World Spine Care

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

Systematic Review of Guidelines 2018

European Spine Journal
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REVIEW

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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European Spine Journal
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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

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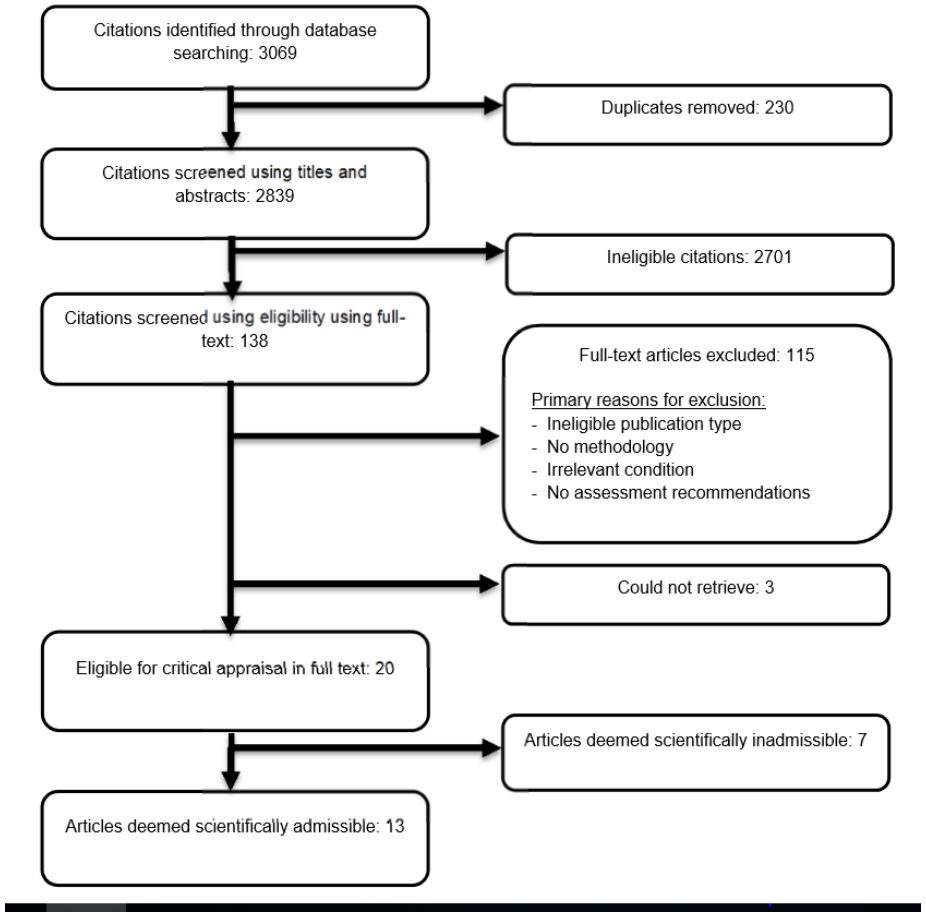
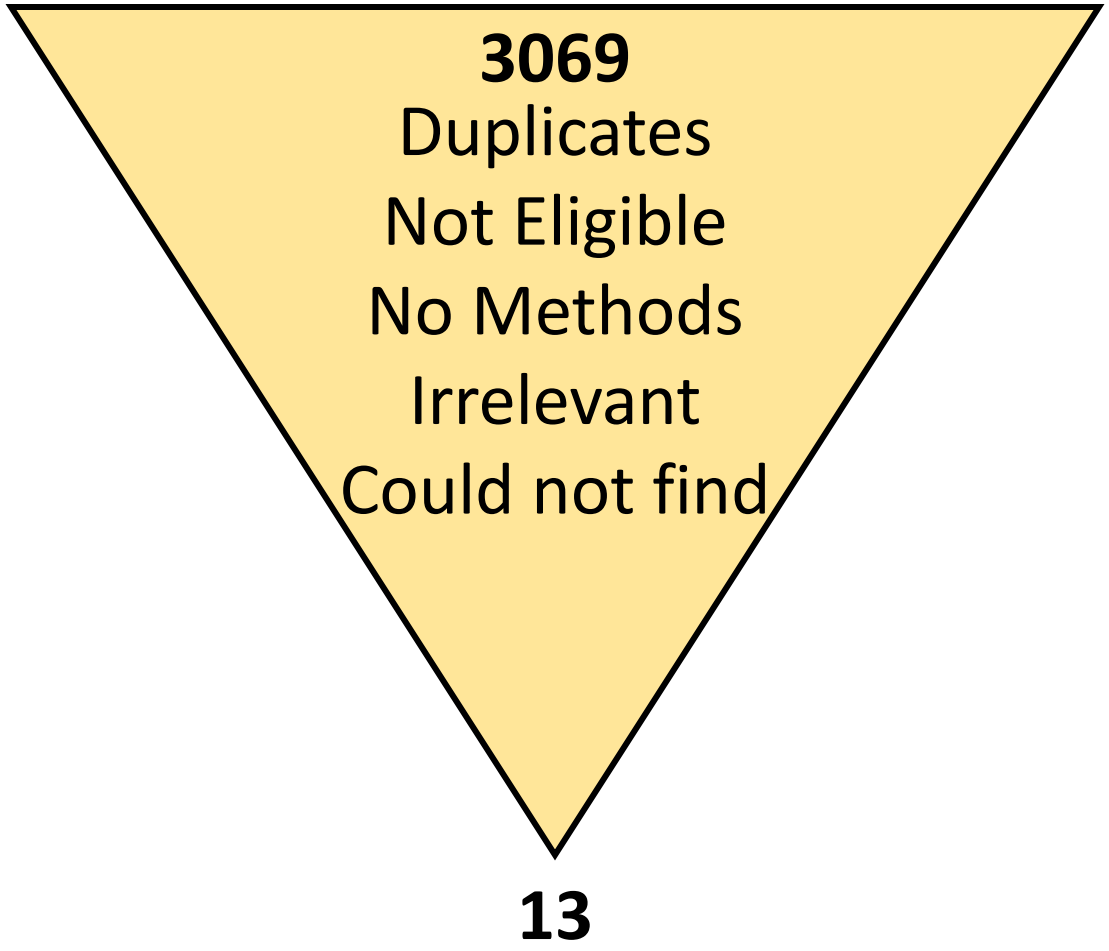
What Did We Do?





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

Type of Imaging	ACOEM, 2011 [67]	ACOEM, 2011 [30]	American College of Radiology, 2012 [68]	American College of Radiology, 2016 [4]	American College of Radiology, 2013 [4]	Chou et al., 2011 [33]	Chung et al., 2011 [37]	Livingstone et al., 2011 [38]	Manchikanti et al., 2013 [27]	North American Spine Society, 2012 [34]	North American Spine Society, 2014 [35]	Work Loss Data Institute, 2013 [31]	Work Loss Data Institute, 2013 [32]
Radiography	✔	✔	✔	✔	✔	✔	✔	✔			✔	✔	✔
Flexion/extension imaging studies	✔	✔					✔					✔	✔
Magnetic Resonance Imaging	✔	✔	✔	✔	✔	✔	✔	✔		✔	✔	✔	✔
Standing Magnetic Resonance Imaging	✔	✔										✔	✔
MRA neck			✔										
Magnetic resonance neurography													✔
Computed Tomography	✔		✔	✔	✔	✔		✔		✔	✔	✔	✔
CTA head and neck			✔										
Myelography with and without Computed Tomography	✔		✔		✔					✔		✔	✔
Arteriography cervicocerebral			✔										
Bone Scan	✔			✔								✔	✔
Needle Electromyography /H-reflexes	✔									✔		✔	✔
Nerve conduction study										✔		✔	✔
F-wave test										✔		✔	✔
Surface Electromyography	✔											✔	✔
Evoked potential studies												✔	✔
Sensory evoked potentials										✔		✔	
SPECT	✔										✔		✔
Ultrasound	✔											✔	✔
Thermography	✔											✔	✔
Fluoroscopy	✔											✔	✔
Videofluoroscopy	✔											✔	✔
Discography	✔	✔							✔			✔	✔
MRI Discography	✔	✔											
Myeloscopy	✔												

- 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 [illegible]ctions
- Cauda equina syndro[illegible]
- Vertebral compression frac[illegible]
- Ankylosing spondylitis
- Nerve compression diso[illegible]
- 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 fractu
- Ankylosing spondylitis
- Nerve compression disc
- 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 disorde
- 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 fra
- Ankylosing spondylitis
- Nerve compression disord
- 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

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Serious pathology

What are your symptoms?

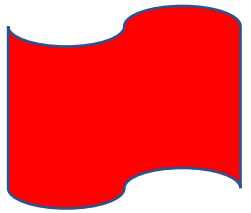
- Pain, numbness, weakness, stiffness?
- Where are your symptoms located?
- Are symptoms constant or intermittent?

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

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Prognosis and modifiable

Depression, anxiety and stress

- Over the past 2 weeks have you felt nervous, anxious, on the edge?
- Not been able to stop or control worrying?
- Felt down, depressed, or hopeless?
- Had little interest or pleasure in doing things?

Function

- Can you lift heavy weights without extra pain?
- Can you look after yourself normally without extra pain?
- Does pain prevent you from walking?
- How long can you sit without extra pain?
- How long can you stand without extra pain?

Coping (catastrophizing, fear avoidance)

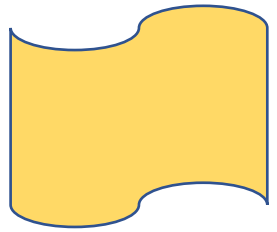
- How do you control your symptoms what do you do to control them?
- How much have you been able to control (i.e., reduce/help) your symptoms on your own during the past week?
- Do you think your back pain will get better?
- Do you feel safe being physically active?

Expectations

- Do you think all necessary examinations have been made?
- According to you, what would be the best treatment for your pain?
- What do you expect from the treatment?

Beliefs

- Tell me about your back pain, how did it start?
- What do you understand is the cause of your back pain?



Recommendation 2

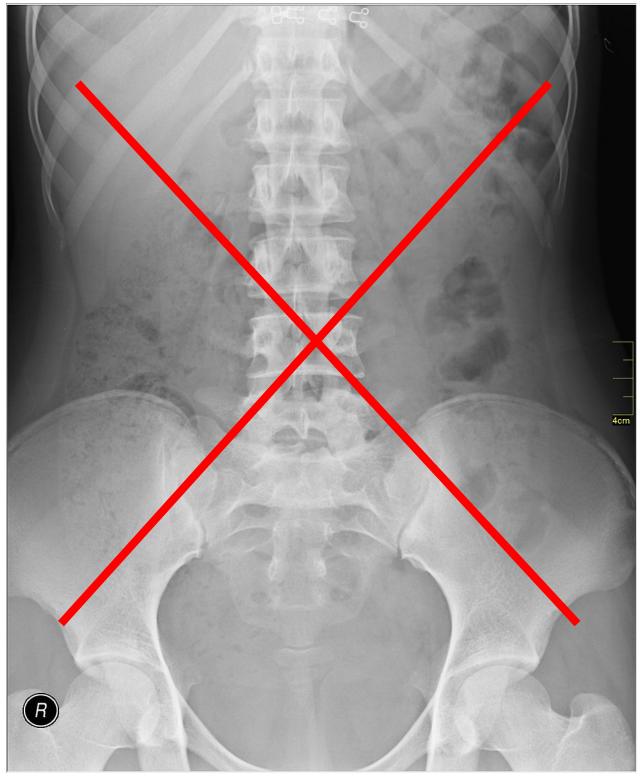
- *Clinicians should always perform a physical examination of the musculoskeletal and neurological systems*
- *5/13 low risk of bias guidelines*

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

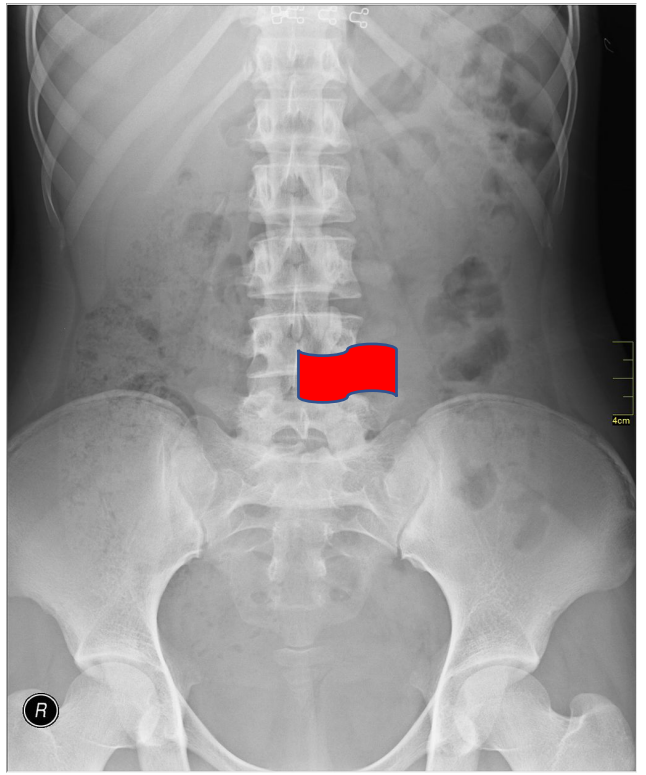
- *Radiations exposure*
- *Reduce cost*
- *Medicalization*

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

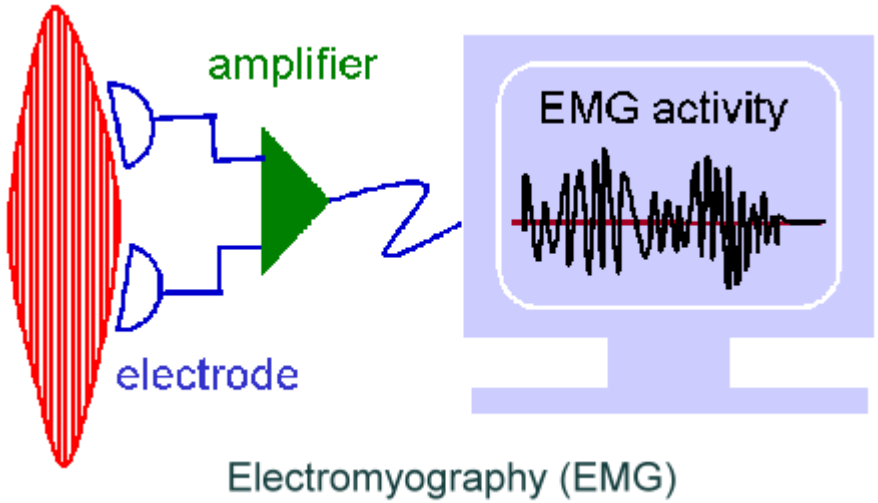
- *Clinicians should perform diagnostic imaging when signs or symptoms suggesting serious pathology (red flags) are suspected*
- *and/or when*
  - *severe progressive neurologic deficits are present,*
  - *and/or persistent disabling pain*
- *11/13 low risk of bias guidelines*



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*

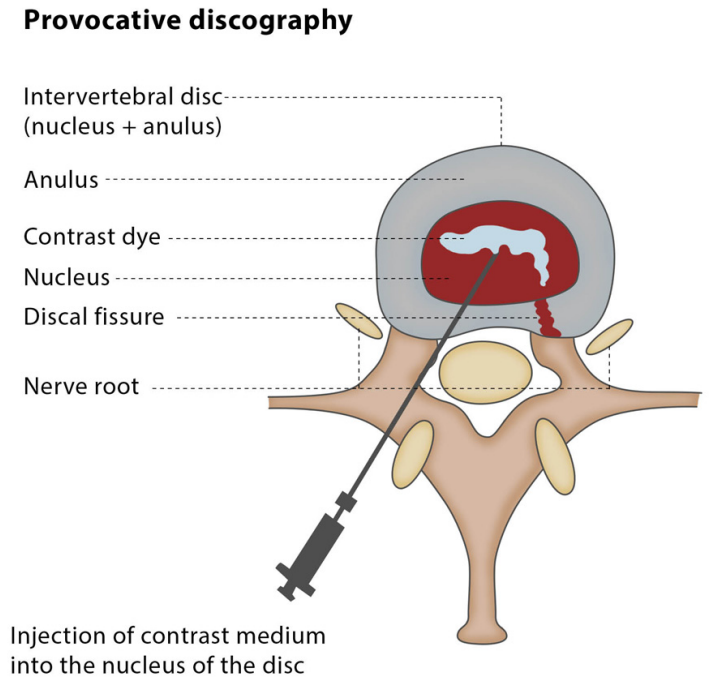
Selected patients



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
  - Videofluroscopy

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Summary Table of Recommended Assessments for Spinal Pain.

Clinical History · Identify presence of signs or symptoms suggesting serious pathology (red flags) · Identify poor psychological prognostic factors (yellow flags)	Recommended (4 out of 13 guidelines)
Physical Examination · Musculoskeletal exam · Neurological exam	Recommended (5 out of 13 guidelines)
Routine Diagnostic Imaging · Non-specific spinal disorders	Not Recommended (11 out of 13 guidelines)
Diagnostic Imaging and Electro-diagnostic Testing · Presence of signs or symptoms suggesting serious pathology (red flags) · Severe prognostic neurological deficits · Persistent disabling pain	Recommended (11 out of 13 guidelines)
Electromyography and Nerve Conduction · Intervertebral disc disease with radiculopathy	Not Recommended (4 out of 13 guidelines)
Discography	Not Recommended (3 out of 13 guidelines)

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Thank You

- Any Questions?