Current Status of the Delivery of Care to Patients with Chronic Low Back Pain

Swedish Naprapathy Congress

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Scott Haldeman, DC, MD, PhD, FRCP(C)

Department of Neurology, University of California, Irvine

Department of Epidemiology, University of California, Los Angeles

Research Department, Southern California University of Health Sciences

Epidemiology

- LBP can affect anyone
- Little or no protection against LBP is offered by age, gender, occupation, socioeconomic status, or general health
- Prevalence of LBP in the general adult population:
  - point ~37%
  - 1-year ~76%
  - **lifetime ~85%**

Cost of illness

- Systematic review found 27 studies wordlwide related to total costs (direct + indirect) of LBP
- No studies found for total costs of LBP in the US
- Estimates in the US vary considerably:
  - **Direct (medical, etc.) $12.2 to 90.6 billion/year**
  - Indirect (work absence, etc.) $7.4 to 28.2 billion/year

Cost of illness

- Indirect costs probably underestimated in the US
- International data suggest direct costs ~15% of total
- Total costs of LBP in the US based on international data
  - **$84.1 to 624.8 billion/year**

Medical Expenditure Panel Survey

- Examined expenditures and health status among US adults with back and neck problems
- In 2005, the mean age- and sex- adjusted medical expenditure among respondents was $6,096
- Expenditures were **73% higher** than those without spine problems

Martin BI and Deyo RA et al, JAMA 2008;299:656

Medical Expenditure Panel Survey

Total cost increases from 1997 to 2005:

- Narcotics 423%
- Prescription medication 188%
- Chiropractic 111%
- Inpatient service 87%
- Physical therapy 78%
- Outpatient service 43%

Martin BI and Deyo RA et al, JAMA 2008;299:656

Medical Expenditure Panel Survey

Costs

- Total expenditures ↑ **65%**

Benefits

- Physical functioning limitations ↑ **from 20.7% to 24.7%**

- **Increased costs = worst health?**

Martin BI and Deyo RA et al, JAMA 2008;299:656

The Rising Prevalence of Low Back Pain

Telephone survey - North Carolina

- 1992 (4447 households), 2006 (5357 households)
- Non industrial low back pain > 3 months
- **Prevalence in 1992 – 3.9%**
- **Prevalence in 2006 – 10.2%**
- Similar over all age, sex and race strata
- Care seeking behavior increased from 73% to 84%
- Mean number of visits to health care professionals similar at 19

Freburger JK et al, Arch Intern Med 2009;169:251-258

Supermarket approach to LBP

- Current approach to selecting CLBP interventions is akin to **shopping in a supermarket**
- Large inventory of treatment options, grouped into aisles **(product categories)**
- Numerous types of treatments available in every category, further divided into **competing brands (clinicians)** largely differentiated by advertising

Products

Storefront—window-shopping	Aisle one—pharmacological	Aisle two—manual	Aisle three—exercise	Aisle four—physical modalities	Aisle five—educational and psychological	Aisle six—injection	Aisle seven—minimally invasive	Aisle eight—surgery	Aisle nine—lifestyle therapies	Aisle ten—complementary and alternative
Activity modification	Acetaminophen	Massage	Aerobic	Cold	Back schools	Epidurals	Intradiscal electrothermal treatment	Arthoplasty	Ergonomic aids	Acupuncture
Coping and acceptance	Anticonvulsants	• Acupressure	Aquatic	• Ice packs	Biofeedback	• Caudal	Intradiscal radio frequency treatment	• Charite	• Belts	• Acupressure
Patient-initiated comfort methods	• Clonazepam	• Connective tissue	Cardiovascular	• Ice massage	Cognitive behavioral therapy	• corticosteroids	Nuclear decompression	• ProDisc	• Braces	• Electrical
Reassurance	• Gabapentine	• Effleurage	Directional preference	• Vapocoolant sprays	Education	• Interlaminar	• APLD	• Acroflex	• Chairs	• French energetic
Rest	• Levetiracitam	• Friction and deep massage	Core strengthening	Counterirritants	Fear-avoidance training	• Local analgesics	• Arthrocare	• Progressive disc nucleus replacement	• Foot orthotics	• Korean Constitutional
Self care	• Pregabalin	• Myofascial release	• Benches and Roman chairs	• Biofreeze	Functional restoration	• Midazolam	• DeKompressor	Brain stimulation	• Mattresses	• Lemington five elements
Self education	• Tiagabine	• Reflexology	• Free weights	• Capsaicin plaster/cream	Psychotherapy	• Morphine	• Laser	• Thalamus	Physical fitness	• Moxibustion
Watchful waiting	• Topiramate	• Rolfing	• Machines	Cutaneous electrical stimulation	Support groups	• Transforaminal	• SpineJet	• Periventicular gray	Smoking cessation	• Needle
	• Valproate	• Shiatsu	• Stability balls	• Continuous high frequency	Video education	Facet blocks	• MicroResector	• Internal capsule	Weight loss	Meditation
	Oxycarbamazepine	• Stroking or effleurage	Flexibility	• Interferential current	Work hardening	Prolotherapy		• PAG/PVG		Faith based
	Phenotoin	• Swedish massage	Functional restoration	• Pulsed low intensity		• With dextrose, glycerine, phenol, and lidocaine		Chemonucleolysis		Prayer therapies
	Topiramate	Manipulation	Group	• Acu-TENS		• With dextrose and lidocaine		Discectomy		Tai-Chi
	Antidepressants	• Activator	Lumbar extensor strengthening	Heat		Pyriformis		Dorsal column stimulator		Gi-gong
	• Amitryptalline	• Diversified	• MedX	• Heat packs		Radio frequency denervation		Facet replacement		Nutritional supplements
	• Clomipramine	• Flexion distraction		• Thermal blankets		• Dutch technique		• TFAS		• Glucosamine
	• Desipramine	• Gonstead		Diathermy				• TOPS		• Vitamin B12
	• Duloxetine	• High						• Stabilimax NZ		Herbal supplements
	• Imipramine							Interspinous devises		• Capsicum frutescens
	• Nortryptalline									• Harpagophytum
	• Paroxitine									
	• Trazadone									
	• Venlafaxine									
	Caffeine									

Products

Storefront—window-shopping	Aisle one—pharmacological	Aisle two—manual	Aisle three—exercise	Aisle four—physical modalities	Aisle five—educational and psychological	Aisle six—injection	Aisle seven—minimally invasive	Aisle eight—surgery	Aisle nine—lifestyle therapies	Aisle ten—complementary and alternative
	Caffeine Capsaicin cream Lidocaine patches • Tolmetin • Valdecoxib Muscle relaxants/ anxiolytics • Aprazolam • Baclofin • Carisoprodol • Chlodiazepam • Chonazepam • Cyclobenzaprine • Dantrolene • Diazepam • Ethchlorvynol • Lorazapam • Metaxolone • Methocarbinol • Temazepam • Tizanidine • Tolperisone NSAIDS • Aspirin • Buffered aspirin • Celecoxib • Diclofenac • Diflusinal	• High velocity low amplitude • McKenzie • Nonforce • Long lever • Sacro-occipital technique • Short lever Medication assisted manipulation • With caudal anesthesia • With conscious sedation • With epidural steroid injection • With general anesthesia • With joint anesthesia Mobilization • Graded oscillation • Joint play	• MedX McKenzie Pilates Proprioceptive/ coordination Relaxation exercises Stabilization Stretching Yoga	Diathermy Electrical muscle stimulation Electromagnetic stimulation Iontophoresis Laser therapy Traction • Auto • Axial or positional • Continuous • Gravity • Intermittent • Manual, machine, or weights • Sustained • VAX-D Ultrasound		technique • ISIS technique Sacroiliac blocks Sciatic nerve block Trigger point • 5HT3 receptor antagonists • Botulinum • Local anesthetic • Saline • Steroids		Interspinous devises • XSTOP • Wallis • Estendsure • CoFlex • DIAM Laminectomy Morphine pump Pedicle screw fixation • Graf ligament • Dynesys • AccuFlex rod • Medtronic PEEK Rod • Scient X Isobar Rhizotomy		• Harpagophytum procumbens • Harpagoside • Lavender oil • Salix alba Homeopathic medications • Spiroflor SRL

Brands

A partial list of clinicians or brands that a person with chronic low back pain may consider when seeking treatment for chronic low back pain

Physicians	Allied health	Complementary and alternative medicine
Anesthesiologist	Massage therapist	Acupuncturist
Family physician	Occupational therapist	Chiropractor
Neurologist	Pharmacist	Faith healer
Neurosurgeon	Physical therapist	Homeopath
Occupational medicine specialist	Psychologist	Naprapath
Orthopedic surgeon	Sports trainer	Naturopath
Osteopathic manipulation physician		
Pain management specialist		
Physical medicine and rehabilitation specialist		
Psychiatrist		
Rheumatologist		

Market share

Utilization and costs (in British pounds) of different treatments for low back pain in the United Kingdom

Services used (unit of measurement)	Units (million)	Average unit cost	Total cost (million £s)
Inpatient care (finished consultant episodes)	0.60	356.00	218
Osteopaths (sessions)	4.32	40.00	173
Out-patient care (attendances)	2.59	64.34	159
NHS Physiotherapy (sessions)	8.30	18.00	151
General practice and home care (consultations)	8.55	20.20	141
Other specialists (sessions)	2.76	40.00	111
Day care (day cases)	0.06	1585.62	109
Private physiotherapists (sessions)	2.51	40.00	100
Prescribed medication (prescriptions)	5.27	17.80	94
Community care			93
Private consultants (consultations)	0.90	81.03	73
Chiropractors (sessions)	1.73	40.00	69
A and E care (attendances)	0.47	55.00	26
Over-the-counter medication (items bought)	4.74	3.58	24
Doctor/nurse at work (consultations)	0.60	10.00	10

A and E=accident and emergency.

Utilization of different health practitioners and treatments for low back pain in the US

Specialist	%	Treatment	%
Family physician	65.5	Heat or cold treatment	67.9
Orthopedist	55.9	Exercise	63.4
Physical therapist	50.5	Massage	43.2
Chiropractor	46.7	Chiropractic manipulation	41.3
Neurosurgeon	39.4	Ultrasound	41.6
Neurologist	30.7	Back brace	37.7
Internist	22.4	Electrical nerve stimulation	31.8
General surgeon	17.9	Traction	29.0
Osteopath	11.2	Relaxation	21.5
Acupuncturist	10.2	Whirlpool	19.2
Rheumatologist	8.6	Surgery	17.9
Psychiatrist	6.1	Nerve blocks	16.7
Psychologist	5.7	Acupuncture	9.3
Faith healer	2.0	Back school	9.1
Hypnotist	1.6	Nutritional therapy	8.2
		Psychotherapy	6.6
		Pain treatment center	6.0
		Biofeedback	4.7
		Body cast	2.2
		Intradiscal therapy	2.2
		Hypnosis	1.8

Market share

Utilization and costs (in AUD$) of different treatment for low back pain in Australia

Therapy	% Using	Mean number of visits	Cost per visit	Total cost
General practice	22.4	2.4	28.75	117,601,875
Chiropractic	19.6	3.8	32.81	182,932,155
Massage therapy	14.8	3.2	30.00	109,350,000
Physiotherapy	13.4	3.5	36.90	131,511,600
Prescribed drugs	13.3	3	10.00	66,285,000
OTC medication	9.5	2.2	10.90	26,928,450
Medical specialists	4.7	2.1	67.75	51,219,000
Acupuncture	3.7	5.7	27.86	45,885,420
Other providers	3.2	2.1	30.00	15,390,000
Osteopathy	2.7	3.4	49.40	35,345,700
Naturopathy	2.6	1.7	43.20	14,584,000
Psychology	1.1	2.1	83.47	15,099,723
Occupational therapy	0.7	5.5	49.80	14,118,300
Private nursing care	0.6	2.3	24.00	2,332,800
Social worker	0.5	2.6	50.00	5,535,000
Dietetics	0.4	1	47.40	1,343,790

Utilization and costs (in Euros) of different treatments for low back pain in Sweden

Treatment	Cost per unit	Total direct costs	% Of total
Back surgery (disc surgery)	3,671	490,588	23.7
Physiotherapist	38	389,045	18.8
General practitioner	93	316,744	15.3
Orthopedic surgeon	153	231,706	11.2
Medications	0.80	172,988	8.3
Company physician	93	99,168	4.8
Other physician	93	69,129	3.3
Rehabilitation specialist	93	40,988	2.0
Private practitioner	93	35,225	1.7
Chiropractor	38	35,680	1.7
Neurologist	135	21,412	1.0
Psychiatrist	153	17,282	0.8

Where are the Naprapaths?

Difficulties with this approach

- **Patients** living with chronic pain must make a decision on a treatment approach with **insufficient or incorrect information (advertising)** and face the consequences

- **Must not only shop in a foreign supermarket with incomprehensible labels, but do so when hungry**

Difficulties with this approach

- **Clinicians** must recommend treatments but have limited information and experience on approaches not offered in their training (education bias) or practice (economic bias)

- Must use knowledge, experience, training to recommend what is best for patient while balancing self interests

Difficulties with this approach

- **Third-party payers and policy makers** can be overwhelmed by the treatment options; reimbursement decisions may be biased by financial considerations or ignorance

- Must provide reasonable access to interventions with the potential to impact quality of life for those with CLBP while minimizing costs

Alternatives to supermarket approach

Evidence-based medicine

- Search the literature for high-quality RCTs and SRs
- Critically appraise their methodology
- Synthesize key research findings by level of evidence
- Adopt interventions with strong supporting evidence
- Discard interventions with insufficient supporting evidence

Difficulties with Evidence Based Medicine

- Usually insists on clear-cut evidence from methodologically sound, double-blinded, placebo-controlled RCTs
- Where such evidence is unclear, conflicting, or unavailable, EBM can be a frustrating mirage
- If interventions for CLBP were limited to those with strong supporting evidence of clinical effectiveness, safety, and cost-effectiveness, patients would be examined and sent home

EBM versus “evidence-informed”

Evidence-informed approach

- Acknowledges benefits and intent of EBM while remaining clinician friendly and including all relevant information
- Based on review articles by expert clinicians and researchers that follow a common format to facilitate comparisons
- Goal is to make all CLBP practitioners informed of the best available evidence for important aspects of all commonly used interventions

Sections of evidence informed articles

1. Define and describe a particular intervention
2. Explain theory or science behind its mechanism of action
3. Search for and evaluate best available evidence of efficacy
4. Discuss potential and known harms
5. Summarize evidence for clinicians in a useful format

Evidence-informed management

- Authors encouraged to provide information in all sections
- Literature searches could be limited to studies <10 years old published in Medline indexed English journals
- Although evidence from SRs and RCTs was given priority, authors were free to summarize results from observational studies, case series, and provide clinical opinion as needed

TSJ special focus issue

- "Evidence informed management of chronic low back pain without surgery"
- Issue of non-surgical care of LBP proposed in 2005
- Published as volume 8, number 1, January/February 2008
- First open access issue of TSJ available for free online:

http://www.sciencedirect.com/science/journal/15299430


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- Official journal of the North American Spine Society
- Indexed in Medline since debut in 2001
- International and multidisciplinary
- Publishes original, peer-reviewed articles on research and treatment related to the spine
- Occasionally publishes special focus issues on topics of interest to readers

Manual therapies
An Example

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THE SPINE JOURNAL

Evidence-informed management of chronic low back pain with spinal manipulation and mobilization

Gert Bronfort, DC, PhD[a,*], Mitch Haas, DC, MA[b], Roni Evans, DC, MS[a], Greg Kawchuk, DC, PhD[c], Simon Dagenais, DC, PhD[d,e]

[a]*Northwestern Health Sciences University, 2501 W 84th St, Bloomington, MN 55431, USA*
[b]*Western States Chiropractic College, Portland, OR, USA*
[c]*Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, Alberta, Canada*
[d]*CAM Research Institute, Irvine, CA, USA*
[e]*Division of Orthopaedic Surgery and Department of Epidemiology and Community Medicine, Faculty of Medicine, University of Ottawa, Ottawa, ON, Canada*

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Description

Mechanism: - alters position of anatomic structures

- releases entrapped structures

- disrupts adhesions

- impacts primary afferent neurons from paraspinal tissues to improve motor control and pain processing

Testing: rule out LBP red flags

Available evidence

- CPGs 6
- SRs 6
- RCTs 22 → mixed 9
  → CLBP 13

- Results presented in descending level of evidence

Clinical practice guidelines

Summary conclusions from national clinical guidelines during the past decade that include an assessment of the efficacy of spinal manipulation for chronic low back pain

Country and year [reference]	Chronic
Switzerland, 1997 [75]	?
Denmark, 1999 [76]	+
Germany, 2002 [77]	?
Sweden, 2000 [78]	+
Finland, 2001 [79]	?
European, 2004 [44]	+

+=Recommends spinal manipulation as a treatment option; ?=evidence unclear.

Clinical practice guidelines

- All 6 CPGs identified originated in Europe
- 3 recommended SMT and 3 were inconclusive
- None had negative recommendations about SMT
- No CPGs identified for SMT and CLBP in North America

Systematic reviews

Summary conclusions for systematic reviews of spinal manipulation for low back pain based on all available RCTs at the time of review

Systematic reviews (first author and year [reference])	Chronic
van Tulder, 1997 [94]	+
Bronfort, 2004 [3]	+
Ferreira, 2002 [95]	?
Assendelft, 2004 [47]	+
Ernst, 2006 [43]	−
van Tulder, 2006 [48]	+

+=Conclusions and recommendations in favor of spinal manipulation efficacy, −=conclusions and recommendations not supporting spinal manipulation efficacy; ?=inconclusive evidence of spinal manipulation efficacy.

Systematic reviews

- 4 SRs supported the use of SMT for CLBP
- 1 was inconclusive
- 1 did not support SMT for CLBP
- Methodology differed considerably amongst 6 SRs

Efficacy summary - mixed

Evidence of efficacy for mixed duration predominantly chronic low back pain

SMT and/or MOB	Comparison intervention	Primary outcome(s)	Short term		Long term	
			Direction of effect*	Evidence level	Direction of effect*	Evidence level
SMT (with instruction in exercise)	Medical care with exercise or instruction in exercise [12,53]	Pain Disability	Similar	Strong	Similar	Strong
SMT	General practice MD [12]	Pain Disability	Superior	Moderate	Superior	Moderate
SMT (as main part of chiropractic management)	Management by physical therapists [57]	Pain Disability	Similar	Moderate	Similar	Moderate
SMT (Lay Bonesetters)	Physical therapy or home back exercise [52]	Disability	Superior	Limited	Superior	Moderate
SMT (as main part of chiropractic management)	Hospital outpatient management including SMT [8]	Small advantage in disability and pain	Superior	Limited	Superior	Limited
SMT	Sham SMT [54]	Disability	Superior	Limited	No evidence	No evidence
SMT/MOB	Placebo diathermy [49]	Pain	Superior	Limited	No evidence	No evidence
	No treatment [49]					
	Traction, exercise, and corset [49]					

SMT=spinal manipulative therapy; MOB=spinal mobilization.

* Effect of SMT and/or MOB in relationship to comparison intervention.

Similar or superior to comparative interventions

Efficacy summary - CLBP

Evidence of efficacy for chronic low back pain

			Short term		Long term	
SMT and/or MOB	Comparison intervention	Primary outcome(s)	Direction of effect*	Evidence level	Direction of effect*	Evidence level
SMT (with strengthening exercise)	Prescription NSAID (with strengthening exercise) [26]	Pain	Similar	Moderate	Similar	Moderate
SMT/MOB	Placebo [34,35] GP management [34,35]	Improvement	Superior	Moderate	Inconclusive	Inconclusive
SMT high dose	SMT low dose [33]	Pain	Superior/similar	Moderate	No evidence	No evidence
Flexion-distraction MOB	Exercise (strength, stretching, and cardiovascular) [31,32]	Pain	Superior	Moderate	Superior/similar	Moderate
Flexion-distraction MOB	Exercise (strength, stretching, and cardiovascular) [31,32]	Disability	Similar	Moderate	Similar	Moderate
SMT	Chemonucleolysis for confirmed disc herniation [27]	Pain Disability	Superior	Limited	No evidence	No evidence
SMT	Medication [28] Acupuncture [28]	Pain	Superior	Limited	Similar	Inconclusive
MOB	High- and low-Tech back exerciseafter disc herniation surgery [38]	Disability	Inferior	Limited	No evidence	No evidence
SMT	Sham SMT [39]	Pain	Superior	Inconclusive	No evidence	No evidence
MOB	Exercise [36,37]	Pain	Similar	Inconclusive	Similar	Inconclusive

SMT=spinal manipulative therapy; MOB=spinal mobilization; NSAID=nonsteroidal anti-inflammatory drug.

* Effect of SMT and/or MOB in relationship to comparison intervention.

Similar or superior to comparison intervention

Harms

- Observational study in Norway
- 1,058 patients received 4,712 sessions of SMT from 102 DCs

Adverse events reported:

- local discomfort 53%
- headache 12%
- tiredness 11%
- radiating discomfort 10%
- dizziness 5%

Harms

- Occurred within 4 hours 64%
- Mild-moderate severity 85%
- Disappeared the same day 74%

Harms

Estimates of rare AEs:

- 1 cauda equina syndrome (CES) per 128 million SMT
- 1 CES per 100 million SMT
- 1 CES or lumbar disc herniation (LDH) per 1 million SMT
- 1 LDH per 8 million SMT
- 1 CES per 4 million SMT

Evidence informed summary

Strong evidence

- SMT = medical care + exercise instruction

Evidence informed summary

Moderate evidence

- SMT > general practice medical care (short + long term)
- SMT = physical therapy (short + long term)
- SMT + exercise = NSAIDs + exercise (short + long term)
- flexion-distraction MOB = exercise (short + long term)
- high-dose SMT > low-dose SMT (very short term)

Evidence informed summary

Limited evidence

- SMT > hospital outpatient care (short + long term)
- SMT > medication + acupuncture (short term)
- SMT > physical therapy + exercise (short + long term)
- SMT = chemonucleolysis for LDH (short + long term)
- MOB < back exercise after surgery for LDH

Clinical practice recommendations

- SMT appears effective for improving both pain and disability in patients with CLBP, both short and long term
- Efficacy is similar to common alternatives, including exercise, NSAIDs, or physical therapy
- Minor harms appear common and self-limiting, while major harms are difficult to estimate but likely very rare
- Best use of SMT may depend on patient preference

Research recommendations

Future trials should:

1. Examine well-defined subgroups of LBP patients according to validated and reliable diagnostic classification criteria

2. Establish the optimal number of treatment visits

3. Evaluate the cost effectiveness of care using appropriate methodology

Conclusions from the review of the evidence for the management of Low Back Pain

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THE SPINE JOURNAL

Editorial

What have we learned about the evidence-informed management of chronic low back pain?

Scott Haldeman, DC, MD, PhD, FRCP(C)[a,b,c,*], Simon Dagenais, DC, PhD[d,e]

[a]*Department of Neurology, University of California, Irvine, CA, USA*
[b]*Department of Epidemiology, School of Public Health, University of California, LA, USA*
[c]*Research Division, Southern California University of Health Sciences, CA, USA*
[d]*Division of Orthopaedic Surgery, and Department of Epidemiology and Community Medicine, Faculty of Medicine, University of Ottawa, Ottawa, Canada*
[e]*CAM Research Institute, Irvine, CA, USA*

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Evidence informed approach

Pre-treatment diagnostic testing

- Only 1 intervention (ESIs) specified the need for imaging (plain film or MRI) prior to treatment
- 2 interventions (IDET, nucleoplasty) inferred imaging was required to identify level of involvement
- Only 2 interventions (LMBN, McKenzie) described a related diagnostic component and offered supporting evidence
- **So why are so many diagnostic tests ordered for CLBP?**

Indications/contraindications

- Virtually **identical** for all interventions

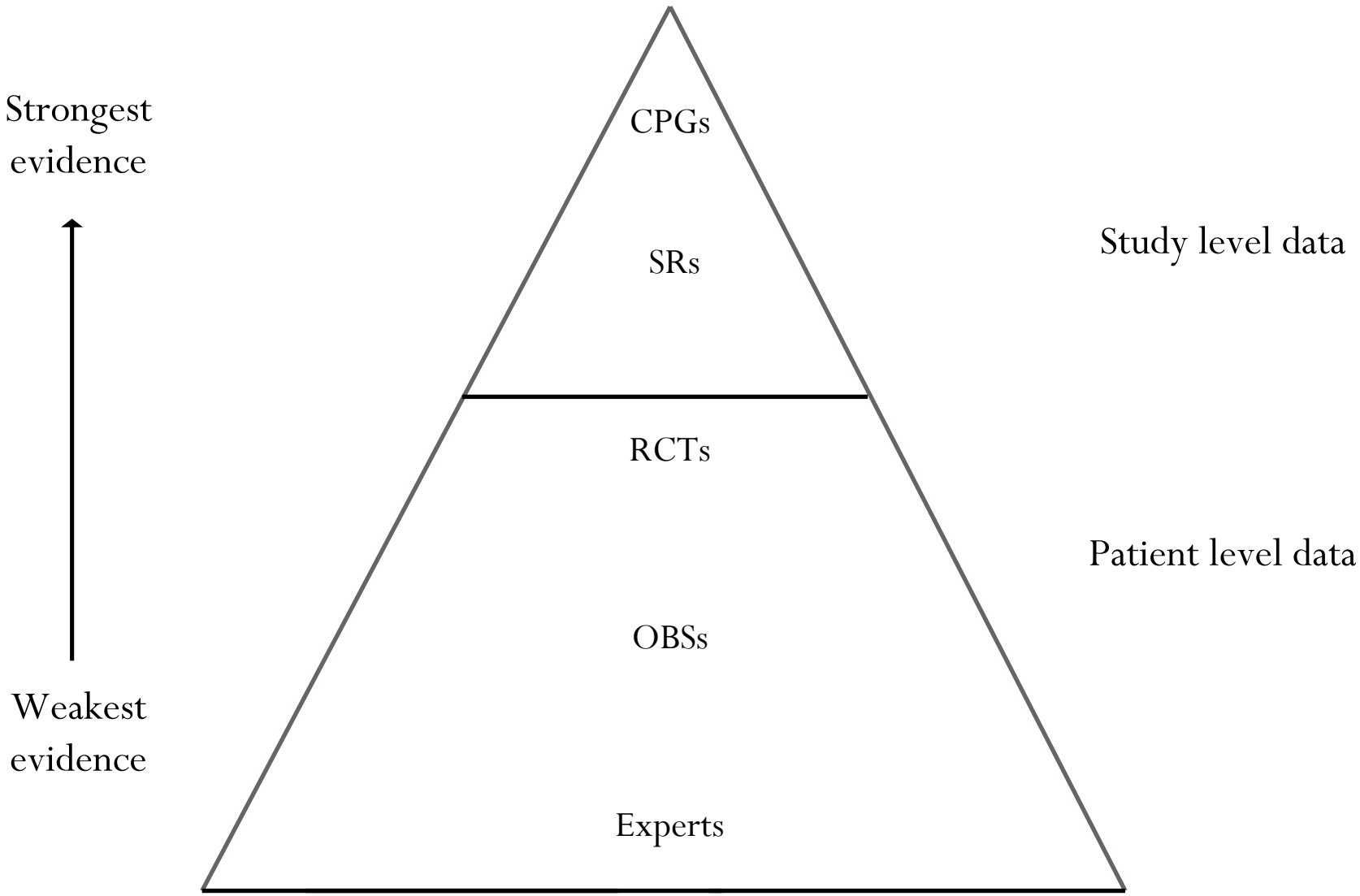
  (i.e. non-specific mechanical CLBP + failed treatments)

- None of the interventions discussed when a patient should **stop trying new treatments**

- Although all 24 interventions could potentially be applied to the same patient with CLBP, there was very little discussion as to **why one should be used over the others, or when**

Evidence

Pyramid of evidence



Evidence of efficacy - Overall

Intervention	CPGs	SRs	RCTs	OBSs	Total
IDET	0	3	3	24	30
Needle acupuncture	1	6	19	0	26
SMT / MOB (CLBP)	6	6	13	0	25
Functional restoration	0	3	8	7	18
Back schools, education, fear avoidance	0	7	8	0	15

Evidence of efficacy - Overall

Intervention	CPGs	SRs	RCTs	OBSs	Total
SNRIs	0	0	0	0	0
Weight loss	0	0	0	0	0
Interferential	0	0	0	0	0
EMS	0	0	0	0	0
US	0	0	0	0	0

Evidence of efficacy – CP Guidelines

CPGs	Intervention	Summary
6	SMT/MOB (CLBP)	Recommended
4	McKenzie (treatment)	Recommended (weak evidence)
2	NSAIDs, muscle relaxants, analgesics	Try NSAIDs and analgesics before other medications
1	Needle acupuncture	Unclear evidence to make recommendations
1	Trigger point injections	Not recommended for CLBP

Evidence of efficacy – Systematic Reviews

SRs	Intervention	Summary
7	Back schools, brief education, fear avoidance	Not recommended for CLBP
7	Lumbar stabilization exercises	1. Effective at improving pain and function 2. No better than general exercise 3. No more effective than manual therapy
6	Needle acupuncture	1. Effective for short-term pain relief 2. Addition of acupuncture to other therapies
6	SMT / MOB (CLBP)	4/6 support use for CLBP 1/6 inconclusive, 1/6 does not support use for CLBP
5	Adjunctive analgesics (TCAs)	Weak/conflicting evidence they are more effective than placebo at moderate symptom reduction

Evidence of efficacy - RCTs

RCTs	Intervention	Summary
19	Needle acupuncture	1. Effective for short-term pain relief 2. Addition of acupuncture to other therapies
13	SMT / MOB (CLBP)	1. Superior to usual care and placebo 2. High-dose superior to low-dose 3. Similar to exercise
11	Lumbar stabilizing exercises	1. More effective than no treatment, passive modalities at improving strength 2. No clear benefit for LSE over other exercises programs 3. High-intensity superior to low intensity
11	Back schools, brief education, fear avoidance	1. Recommended in clinical setting for return to work 2. Back book/internet discussion not recommended
10	ESIs (TLESIs)	Effective for short-term improvement if unresponsive to physical therapy, anti-inflammatory medication, and time

Evidence of efficacy – Observational Studies

OBSs	Intervention	Summary
24	IDET	Provides modest improvement but is likely less destructive, cheaper, and safer than more invasive therapies
12	Nucleoplasty	1. Favorable results reported in 20-80% of patients 2. Studies are small, with short follow-up, and no controls 3. Can be considered prior to surgery for protrusions <4-6 mm, minimal stenosis, and well-maintained disc heights
7	Functional restoration	Demonstrated effectiveness with multiple outcome measures
7	McKenzie (diagnosis)	1. non-centralization is a strong predictor of poor outcomes 2. moderate reliability amongst clinicians
6	Medicine assisted manipulation	Findings were mostly positive, but studies had poor methodological quality and lacked control groups

Harms

Evidence of harms

No reported harms	Extensive reported harms
Back schools, brief education, fear avoidance	Herbal, vitamin, mineral, and homeopathic supplements
CBT	Adjunctive analgesics
Facet blocks and radiofrequency neurotomy	Opioid anlagesics
Functional restoration	NSAIDs, muscle relaxants, simple analgesics
McKenzie	Prolotherapy
Lumbar stabilization exercises	ESIs

Evidence of harms

Possibilities:

1. Harms from interventions for CLBP are rare and minor
2. Evidence on harms is lacking in the literature
3. Clinicians are unaware of possible harms
4. Clinicians are unwilling to discuss harms

Summary

Summary

- Supermarket approach to CLBP is not working
- Multidisciplinary approach is crucial
- Evidence informed approach attempts to summarize expert knowledge with best available research evidence to help clinicians become familiar with available options
- Manual practitioners can play an important role in this process

Summary

- Clinicians need to reconsider what form of diagnostic testing is truly required prior to treatment

  (i.e. why use imaging if it doesn't impact outcomes?)

- Indications for many interventions are similar, but clinicians should be aware of differences for appropriate referrals

  (e.g. radicular pain only for ESIs)

- Contraindications for some interventions are in fact indications for others

  (e.g. psychological co-morbidities and CBT)

Summary

- Pyramid of evidence is useful tool for assessing literature
- Interventions should ideally be supported by multiple, consistent, high-level studies prior to being widely adopted
- Highest level of evidence comes from CPGs, SRs, and RCTs
- OBSs studies are prone to bias and confounding

Summary

- A reasonable, evidence informed approach to CLBP would center on manual SMT / MOB or McKenzie, education, and exercise or general physical activity

- Occasional use of needle acupuncture, massage, high-frequency TENS, herbal supplements, or OTC NSAISs might be appropriate for short-term pain relief with flare-ups, as dictated by patient preference

Summary

- Patients with radicular pain can be referred for ESIs
- Patients with psychological co-morbidities can be referred for functional restoration or CBT
- Patients with severe trauma, structural abnormalities, stenosis, neurologic deficits, or prolonged, intractable radicular pain can be referred for fusion surgery
- Other patients contemplating fusion surgery can be referred for fear avoidance training

Conclusion

- In the supermarket of treatments for CLBP, we are in the era of *caveat emptor* (Buyer beware)
- It is essential that patients, providers and payers read the best available consumer information before making a decision
- Evidence informed reviews can be considered the *Consumers Report* of CLBP
- Clinicians should become thoroughly familiar with available options to provide optimal help to their patients

Thank you!