Prioritizing Interventions for Low Back Pain Management

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Background

- Tenured Professor at Duke University
- Duke Clinical Research Institute
- 28 years as a physio
- >235 publications

Opioid Effectiveness/Opioid Crisis

Interventions such as Manual Therapy and Exercise have only Small Effects

First Provider and System Management Matters

No Differences in RTW and Disability for Fusion vs. Conservative Approach
Nonetheless, Low Back Surgeries have increased 1.7 fold in last 14 years.

Our Outcomes Lack Content Validity

A systematic review highlights the need to investigate the content validity of patient-reported outcome measures for physical functioning in patients with low back pain.

Our Outcomes Thresholds are Variable

Different minimally important clinical difference (MCID) scores lead to different clinical prediction rules for the Oswestry disability index for the same sample of patients.

Risk Stratification is Not a Cure-all

The STarT Back Tool has poor predictive and discriminative ability for future pain.

Guidelines (and their limitations)

Recommendations from Lancet Series

• Increase recognition of the burden of low back pain to politicians and policy makers
• Prevent onset and persistence of disability associated with low back pain
  • Change priorities
  • Change systems
  • Change practice patterns
• Move away from an emphasis on biomedical and fragmented models of care
  • Change culture
  • Change clinician behaviors
  • Change systems
  • Tackle vested interests


Topic 1) Understand the “Role” of Diagnosis when Managing Low Back Pain

• Our Tools to Diagnose Low Back Pain have low Utility
Tissue Diagnosis

- 90% Nonspecific Low Back Pain
- 4% compression fracture
- 3% spinal stenosis,
- 2% visceral disease,
- 0.7% a tumor or metastasis,
- 0.01% an infection.


Non-Specific Low Back Pain?

- Low back pain not attributable to a recognizable, known specific pathology (e.g., infection, tumor, osteoporosis, lumbar spine fracture, structural deformity, inflammatory disorder, radicular syndrome, or cauda equina syndrome).


Can We Diagnose Low Back Pain Causes?

Understand the “Role” of Diagnosis when Managing Low Back Pain

- Non-specific low back pain

“Low back pain is a symptom rather than a disease”
Understand the “Role” of Diagnosis when Managing Low Back Pain

- Leg pain > back pain, no prior surgery, and older age prognostic for positive surgical outcomes
- Centralization suggests a positive outcome regardless of care type
- Multiple factors predict outcome: personal, health, pain, social, work, physical, psychological health, expectations, and cognitive factors
- Prior history-prognostic for recurrence


Use Proper Screening Tools and Philosophies

- **Screen with Caution**
- **None of the screening tools are actually screening tools**
- **Value in Watchful waiting**
- **The close association of “Red Flag” findings with health status**

**StartBack Tool**: Premise; helps to strategy those who need less care and those who need cognitive-behavioral-based care

**Orebro Musculoskeletal Pain Questionnaire**: Premise; helps to identify those at risk for long-term problems.

**10 Item Review-of-Systems Screening Tool (OSPRO)**: Premise: Designed to measure most common systems-related problems in MSK


Topic 2) Let’s Improve the Biopsychosocial Management of Low Back Pain

- Consider your own biases first
- **Pain Attitudes and Beliefs Scale (PABS)-10 items**
- PABS is a self-administered
- Assesses strength of two treatment orientations: 1) ‘biomedical’ and 2) ‘behavioral’

Bishop A. Pain Attitudes and Beliefs Scale (PABS). J Physiotherapy. 2010;56(4):279

A Quick Review of those Assumptions

- Biological factors may be the primary source of pain following a traumatic event
- Initial shoulder symptoms are typically due to a biological factor
- Persistent pain is usually associated with psychological factors
- Rotator cuff severity has no relationship with pain level in atraumatic subjects
- Role of external mechanical compression of rotator cuff tendons has been refuted
- Impingement concept is highly questionable
Understand the Influence of Your Communication

Evaluate, Communicate and Treat with a Biopsychosocial Framework

<table>
<thead>
<tr>
<th>Words to avoid</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic degenerative changes</td>
<td>Normal age changes</td>
</tr>
<tr>
<td>Negative test results</td>
<td>Everything appears normal</td>
</tr>
<tr>
<td>Instability</td>
<td>Needs more strength and control</td>
</tr>
<tr>
<td>Wear and tear</td>
<td>Normal age changes</td>
</tr>
<tr>
<td>Neurological</td>
<td>Nervous system</td>
</tr>
<tr>
<td>Don’t worry</td>
<td>Everything will be okay</td>
</tr>
<tr>
<td>Bone on bone</td>
<td>Narrowing/tightness</td>
</tr>
<tr>
<td>Tear</td>
<td>Pull</td>
</tr>
<tr>
<td>Damage</td>
<td>Reparable harm</td>
</tr>
<tr>
<td>Paraesthesia</td>
<td>Altered sensations</td>
</tr>
</tbody>
</table>

Stewart and Loftus. Sticks and Stones: The impact of language in musculoskeletal rehabilitation. JOSPT (2018 accepted)
• "Of the 141 associations based on only randomized controlled trials, none presented strong or highly suggestive evidence by satisfying all the aforementioned criteria."

• "In conclusion, the present findings support that the effectiveness of psychological treatments for pain management is overstated and the supporting empirical evidence is weak."

• There is inconsistent, patient-oriented evidence (grade B) to support the use of CBTs and/or psychoeducation strategies by rehabilitation specialists to treat fear-avoidance beliefs.

• Patient-centered and personalized CBTs were most effective to treat these psychosocial factors in patients with LBP when compared with a control treatment.
Does Strengthening Matter?

Clinical Practice Guidelines
- Guidelines provide great disparity in the type (e.g., aquatic exercises, stretching, back schools, McKenzie exercise approach, yoga, and tai-chi) and mode of delivery (e.g., individually designed programs, supervised home exercise, and group exercise).


Topic 4) Let's Improve how we Measure Outcomes
- Quantifiable using a Proxy Measure
- Reflects Recovery
- Has Reliability, Responsiveness and Validity
- Means something to the patient (content validity)

The Outcomes Paradox
- Need something to explain the "value" and effectiveness of our care
- Needs to be simple but it's not a simple concept
Recovery is Complicated

- Julia Hush’s work

Recovery (Outcome): More Complex than What we Think

- Recovery is neither defined by a single composite number nor is it quantified at a single time point, but rather it is a continuum occurring in multiple domains and over periods of time from hours, to days to weeks or months after intervention.
- Recovery is often incomplete which may persist long term, leading to patient suffering, loss of work, and increased demands on family and healthcare providers long after apparently successful intervention.

Recovery-Defined

- The act or process of becoming healthy after an illness or injury;
- The act or process of returning to a normal physical, mental or social state after a period of difficulty.

Mental Health Literature

- A process of change through which individuals improve their health and wellness, live a self-directed life, and strive to reach their full potential.

http://www.health.gov.au

https://www.samhsa.gov/newsroom/advisories/1112223420.aspx
Non-Mental Health Literature

• No single way of measuring recovery
• Usually associated with a cut-off (threshold) of success or lack of success
• Used to model predictors or patients at risk of poor outcome
• Often tied to MCID (minimally clinically important change score)


Minimally Clinically Important Difference

- Anchor based
  • Sensitivity and specificity based approach
  • Within-patients score change
  • Between-patients score change
  • Social comparison approach
- Distribution based
  • Standard error of measurement
  • Minimal detectable change
  • Standard deviation
  • Effect size

Copay, AG. Understanding the minimum clinically important difference: a review of concepts and methods. The Spine Journal 2007;7:541-546

Summary-Ways of Measuring Recovery

<table>
<thead>
<tr>
<th>Method</th>
<th>Weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold of an outcome measure</td>
<td>Fails to define the multidimensionality of recovery. Assumes one can create a single cut point for success and lack of success.</td>
</tr>
<tr>
<td>Point of no more improvement</td>
<td>What if they never improve?</td>
</tr>
<tr>
<td>Self report of recovery (rate of recovery)</td>
<td>Variable depending on the pain</td>
</tr>
<tr>
<td>No more symptoms</td>
<td>Sometimes, unrealistic when pain is primary measure.</td>
</tr>
<tr>
<td>PASS (patient acceptable symptom state)</td>
<td>Highly skewed toward &quot;acceptable&quot;</td>
</tr>
<tr>
<td>Health Seeking Behavior</td>
<td>Not available at completion of care</td>
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</tbody>
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Variance Explained-Outcome Measure

- Specific Treatment (5%)  
- Non-Specific Treatment (15%)  
- Unexplained variance (60%)

Core Outcome Sets-LBP

Core outcomes domains for clinical trials in non-specific low back pain 

- Thao Pham, Desiree van der Heijde, Manuela Luesar, Roy D Altman, Jennifer J Anderson, Nicholas Bauray, Marc Houthoff, Lee Green, Vibeke Strand, Thaisa Woodworth, Suzanne Dougados and OMERACT-OARSI 

J Rheumatol 2003;30:1049-1054

http://www.jrheum.org/content/30/7/1049

"physical functioning, pain intensity and health-related quality of life"
**PREMS (Patient Reported Experience Measures)**

- PREMS gather information on patients' views of their experience while receiving care and are a proxy measure of the quality of patient care.

  [Source](https://academic.oup.com/bjaed/article/17/4/137/2999278)

**“Constructs of PREMS”**

- Michael Porter et al. have suggested that capturing experience measures such as:
  - a) the time invested for the particular care approach (including waiting times),
  - b) complications and suffering that incurred while receiving the care and
  - c) the sustainability of benefits
  - d) costs versus outcomes


**Topic 5) Let’s Phenotype Pain**

**Pain: Multidimensional**

- Melzack and Casey described pain in terms of its three dimensions:
  - “affective-motivational” (unpleasantness and urge to escape the unpleasantness);
  - “sensory-discriminative” (sense of the intensity, location, quality and duration of the pain);
  - “cognitive-evaluative” (cognitions such as appraisal, cultural values, distraction and hypnotic suggestion).

  [Source](https://www.practicalpainmanagement.com/treatments/history-pain-brief-overview-19th-20th-centuries?page=0,3)

**Why Phenotype Pain?**

- “tremendous interpatient variability in the response to analgesic therapy (even for efficacious treatments), which can be the source of great frustration in clinical practice”

  - Phenotype Domains

  [Source](https://www.practicalpainmanagement.com/treatments/history-pain-brief-overview-19th-20th-centuries?page=0,3)
Psychosocial Factors

Endogenous Pain Modulatory Processes

• Conditioned Pain Modulation
• Offset Analgesia
• Pain Adaptability

Endogenous Pain Modulatory Processes

Exogenous Pain Modulatory Processes

• Conditioned Pain Modulation
• Offset Analgesia
• Pain Adaptability

People can be categorized as pain adaptive or non-pain adaptive

• Being pain adaptive means a person has the ability (endogenously, within their body), to modulate pain without the help of medical interventions

For a Pain Modulatory Approach

• Early pain modulation appears to have a positive prognostic effect
• If this is your approach of interest, look for within and between session changes
• Can be performed in absence of a diagnosis
• Appears very sensitive
• Ample literature that demonstrates short term success

Key Terms: Within Sessions Change

• Changes in pain during a single visit are termed within-session changes

Key Terms: Between Session Changes

• Changes in pain that carry over to a succeeding visit is known as a between-session change
• Garrison JC, Shanley E, Thigpen C, Hegedus E, Cook C. Between-session changes predict overall perception of improvement but not functional improvement in patients with shoulder impingement syndrome seen for physical therapy: an observational study. Physiother Theory Pract 2011;27:137e45
• Tuttle N. Is it reasonable to use an individual patient’s progress after treatment as a guide to ongoing clinical reasoning? J Manip Physiol Ther 2009;32: 396e403.

Let’s Discuss the Limitations of Guidelines

• They do not address processes
• They focus on comparisons of interventions across heterogeneous groups
• They provide most effective outcomes for group means (not individuals)
• CPGs often do not agree
• CPGs often are reluctant to make strong recommendations against interventions
• CPGs do not address the careful balance of benefits vs. harms
• Emerging concepts are left out (e.g., shared decision making)
• Rarely address population health considerations (e.g., lifestyle medicine)


Low Back Pain Guidelines


Systems Management is About Optimizing Processes

• 1. (If) Should Patients be Seen (is care needed)?
  • A. If so, who should see them first?
  • B. If so, how much?
• 2. (Then) What Care should be Provided?
  • A. Effectiveness?
  • B. Value (health outcomes achieved per dollar spent)

Systems Approach in Medicine

• It readily apparent that health care as it exists today is neither a system nor a system of systems.
• Our current healthcare system involves Ah Hoc management processes with selected parties who have a vested interest.
• Systems management goes a step further and evaluates the influence of previous or current encounters.


Utilize “Best” Interventions

• Do not routinely offer imaging (x-ray, computed tomography or magnetic resonance imaging) to patients with recent onset non-specific low back pain, as the evidence does not support a positive effect.
• Use a triage approach when classifying patients presenting with low back pain.
• Advice, reassurance and self-management remain key components of first line care.
• These should be tailored to the patient’s needs and capabilities.
• Exercise and/or cognitive behavior therapy, with multidisciplinary treatment for patients with more complex presentations, continue as the main treatment approaches for patients with chronic low back pain.
• Electrotherapy, traction, orthoses and bed rest are not recommended.

“The problems in health care have ... to do with the process (systems) of care as opposed to the quality of care” @childsjd

But Remember

• Not everyone needs a physical therapist.
• Not everyone will benefit from a PT first approach (versus someone else).
• Many of the process changes we suggest are not exclusive to physical therapy.


Utilize “Best” Interventions

• Simple first line care and a review at 1–2 weeks is all that is typically required.
• If patients need second line care, non-pharmacological treatments (eg, physical and psychological therapies) should be tried before pharmacological therapies.
• If pharmacological therapies are used, they should be used at the lowest effective dose and for the shortest period of time possible.
• Some commonly used pain medicines (eg, paracetamol) are now understood to be ineffective and should not be routinely used for non-specific low back pain.
• Despite wide use, surgery and interventional procedures are now understood to be ineffective for non-specific low back pain.

Summary

• 1) Let's up our game on diagnosis
• 2) Let's improve our biopsychosocial model of care
• 3) Let's better understand the role of strengthening and low back pain
• 4) Let's measure our outcomes appropriately
• 5) Let's consider phenotyping pain
• 6) Improve the "system" of care

Thank you