duration* – Evaluate each injection, rather than a series of 3.
- *Indications for Discontinuation* – Resolution of the symptoms of spinal stenosis, or decrease in symptoms to a tolerable level.

Recommended, Insufficient Evidence (I)

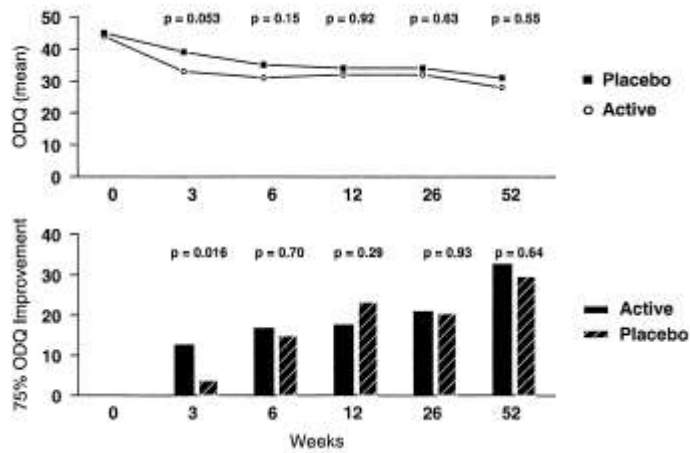
Epidural glucocorticosteroid injections are not recommended for acute, subacute, or chronic LBP in the absence of significant radicular symptoms.

NOT Recommended, Evidence (C)



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Epidural glucocorticosteroid injections versus placebo, unilateral sciatica of 1-18 months (n=228)

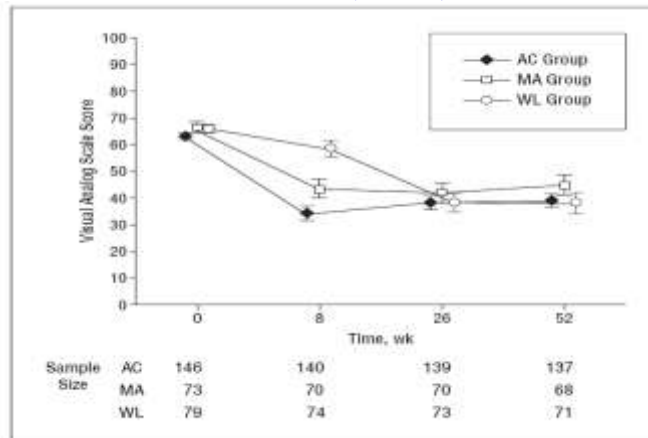


Arden NK et al. *Rheumatology*. 2005;44:1399-1406. Score=9.5/11



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Traditional Acupuncture Vs. Minimal Ac. Vs. Wait Listed Controls (n=301)

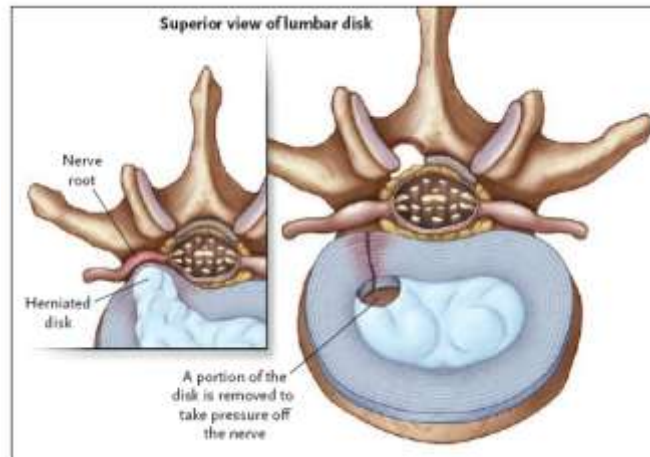


Brinkhaus B J *Alternative Complementary Med*. 2006;12(7):649-57.



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Discectomy, Microdiscectomy, Sequestrectomy and Endoscopic Decompression



Deyo RA. *N Engl J Med.* 2007;356(22):2239-43.



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Discectomy (16 RCTs)

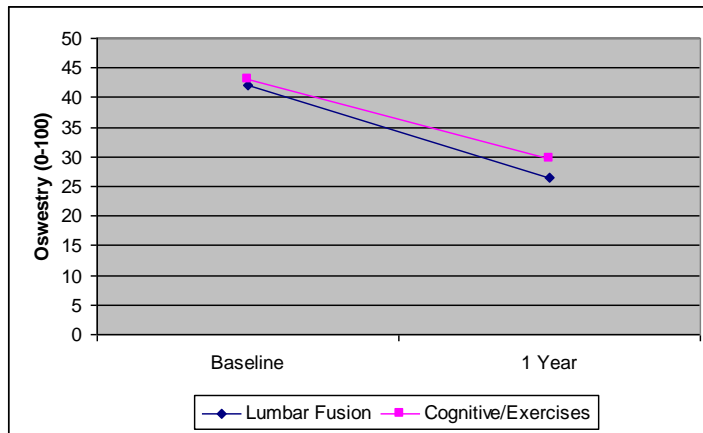
Lumbar discectomy is recommended for ongoing nerve root compression with continued significant pain and functional limitation after 4 to 6 weeks of time and appropriate conservative therapy. Patients should be informed there is no need to rush surgical decisions as there is no difference in long-term functional recovery. The decision of which procedure (e.g., open/micro/etc) should be left to the surgeon until quality evidence available.

- **Indications** – All of: 1) radicular pain syndrome with current dermatomal pain and/or numbness, or myotomal muscle weakness all consistent with a herniated disc; 2) imaging findings that confirm nerve root compression at the level and on the side predicted by the history and clinical examination; 3) continued after 4 to 6 weeks with appropriate conservative therapy.
- **Moderately Recommended, Evidence (B)**



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Spinal Fusion: Chronic non-specific LBP

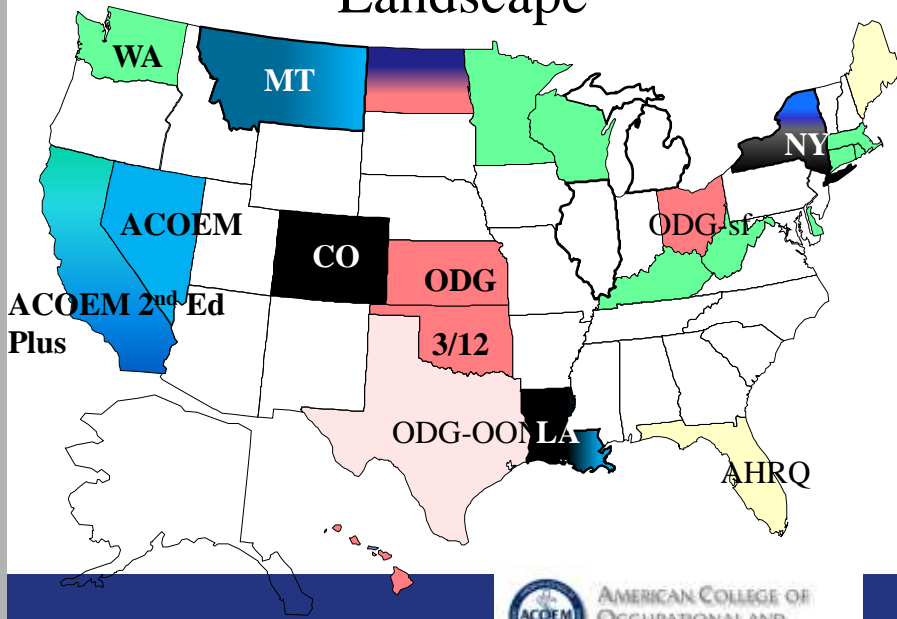


Brox Spine. 2003;28(17):1913-21.



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Landscape



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ACOEM Guidelines

1. Book Format (and selected chapters)

www.acoem.org
847-818-1800 (ACOEM)

2. Electronic Format: APG-I (Providers)

<http://apg-i.acoem.org/>
847-818-1800 (ACOEM)

3. UMK Format (Payers)

www.acoemumk.org
303/404-6604



ACOEM Practice Guidelines Plus

ACOEM Practice Guidelines Product System

The ACOEM Practice Guidelines Plus Product System is a comprehensive, multi-volume set of evidence-based practice guidelines for occupational medicine. It is designed to be used by occupational medicine providers, employers, and public health officials. The system includes a comprehensive set of evidence-based practice guidelines for occupational medicine, covering a wide range of occupational injuries and illnesses. The system is designed to be used by occupational medicine providers, employers, and public health officials. The system includes a comprehensive set of evidence-based practice guidelines for occupational medicine, covering a wide range of occupational injuries and illnesses. The system is designed to be used by occupational medicine providers, employers, and public health officials.



Apple Products

[iTunes Apps Store link](#)

iTunes Preview

ACOEM Practice Guidelines by Indico Solutions

Open (Click to buy and download apps)

Description

ACOEM Practice Guidelines for iOS is a free app designed to work on both iPhone and iPad devices. The app includes the full text of the ACOEM Practice Guidelines for Occupational Medicine, covering a wide range of occupational injuries and illnesses. The app is designed to be used by occupational medicine providers, employers, and public health officials. The app includes a comprehensive set of evidence-based practice guidelines for occupational medicine, covering a wide range of occupational injuries and illnesses. The app is designed to be used by occupational medicine providers, employers, and public health officials.

Screenshots

ACOEM Guidelines

Select a disorder:

- All Hand, wrist and forearm...
- Carpal tunnel syndrome
- Common distal upper extrem...
- Crush Injuries and Compart...
- Distal Forearm Fractures
- Extensor Compartment Teno...
- Flexor Tendon Entrapment...
- Ganglion cyst
- Hand Arm Vibration Syndro...



Comparison of Low Back Guidelines

Guideline	Date	Graded Body of Evidence	Graded Body				Pos %	Refs
			Recs	Pos	No	Neg		
APS	May-09	Yes	28	9	16	3	32%	377
ACOEM	Mar-08	Yes	205	70	18	117	34%	1310
ASIPP	Nov-07	Yes	27	27			100%	1334
ODG	May-09	No	195	84	44*	67	43%	653

* includes "Generally", "Option", "Under Trial"



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Number of High and Moderate Quality Studies Incorporated Into Practice Guidelines*

*As of September 14, 2009
ACOEM Rating: RCTs: Score 4.0-7.5 =Moderate, Score 8.0-11.0=High
Other Rating: Rating 2 = RCTs or Controlled, a=high, b=med

Disorder/Treatment	ACOEM Total High/Moderate Studies	Other Total High/Moderate Studies
Low Back – Exercise	54	24
Low Back– Chiropractic Care/ Manipulation	27	24
Hand, Wrist, Forearm – Carpal Tunnel Syndrome	100	51
Hand, Wrist, Forearm – Human and Animal Bites	7	0
Hand, Wrist, Forearm – Laceration Repair/ Mgt	44	0
Neck – Surgical Considerations	43	14
Shoulder – Surgery for Rotator Cuff Tears	11	1



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....A Patient...



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Elbow Pain

- **47** year old
- Right elbow pain, “lateral epicondylitis”
- “Failed all treatment”
 - ?Surgery??
- Diagnostic considerations
- Treatment history
- Treatment plan and results



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Issues

- Payors: Give me guidelines with as much specificity as possible (i.e., including beyond where evidence goes)
- Providers: Don't adopt any guideline. If adopt, choose guidelines that require me to change my practice the least. (i.e., I already practice EBM)
- Patients: Do what my doctor tells me to do.



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Occupational Medicine Practice Guidelines

Thank You !



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