Assessment of Spinal Disorders including Yellow Flags: Guidance from Evidence

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What We Have Learned in Spine Care

- Training in clinical evaluation excellency is most important
  - Careful clinical examination
  - Additional diagnostics when needed

- Assessment and diagnostic studies
  - Clinicians are better at ruling out conditions
  - Red Flags are accepted world wide
  - Yellow flags are important for the recovery, prognostics and prevention of disability
  - Over diagnostic is common in industrialized countries
  - Underserved populations poorly served lead to disability
  - “Overserved” populations may lead to disability
  - Access to health is a human right issue
  - Diagnostics require training in clinical examination and assessment based on evidence
The Global Spine Care Initiative: a systematic review for the assessment of spine-related complaints in populations with limited resources and in low- and middle-income communities

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Key points

1. The assessment of patients with spine-related complaints includes ruling in or out pathology, determining the diagnosis, and guiding the need for additional investigations.
2. The effective assessment of patients should be evidence-based and informed by clinical practice guidelines.
3. To our knowledge, no systematic reviews of clinical practice guidelines are available to inform the assessment and diagnosis of spine-related complaints in underserved areas with limited resources.

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Nordin M, Randhawa K, Torres P, Yu H, Haldeman S, O'Dane B, et al
European Spine Journal 2018
What Did We Do?

3069 Duplicates
Not Eligible
No Methods
Irrelevant
Could not find

13
Methods

• Criteria selection for
  • Inclusion
  • Exclusion

• Critical appraisal by 2 people

• Disagreement resolved by
  • Discussion
  • Third reviewer
  • Contacting author

• Rated accepted guidelines by AGREE II formal system

• Synthesized findings

• Formulated recommendations

• Wrote paper

• European Spine Journal asked us to update the search and we did that
13 Low Bias Guidelines Accepted

- American College of Occupational and Environmental Medicine 2011, 2011
- American College of Radiology 2013, 2016
- Chou et al 2011
- Chung et al 2011
- Livingstone et al 2011
- Manchikanti et al 2013
- North American Spine Society 2014
- Work Loss Data Institute 2013, 2013
Recommendation 1

Clinicians should always take a clinical history during the initial assessment of patients with a spine-related complaints. The history should aim to determine

• the presence of signs or symptoms suggesting serious pathology (red flags) and
• psychological prognostic factors (yellow flags)
• 4/13 low risk of bias guidelines
RED Flags: serious pathology

- Trauma
- Cancer
- Spinal column infections
- Cauda equina syndrome
- Vertebral compression fracture
- Ankylosing spondylitis
- Nerve compression disorder
- Spinal stenosis
- Myelopathy

- History of direct trauma
- Any evidence of neurological pain
- Chronic slow onset pain, increasing at night

- History of cancer
- Insidious onset
- Unexplained weight loss
- No relief at bedtime, worse when supine
- Failure to improve after one month
- Age > 50 years
- Male with diffuse osteoporosis or compression fracture
RED Flags: serious pathology

- Trauma
- Cancer
- Spinal column infections
- Cauda equina syndrome
- Vertebral compression fracture
- Ankylosing spondylitis
- Nerve compression disorders
- Spinal stenosis
- Myelopathy

- Fever
- Intravenous drug use,
- Recent infection
- Previous surgery
- No relief at bedtime, worse when supine

- Urinary retention
- Motor deficits at multiple levels
- Fecal incontinence
- Saddle anesthesia
RED Flags: serious pathology

- Trauma
- Cancer
- Spinal column infections
- Cauda equina syndrome
- Vertebral compression fracture
- Ankylosing spondylitis
- Nerve compression disorder
- Spinal stenosis
- Myelopathy

- History of osteoporosis
- Use of corticosteroids
- Older age
- Traumatic injury or cumulative trauma

- Morning stiffness
- Improvement with exercise
- Alternating buttock pain
- Awakening due to back pain second part of night
- Younger age
RED Flags: serious pathology

- Trauma
- Cancer
- Spinal column infections
- Cauda equina syndrome
- Vertebral compression fracture
- Ankylosing spondylitis
- Nerve compression disorders
- Spinal stenosis
- Myelopathy

- Radiculopathic symptoms present >1 month
- Severe progressive neurological deficits, progressive motor weakness
- Pain and stiffness in the neck
- Heavy feelings in the legs
- Inability to walk at brisk pace
- Deterioration in fine motor skills
- Intermittent shooting pains into arms and legs, like electric shock when bending head forward
- Older age
- Pain usually relieved with sitting
- Pseudo claudication weak predictor
- Spinal stenosis symptoms present >1 month
Clinical History Screening Questions

**What are your symptoms?**
- Pain, numbness, weakness, stiffness?
- Where are your symptoms located?
- Are symptoms constant or intermittent?

**How do these symptoms limit you?**
- How much does pain interfere with your day to day activities?
- With work around the home?
- With your ability to participate in social activities?
- With your household chores?

**When did the current limitations begin?**
- How long have your activities been limited?
- Has this happened before?
- Have you had previous testing or treatment?
Clinical History Screening Questions

<table>
<thead>
<tr>
<th>Depression, anxiety and stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Over the past 2 weeks have you felt nervous, anxious, on the edge?</td>
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<tr>
<td>- Not been able to stop or control worrying?</td>
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<tr>
<td>- Felt down, depressed, or hopeless?</td>
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<tr>
<td>- Had little interest or pleasure in doing things?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Can you lift heavy weights without extra pain?</td>
</tr>
<tr>
<td>- Can you look after yourself normally without extra pain?</td>
</tr>
<tr>
<td>- Does pain prevent you from walking?</td>
</tr>
<tr>
<td>- How long can you sit without extra pain?</td>
</tr>
<tr>
<td>- How long can you stand without extra pain?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coping (catastrophizing, fear avoidance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- How do you control your symptoms what do you do to control them?</td>
</tr>
<tr>
<td>- How much have you been able to control (i.e., reduce/help) your symptoms on your own during the past week?</td>
</tr>
<tr>
<td>- Do you think your back pain will get better?</td>
</tr>
<tr>
<td>- Do you feel safe being physically active?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Expectations</th>
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</thead>
<tbody>
<tr>
<td>- Do you think all necessary examinations have been made?</td>
</tr>
<tr>
<td>- According to you, what would be the best treatment for your pain?</td>
</tr>
<tr>
<td>- What do you expect from the treatment?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Tell me about your back pain, how did it start?</td>
</tr>
<tr>
<td>- What do you understand is the cause of your back pain?</td>
</tr>
</tbody>
</table>

Prognosis and modifiable
Recommendation 2

- Clinicians should always perform a physical examination of the musculoskeletal and neurological systems
- 5/13 low risk of bias guidelines

World Spine Care has a toolkit with recommendations for basic clinical examination of the spine, demonstration at this conference

Use clinical examination tests with high validity
Recommendation 3

• Clinicians should not routinely obtain diagnostic imaging in the initial assessment for non-specific spinal pain
• 8/13 low risk of bias guidelines

Reduce
• Radiations exposure
• Reduce cost
• Medicalization
Recommendation 3

• First, awareness of physiological degenerative changes as diagnosed by immediate imaging might foster fear–avoidance beliefs in some patients and become an obstacle to recovery.

• Second, exposure to radiation doses in computed tomography or radiography is also an issue.

• Third, various epidemiological studies have shown that it is rare to find serious underlying conditions in primary care patients with low-back pain. (Lancet 2009, ESJ 2018)
Recommendation 4

- Clinicians should perform diagnostic imaging when signs or symptoms suggesting serious pathology (red flags) are suspected
- and/or when
  - severe progressive neurologic deficits are present,
  - and/or persistent disabling pain
- 11/13 low risk of bias guidelines
Recommendation 5

- Clinicians should not routinely perform electromyography and nerve conduction studies for diagnosis of intervertebral disc disease with radiculopathy
- 4/13 low risk of bias guidelines

Selected patients → Electromyography (EMG)
Recommendation 6

- Clinicians should not perform discography for the assessment of spinal pain
- 3/13 low risk of bias guidelines

Not Recommended
Assessment with insufficient evidence

- Clinical Examination
  - Cough Impulse Test
  - Bell test
  - Hyper extension test
  - Femoral nerve stretch test
  - Slump test for disc herniation with radiculopathy
  - Palpation for spondylolisthesis
- Electro diagnostics
- Thermal tests

- Imaging/Xray/Scan/other
  - Flexion extension Xray of spine
  - Standing MRI
  - MR Neurography
  - SPECT (Single photon emission)
  - Bone scan
  - Ultra sound
  - Thermography
  - Fluoroscopy
  - Videofluoroscopy
### Summary Table of Recommended Assessments for Spinal Pain.

<table>
<thead>
<tr>
<th>Category</th>
<th>Recommended/Not Recommended</th>
<th>Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical History</strong></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>· Identify presence of signs or symptoms suggesting serious pathology (red flags)</td>
<td>Recommended</td>
<td>4 out of 13</td>
</tr>
<tr>
<td>· Identify poor psychological prognostic factors (yellow flags)</td>
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<td></td>
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<tr>
<td><strong>Physical Examination</strong></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>· Musculoskeletal exam</td>
<td>Recommended</td>
<td>5 out of 13</td>
</tr>
<tr>
<td>· Neurological exam</td>
<td></td>
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</tr>
<tr>
<td><strong>Routine Diagnostic Imaging</strong></td>
<td>Not Recommended</td>
<td>11 out of 13</td>
</tr>
<tr>
<td>· Non-specific spinal disorders</td>
<td></td>
<td></td>
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<tr>
<td><strong>Diagnostic Imaging and Electro-diagnostic Testing</strong></td>
<td>Recommended</td>
<td>11 out of 13</td>
</tr>
<tr>
<td>· Presence of signs or symptoms suggesting serious pathology (red flags)</td>
<td></td>
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<tr>
<td>· Severe prognostic neurological deficits</td>
<td></td>
<td></td>
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<tr>
<td>· Persistent disabling pain</td>
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</tr>
<tr>
<td><strong>Electromyography and Nerve Conduction</strong></td>
<td>Not Recommended</td>
<td>4 out of 13</td>
</tr>
<tr>
<td>· Intervertebral disc disease with radiculopathy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Discography</strong></td>
<td>Not Recommended</td>
<td>3 out of 13</td>
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*European Spine Journal* 2018
Thank You

• Any Questions?