Disclosures

- Consultant    Stryker Spine
- Consultant    Medtronic
- Consultant    RTI Surgical
- Medical Director    CBI Health Group
- Medical Director    Pure Healthy Back
Low Back Pain

• Why a syndrome approach?
  • Because 90% of low back pain is mechanical.
Low Back Pain

• Mechanical back pain is pain related to:
  • movement
  • position

• Mechanical back pain is a benign condition related to a painful structure within the spine.

• Most back pain begins spontaneously.
  • In a study of over 11,000 patients, 2/3\(^{rd}\)s of the subjects could not recall any cause for the pain.

Low Back Pain

• Why a syndrome approach?
  • Because 90% of low back pain is mechanical.
  • Because mechanical pain has specific patterns.

“Distinct patterns of reliable clinical findings are the only logical basis for back pain categorization and subsequent treatment.”

Quebec Task Force 1987
Low Back Pain

• Why a syndrome approach?
  • Because 90% of low back pain is mechanical.
  • Because mechanical pain has specific patterns.
  • Because we can identify the relevant pathology in less than 20% of cases.

Everything else is labeled “non-specific” back pain and it is treated “non-specifically”.
Low Back Pain

• Why a syndrome approach?
  • Because 90% of low back pain is mechanical.
  • Because mechanical pain has specific patterns.
  • Because we can identify the relevant pathology in less than 20% of cases.

Early MRI without indication has a strong iatrogenic effect in acute LBP... it provides no benefits, and worse outcomes are likely.

Webster BS et al. Spine 2013
Low Back Pain

• Why a syndrome approach?

<table>
<thead>
<tr>
<th>Table 1. Differential Diagnosis of Low Back Pain.*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mechanical Low Back or Leg Pain (97% †)</strong></td>
</tr>
<tr>
<td>Lumbar strain, sprain (70% †)§</td>
</tr>
<tr>
<td>Degenerative processes of disks and facets, usually age-related (10%)</td>
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<tr>
<td>Herniated disk (4%)</td>
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<tr>
<td>Spinal stenosis (3%)</td>
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<tr>
<td>Osteoporotic compression fracture (4%)</td>
</tr>
<tr>
<td>Spondylolisthesis (2%)</td>
</tr>
<tr>
<td>Traumatic fracture (&lt;1%)</td>
</tr>
<tr>
<td>Congenital disease (&lt;1%)</td>
</tr>
<tr>
<td>Severe kyphosis</td>
</tr>
<tr>
<td>Severe scoliosis</td>
</tr>
<tr>
<td>Transitional vertebrae</td>
</tr>
<tr>
<td>Spondylolisthesis‡</td>
</tr>
<tr>
<td>Internal disk disruption or diskogenic low back pain</td>
</tr>
</tbody>
</table>

Deyo, RA and Weinstein, JN; NEJM 344 (5), Feb 1, 2001; 363 - 370
Low Back Pain

• Why a syndrome approach?
  • Because 90% of low back pain is mechanical.
  • Because mechanical pain has specific patterns.
  • Because we can identify the relevant pathology in less than 20% of cases.
  • Because sinister causes account for less than 5%.

But we still start with the Red Flags.
Here is the usual approach
Self Monitoring & Management

Clinical Presentation → Any Red Flags? → YES

Rule out Inflammation

Acute (within 24 hrs)

Initial Presentation

- Sub-Acute Patient Handout
  - Give Patient the Green Light
    - Patient Questionnaire
    - History & Physical
    - Differential Diagnosis
    - Management Options
    - Monitoring & Followup
    - Referral Options

- Chronic Patient Handout
  - Self Management
  - Assessment & Treatment Options
  - Exercises
  - Medications
  - Physician Resources
  - Moderate to Severe Pain
  - Opioids
  - Referral Options

YELLOW FLAGS

- Initial 1 - 4 weeks: Expect improvement
- Review weekly
- 4 - 6 week follow up

Symptoms Improving YES

Reinforce Green Light Advice

NO

Recheck for Red Flags

Investigations

Refer to a specialist

Tools

- Dermatome Map
- DN4 Neuropathic Pain Questions
- Opioid Management
- Pain Inventory
- Patient Handouts
- PHQ-9
- Support Letter
- Urine Drug Screen

or this
But consider this...

The presentation is mechanical over 90% of the time.

90% of those patients will have a recognizable mechanical pattern.

Isn’t this the most efficient place to start?
But consider this...

Any Red Flags?
How many are there?
A short list of RED FLAGS

- Sphincter disturbance: bowel or bladder
- History of cancer
- Unexplained weight loss
- Immunosuppression
- Intravenous drug use
- Recent onset of structural deformity
- Recent or on-going infection
- Fever
- Night sweats
- Non-mechanical pattern of pain
- Constant pain
- Wide spread neurological signs or symptoms
- Disproportionate night pain
- Lack of treatment response
- Thoracic dominant pain
- Under 20 and over 55

Noseworthy J.N.
Neurological Therapeutics
Maybe this isn’t the best start...

Few red flags associated with low back pain actually predict fracture or malignancy

Red Flags for Back Pain: A popular idea that didn’t work
Underwood M and Buchbinder R BMJ 2013
Maybe this isn’t the best start...

- Whether they are accurate or not, using Red Flags at first contact is inefficient.
  - You are screening everyone for pathologies that affect less than 5%.
- If you identify and successfully manage a mechanical pattern there is no need for the flags.
  - With no pattern or positive response that is the time to think about Red Flags.
Consider the syndrome approach

- Mechanical back pain has a recognizable presentation and a recognizable pattern.
- For all non-invasive treatments the specific pathological diagnosis doesn’t matter.
- Identifying the syndrome rules out most of the Red Flags and directs initial management.
- Syndrome recognition is based on the history and the confirmatory physical examination.
Syndrome recognition

• The history begins with three questions.

Where is your pain the worst?
Where is your pain the worst?

• Is it back or leg dominant?

• Back dominant pain is **referred** pain from a physical structure.

• Back dominant:
  • back
  • buttocks
  • coccyx
  • greater trochanters
  • groin
Where is your pain the worst?

• Is it back or leg dominant?
• Back dominant pain is referred pain from a physical structure.
• Sites of referred pain can become locally tender.
  • Trochanteric bursitis
Where is your pain the worst?

- Is it back or leg dominant?
- Leg dominant pain is *radicular* pain from nerve root involvement.

- Leg dominant:
  - Around or below the gluteal fold, to the:
    - thigh
    - calf
    - ankle
    - foot
Where is your pain the worst?

• Is it back or leg dominant?
• The patient will often report both.
• But it must be one or the other.
  • “If I could stop only one pain, which one do I stop?”
Back dominant

Leg dominant
Syndrome recognition

• The history begins with three questions.

  Where is your pain the worst?

  Is your pain constant or intermittent?
Part A

Is there ever a time when you are in your best position, in your best time of your day and everything is going well when your pain stops even for a moment?

I know it comes right back but is there ever a time, even a short time when the pain is gone?
Part B

When your pain stops does it stop completely?

Is it all gone?

Are you completely without your pain?
Syndrome recognition

• The history begins with three questions.

  Where is your pain the worst?
  Is your pain constant or intermittent?
  Does bending forward make your typical pain worse?
1. Where is your pain the worst?

2. Is your pain constant or intermittent?

3. Does bending forward make your typical pain worse?
   • What are the aggravating movements/positions?
Back dominant
- Constant
- Intermitent

Leg dominant
- Constant
- Intermittent

↑ flex
- ↓ flex
1. Where is your pain the worst?

2. Is your pain constant or intermittent?

3. Does bending forward make your typical pain worse?

4. Has there been a change in your bowel or bladder function
   • since the start of your pain?
1. Where is your pain the worst?

2. Is your pain constant or intermittent?

3. Does bending forward make your typical pain worse?

4. Has there been a change in your bowel or bladder function?

5. What can’t you do now that you could do before you were in pain and why?
1. Where is your pain the worst?
2. Is your pain constant or intermittent?
3. Does bending forward make your typical pain worse?
4. Has there been a change in your bowel or bladder function?
5. What can’t you do now that you could do before you were in pain and why?
6. What are the relieving movements/ positions?
1. Where is your pain the worst?

2. Is your pain constant or intermittent?

3. Does bending forward make your typical pain worse?

4. Has there been a change in your bowel or bladder function?

5. What can’t you do now that you could do before you were in pain and why?

6. What are the relieving movements/positions?

7. Have you had this same pain before?
1. Where is your pain the worst?
2. Is your pain constant or intermittent?
3. Does bending forward make your typical pain worse?
4. Has there been a change in your bowel or bladder function?
5. What can’t you do now that you could do before you were in pain and why?
6. What are the relieving movements/positions?
7. Have you had this same pain before?
8. What treatment have you had? Did it work?
History takes precedence over physical examination.

But the physical examination must support the history.
1. Observation

- general activity and behaviour
- back specific:
  - contour
  - colour
  - scars
  - palpation (if you must)
Physical Examination

1. Observation

2. Movement
   - flexion
   - extension
   - prone passive extension when there is pain with flexion

PEP Prone Extension Positive - pain decreases
PEN Prone Extension Negative - pain increases
Pattern 1

Back dominant
- Constant
- Intermittent

Leg dominant
- Constant
- Intermittent

Pattern 1

↑ ext

↑ flex
↓ flex

↑ flex
↓ flex
Pattern 1 is referred pain

The neurological exam is normal or unrelated to the Pattern
Pattern 1

- Back dominant
- Leg dominant

Pattern 1 PEP
Pattern 1 PEN

Intermittent
Constant

Pattern 1
Pattern 2 is referred pain

The neurological exam is normal or unrelated to the Pattern

Constant pain or any pain in flexion is Pattern 1
Physical Examination

1. Observation
2. Movement
3. Nerve root irritation tests
   • straight leg raising
A positive straight leg raise:

- Passive test - the examiner lifts the leg
- Reproduction/exacerbation of typical leg dominant pain
- Back pain is not relevant
- Produced at any degree of leg elevation

To reduce confusion with hamstring tightness, flex the opposite hip and knee.
Physical Examination

1. Observation
2. Movement
3. Nerve root irritation tests
4. Nerve root conduction tests
   - L4 knee reflex
   - L5 great toe extension
   - S1 great toe flexion
Back dominant

- Constant
  - Pattern 1
    - Pattern 1 PEP
    - Pattern 1 PEN
  - Pattern 2

- Intermittent
  - Leg dominant
    - Constant
    - Intermittent
      - ↑ flex
      - ↓ flex
Pattern 3 is radicular pain

The neurological exam has irritative and/or conductive findings
Back dominant
  - Constant
  - Intermittent

Pattern 1
  - Pattern 1 PEP
  - Pattern 1 PEN

Pattern 2

Pattern 3

Leg dominant
  - Constant
  - Intermittent

↑↓ flex
Pattern 4 PEP is radicular pain

Rarely positive irritative and/or conductive findings

Leg dominant pain that responds like Pattern 1 PEP
Pattern 4 PEN is neurogenic claudication
Worse with activity in extension; better with rest in flexion
Never a positive irritative test – SLR negative
Physical Examination

1. Observation
2. Movement
3. Nerve root irritation tests
4. Nerve root conduction tests
5. Upper motor test
   • plantar response
   • clonus
Physical Examination

1. Observation
2. Movement
3. Nerve root irritation tests
4. Nerve root conduction tests
5. Upper motor test
6. Saddle sensation
   • lower sacral nerve roots (2,3,4) test
That’s all there is

There are only four Mechanical Syndromes
That’s all there is

Mechanical Syndromes

Unequivocal history

Anticipated treatment response

Concordant physical examination
Effectiveness of a Low Back Pain Classification System
Hall H, McIntosh G, Boyle C. The Spine Journal 2009
Start with the patterns

• There will be a pattern in ninety percent of your patients.
• If it responds as expected, you have your solution.
• If there is no syndrome or it doesn’t respond as anticipated, that is the group that needs to be investigated.
• That is the time to consider the Red Flags.