PRIMARY CARE
MED437

Approach To A Patient With Back Pain

Objectives (per the guideline):

1. Define common causes of acute and chronic back pain.
2. Screen red and yellow flags related to back pain.
3. Conduct appropriate history and physical exam for individuals complaining of back pain.
4. Formulate differential diagnoses for back pain based on history and physical examination.
5. Outline appropriate management plan, including investigations and referrals with proper utilization of available resources.
6. Provide essential health education and promotion to prevent and relieve back pain.
7. Identify the family physician's role in dealing with individuals with back pain.
8. Explain the indications for referral to a specialist.

Done by:

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Sources:

436 student work, Dr's slides & references (VA/DoD Clinical Practice Guideline, Murtagh's General Practice), 434 Basic Clinical Guide.

Important *Notes* *Extra* *Golden* *Female lecture*

Editing file link

Dr. Norah Alshehri notes:

You have to cover 3 domains in the OSCE exam:

1. Introduction: (almost 5 marks)
    a. Introduce yourself.
    b. Ask the patient about his/her name.
    c. Establish a good rapport with the patient.
2. FULL comprehensive detail history: (almost 10 marks)
    a. HPI (site/severity/radiation/nature/associated symptoms..) (almost 5 marks)
    "all of you focus on this part in the exam and ignore to take a complete history"
    b. Surgery history.
    c. Medical history (Any chronic diseases? Any medications? New admission to the hospital? ER visit?).
    d. Allergy history.
    e. Family history.
    f. Social history. (smoking..)
    g. ICE (almost 3/4 marks) "all of you forget to ask about it! you need to ask about it in EVERY OSCE station. From ICE we're almost give you the diagnosis"

Before starting the management, explain to the patient differential diagnoses + what's your most likely diagnosis + be sure that the patient is understand it!

3. Management: (almost 10 marks)
    a. Investigations:
        i. Lab.
        ii. Radiological.
    b. Treatment:
        i. Non-pharmacological.
        ii. Pharmacological.
    c. Referral.
    d. Follow up.

Dr. Norah Alshehri notes:

- History taking questions for **back pain**:
  - Are there any menstrual changes? To rule out PID and endometriosis. It's a referral pain = the pain source is not from the back itself.
  - Social history > Traveling (TB)
  - History of animal contact (brucellosis)
  - What's the job of the patient? (mechanical causes/non-specific)
  - Neurological deficit like numbness (disk prolapse)
  - Bowl and urine control (cauda equina)
  - History of trauma.
  - Yellow flags.
  - Constitutional symptoms + REDFLAGS.
- Osteoporosis is an important OSCE station. The patient will complain of (Bone pain, unexplained fracture, multiple fracture and small fractures). The risk factors are; Sun exposure and Premature ovarian.
- Back pain is one of the most common case we face it in the family medicine clinics.
- Back pain can be very easy pain > non-mechanical: muscle strain and sprain. Also, it can be something really SERIOUS!
- Case: A 46 years old engineer gentleman came to the clinic complaining of back pain. It's really bothering him for a couple of months. Nothing makes the pain better. He takes paracetamol to relieve the pain. There are no neurological symptoms.

  In family medicine, when there are no redflags or neurological symptoms usually we delay the radiological investigations. In this case, the doctor ordered for him an x-ray because the patient came after 6 months since the pain started. Unfortunately, the x-ray shows lytic lesion > secondary ca in the bone due to metastasis (from colon cancer). Notice that the patient didn't came complaining of colon cancer! After 4 or 6 months he died.
- The most common cause of back pain is non-specific (70%). Non -mechanical/referred pain (3-5%).

Dr. Norah Alshehri notes:

According to management of **back pain**:

- In acute pain, we usually advise rest while in chronic pain we don't.
- In chronic pain we delay the order of radiological investigations. After giving the patient pain killers we will wait for 4-6 weeks to see if the patient will improve, if not at least you will do the x-ray, and if the there are neurological symptoms MRI.
- A patient presented with back pain, what is the first line treatment?
    - **Paracetamol**. Does the patient take it already? Correct dose? Frequency?
- If paracetamol didn't work > use **NSAIDs**.
- If a patient presented with a chronic pain (muscle strain) can he/she use acupuncture? Yes, it's really effective to improve the pain.
- When you refer your patient?
    - Secondary cancer.
    - Progressive neurological deficit.
    - Ankylosing spondylitis.
    - Cauda equina.
    - Disk prolapse for many years > referral to surgery.
    - Fracture
- Based on symptoms we refer rheumatological conditions.

Key facts about Back pain:

- In Saudi Arabia seven cross sectional studies found a prevalence and pattern of back pain ranging from 53.2% to 79.17%.
- At least 50% of these people will recover within 2 weeks and 90% within 6 weeks, but recurrences are frequent.
- The most common diagnosis in Lower Back Pain is lumbosacral sprain/strain or mechanical LBP
- Patients with persistent or fluctuating pain that lasts **longer than three months** are defined as having chronic low back pain.

Common causes and DDx of back pain?

When taking a history of back pain, first use any category then rule in or out the diseases.

Mechanical causes (most common)

- Lumbosacral strain/sprain
- Herniated disc
- Spinal stenosis
- Compression fracture
- Spondylolysis
- Spondylolisthesis
- Discs and/or facets degeneration

Systemic Causes

Malignancy

- Primary
- Secondary (Metastasis)

Infection

- Osteomyelitis
- TB (Pott's Spine)
- Brucellosis

Inflammation

- Spondylitis

Referred Pain

- Ruptured Abdominal Aortic Aneurysm
- Prostatitis
- Endometriosis
- Renal Stones
- Pyelonephritis
- Pancreatitis

- Major causes of low back pain and their patient presentation percentages.

More than 70% is mechanical BP

Patients	%
Vertebral dysfunction	71.8
Lumbar spondylosis	10.1
Depression	3.0
Urinary tract infection	2.2
Spondylolisthesis	2.0
Spondyloarthropathies	1.9
Musculoligamentous strains/tears	1.2
Malignant disease	0.8
Arterial occlusive disease	0.6
Other	6.4
Total	100.0

Other category to diagnose a patient with low back pain:

- nonspecific low back pain
- back pain associated with radiculopathy or spinal stenosis*
- back pain referred from a non spinal source
- back pain associated with another specific spinal cause*

(*): **MRI** or **CT** may establish the diagnosis and guide management.

Table 1. Differential Diagnosis of Chronic Low Back Pain

Nonspecific or idiopathic (70 percent)	Referred pain (2 percent)	Nonmechanical (1 percent)
Lumbar sprain or strain	Aortic aneurysm	Neoplasia
Mechanical (27 percent)	Diseases of the pelvic organs	Multiple myeloma
Degenerative processes of disks and facets	Prostatitis	Metastatic carcinoma
Herniated disk	Endometriosis	Lymphoma and leukemia
Osteoporotic fracture*	Chronic pelvic inflammatory disease	Spinal cord tumors
Spinal stenosis	Gastrointestinal disease	Retroperitoneal tumors
Traumatic fracture*	Pancreatitis	Primary vertebral tumors
Congenital disease	Cholecystitis	Inflammatory arthritis, often associated with human leukocyte antigen-B27
Severe kyphosis	Penetrating ulcer	Ankylosing spondylitis
Severe scoliosis	Renal disease	Psoriatic spondylitis
Transitional vertebrae	Nephrolithiasis	Reiter syndrome
Spondylosis	Pyelonephritis*	Inflammatory bowel disease
Internal disk disruption or discogenic pain	Perinephric abscess*	Infection*
Presumed instability		Osteomyelitis
		Septic diskitis
		Paraspinous abscess
		Epidural abscess
		Shingles
		Scheuermann disease (osteochondrosis)
		Paget disease of bone

*—Indicates conditions more likely to present as acute low back pain.

Adapted with permission from Deyo RA, Weinstein JN. Low back pain. N Engl J Med. *2001;344(5):365.*

Red flags of back pain:

- ❏ Are signs and symptoms that points to a serious health problem and indicates further investigations or a referral to a specialist.
- ❏ A great mnemonic for them is **TUNA FISH >**
- ❏ Ask about them during history.
- ❏ Other Redflags are:
  - Use of anticoagulants (bleeding around nerve roots)
  - Possible cauda equina syndrome;
    - Saddle anaesthesia
    - Recent onset of bladder dysfunction
    - Recent onset of bowel incontinence
    - Leg weakness

Yellow Flags of back pain:

- ❏ Are psychosocial and occupational factors that may increase the risk of chronicity in people presenting with acute back pain.
- ❏ Consider psychological issues if:
  - abnormal illness behaviour
  - unsatisfactory restoration of activities
  - failure to return to work
  - unsatisfactory response to treatment
  - treatment refused
  - atypical physical signs

Table 3. Psychosocial "Yellow Flags" Predicting Long-Term Disability in Patients with Chronic Low Back Pain

Affect	Anxiety; depression; feeling of uselessness; irritability
Behavior	Adverse coping strategies; impaired sleep because of pain; passive attitude about treatment; withdrawal from activities
Beliefs	Thinks "the worst" or that pain is harmful or uncontrollable, or that it needs to be eliminated (before returning to activities or work)
Social	History of sexual abuse, physical abuse, or substance abuse; lack of support; older age; overprotective family
Work	Expectation that pain will increase with work and activity; pending litigation; problems with worker's compensation or claims; poor job satisfaction; unsupportive work environment

Information from references 9 through 11.

How can you approach a patient with back pain?

- ❏ We start by history and physical examination.

History taking: (Ask about the Redflags)

Personal information: (Name - Age - Occupation)
Chief complaints: What? When? Where?
History of presenting illness (SOCRATES):

- **Site:** Upper? Middle? Lower?
- **Onset:** any offending events? (lifting object) Sudden? (fracture/injury) Gradual?
- **Course:** Continuous (neoplasia/infection) or in separate attacks?
- **Character:**
    - Sharp or stabbing? radicular pain (e.g. sciatica/disc herniation)
    - Aching throbbing? (inflammation)
    - Constant and nocturnal? (malignancy)
    - Colicky? (visceral pain)
    - Tearing? (aortic dissection)
- **Radiation:** Pain radiating to legs? (lumbosacral radiculopathy)
- **Exacerbating factors:** Movement? Flexion or extension? Coughing? Posture?
- **Alleviating factors:** Rest? Posture? Exercise? (Ankylosing spondylitis) Medication?
- **Timing:** Pain at night? Worse at morning? (inflammatory back pain)
- **Severity:** How it affects the patient's emotions? daily activities? Sleep?
- **Associated symptoms:** Stiffness? Deformity? Pain, numbness, paresthesia or weakness in the lower limbs? Bladder dysfunction?

Constitutional symptoms & Redflags:

- Fever
- Weight loss
- Nausea & vomiting
- Loss of appetite
- Night sweat
- Urinary retention or incontinence
- Fecal incontinence or urgency
- Impotence

Past History:

- Past medical history (Including cancer, psychiatric issues and infections)
- Past surgical history
- Past trauma
- History of blood transfusion

Medications/Allergies:

Corticosteroids? Immunosuppressive medications? Anticoagulants? Allergies?

Family History:

- Of similar condition
- Any inherited diseases that run in the family
- History of Cancer

Social History:

- Smoking
- Alcohol
- Illicit drug usage (e.g Osteomyelitis with IV drug use)
- Recent Travel
- Contact with infected people
- Immunization history

Don't forget ICE:

- ❑ How does it affect the patient functionally and mentally?
  - ❑ Ideas
  - ❑ Concerns
  - ❑ Expectations

Approach to the physical examination:

- ❑ In both standing and supine position.

Look → Feel → Move → Special tests

Approach to Low Back Pain Physical Exam - Stanford Medicine 25

Investigations:

Laboratory assessment

- ★ Erythrocyte sedimentation rate
- ★ Complete blood count
- ★ C-reactive protein level

→ Should be considered when red flags indicating the possibility of a serious underlying condition are present.

- ★ Urinalysis

→ May be useful when urinary tract infections are suspected.

- ★ Alkaline phosphatase
- ★ Calcium levels

→ Can help identify conditions, such as Paget disease of bone, that affect bone metabolism.

Treatment:

Pharmacological

Acetaminophen is first-line therapy because of its high safety profile. **NSAIDs** provide similar analgesia, but have significant gastrointestinal and renovascular adverse effects. Tramadol, opioids, and other adjunctive medications may benefit some patients who do not respond to NSAIDs.

Non-pharmacological

Acupuncture, **exercise therapy**, **multidisciplinary rehabilitation programs**, **massage**, **behavior therapy**, and **spinal manipulation** are effective in certain clinical situations. Patients with radicular symptoms may benefit from **epidural steroid injections**, but studies have produced mixed results. Most patients with chronic low back pain will not benefit from **surgery**. A surgical evaluation may be considered for select patients with functional disabilities or refractory pain despite multiple nonsurgical treatments.

Surgery

If anatomic abnormalities consistent with the distribution of pain are identified, surgery can be considered in persons who have experienced significant **functional disabilities** and in those with unremitting pain, especially pain lasting **longer than 12 months despite multiple nonsurgical treatments**.

When to refer to a specialist?

When to refer to surgical:

- **Urgent/Emergency referrals which requires Immediate evaluation:**
  - Cauda equina syndrome.
  - Fracture
- **Elective:**
  - Herniated lumbar disc
  - Spinal stenosis

When to refer for diagnostic evaluation:

Consider referral if a serious spine condition is suspected such as :

- Tumor
- Infection
- Fracture
- Other suspected space-occupying lesion
- Redflags

Patients with	PHC	Referral
• Sciatica • Abnormal nerve root findings (abnormal strength, sensation, reflex)	• Conservative therapy	• Neurologist • Orthopedic • Neurological surgeon

From here to the end of the lecture is from 437 boys team

Look (Inspection):

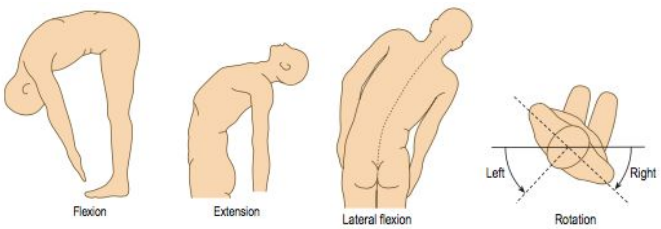
- ★ Starting with a standing position
- ★ Expose the trunk and lower limbs properly.
- ★ Examine front and back.
- ★ Notice any deformity (look from front, sides and behind), swelling, or skin changes (scars, hairy tuft, "café au lait" spots).
- ★ Notice normal thoracic kyphosis and lumbar lordosis.
- ★ Notice shoulders & pelvis level.
- ★ Notice if the patient is consistently standing with one knee bent (suggestive of nerve root tension) and check for muscle wasting.
- ★ Are shoulders and pelvis level symmetrical?
- ❑ **Gait:**
  - ❑ Abnormal gait types: Antalgic, Trendelenburg, Waddling.
  - ❑ Heel and toe walking: For nerve roots.
  - ❑ Heel walk = Examining L4
  - ❑ Toe walk = Examining S1

Feel (Palpation):

- ★ Palpate spinous processes for tenderness, steps or gaps.
- ★ Soft tissues: temperature, tenderness.
- ★ Patient should be in prone position.
- ★ Palpation occurs:
  - Centrally
  - Unilateral
  - Soft tissues
  - After warning the patient, lightly percuss the spine with your closed fist and note any tenderness.

Move:

- ★ There are three main movements of the lumbar spine:
  - Flexion
  - Extension
  - Lateral bending
  - Rotation



Special tests:

★ **Adams Forward bending test:**

★ Full forward flexion until back is horizontal to the floor.
If thoracic scoliosis is present, then rib hump will become visible.

❑ **Straight leg raising (SLR) test:**

❑ Done while the patient lying in supine position.

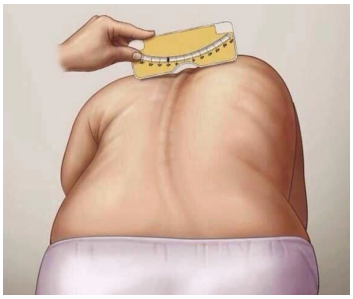
❑ Tension increased by dorsiflexion of foot (Bragard's test).
Root tension relieved by flexion at the knee.

❑ Pressure over the center of popliteal fossa causes pain locally and radiation into the back.

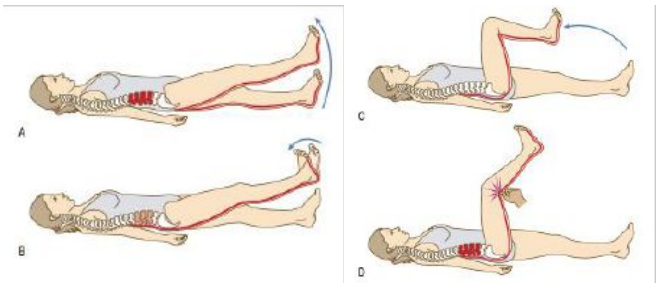
❑ Positive test mean that the L4, L5 and S1 nerve roots are involved.

❑ Hamstring tightness and knee or hip pain should be distinguished from a true positive SLR. Screening Hip and knee examinations (e.g. rotation of the hips, joint line tenderness at the knees) should be done to rule out hip or knee OA which can be confused with sciatica.

Adams Forward bending test

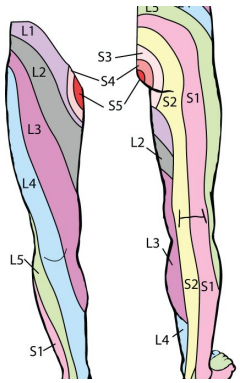


Straight leg raising (SLR) test



Neurological examination:

★ Motor: Hip flexion=L2, knee extension=L3, ankle dorsiflexion=L4, big toe extension=L5, ankle plantar flexion=S1 .



★ Sensory: dermatomes.

★ Tone: normal, flaccid or rigid.

★ Reflexes: knee & ankle jerks

★ If there is nerve roots compression patient will have pain, paresthesia, anesthesia and weakness, extend into the leg.

Vascular examination:

★ Pedal pulses (dorsalis pedis & posterior tibial artery).

★ Capillary refill (normal < 2 seconds).

In case of an OSCE:

- First take a quick full history
- Don’t forget to ask about the Redflags & ICE
- Give a possible DDx
- Mention further investigations you would like to do (e.g x-ray)
- Management plan starting with the non-pharmacological (e.g physiotherapy)
- Give a referral if needed (e.g sciatica getting worse refer to a neurologist)
- Schedule a follow up
- Do some safety netting (e.g In case you develop a fever go to the ER)

Available Investigations:

- **X ray:** it will show the alignment of your bones and whether you have arthritis or broken bones. Alone, it won't show problems with your spinal cord, muscles, nerves or disks.

- **MRI or CT scans:** These scans generate images that can reveal herniated disks or problems with bones, muscles, tissue, tendons, nerves, ligaments and blood vessels.

- **Blood tests:** These can help determine whether you have an infection or other condition that might be causing your pain.

- **Bone scan:** In rare cases, your doctor might use a bone scan to look for bone tumors or compression fractures caused by osteoporosis.

- **Nerve studies:** Electromyography (**EMG**) measures the electrical impulses produced by the nerves and the responses of your muscles. This test can confirm nerve compression caused by herniated disks or narrowing of your spinal canal (spinal stenosis).

Labs:

- **FBC:** suspected infection, malignancy, non spinal cause of back pain.
- **ESR:** suspected infection, malignancy, ankylosing spondylitis.
- **Bloods cultures:** febrile and suspected infection.
- **Coagulation studies:** neurosurgery anticipated.
- Other pathology tests including UECs, LFTs, lipase, urinalysis etc. should be considered when suspecting a non-spinal cause of back pain.

Indications:

- **MRI**
    - Major risk factors for cancer.
    - Signs of cauda equina syndrome (Urinary retention, faecal incontinence, saddle anaesthesia).
    - Risk factors for spinal infection.
    - Severe neurological deficits.
    - Progressive motor weakness, motor deficits at multiple neurological levels.
- **CT**
    - If an MRI is contraindicated or unavailable and the above diagnoses are suspected a CT lumbar spine may be indicated after discussion with a neurosurgeon and radiologist.
    - Vertebral fracture suspected with significant trauma.
- **X-RAY**
    - Vertebral fracture suspected in Osteoporotic bone (elderly, corticosteroid use) with minimal or no trauma.

Diagnostic approach diagram:

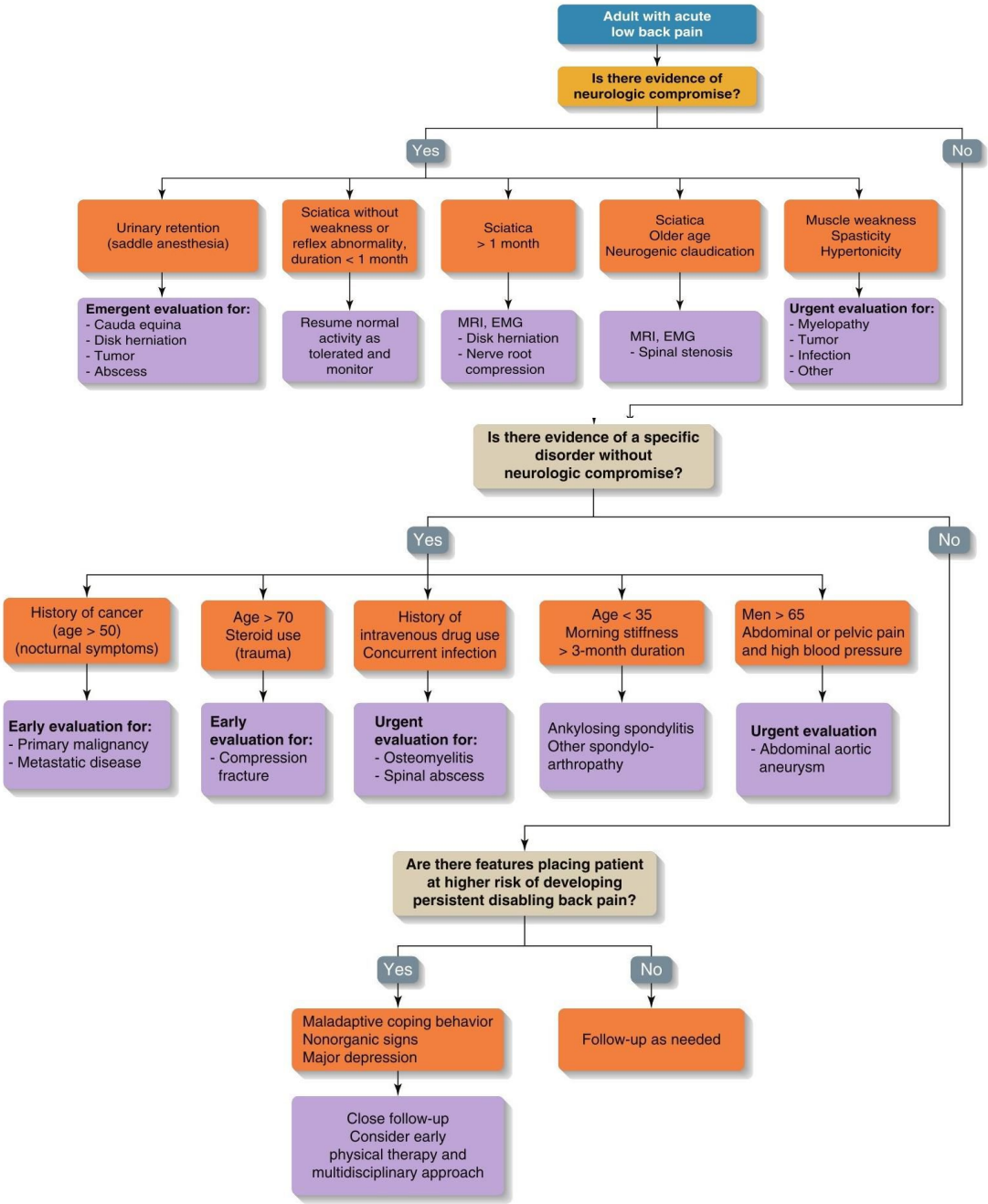


FIGURE 54–1 Diagnostic approach: Low back pain. EMG, electromyography; MRI, magnetic resonance imaging.

Brief comments on Mechanical, Inflammatory, Root nerve compression and Malignancy pain:

Mechanical pain:

- Tends to get better or worse depending on your position – for example, it may feel better when sitting or lying down.
- Typically feels worse when moving.
- Can develop suddenly or gradually.
- Poor posture or lifting something awkwardly, but often occurs for no apparent reason.
- May be due to a minor injury.

DDx:

- ❖ Spinal stenosis
- ❖ Degenerative processes of disks and facets.
- ❖ Herniated disc.
- ❖ Osteoporotic fracture
- ❖ Traumatic fracture
- ❖ Transitional vertebrae spondylosis
- ❖ Congenital disease - severe scoliosis and kyphosis.

Nerve root compression:

- Characterized by radicular pain arising from nerve root impingement due to herniated discs. (see the previous image)
- Radicular pain: Pain that radiates into the lower extremity directly along the course of a spinal nerve root.

Causes of lumbar disc herniation :

1. Trauma or injury to the disc
2. Disc degeneration (inflammatory process)
3. Congenital predisposition

Risk factors:

- Age
- Smoking
- Physically demanding jobs
- Obesity
- Trauma

Inflammatory back pain:

- Age at onset of back pain <45 years
- Back pain lasting > 3 months
- Night pain
- Early morning pain and stiffness lasting more than one hour
- Insidious onset
- Tenderness/inflammation over the joint
- Increased by Rest and relieved by activity

DDx:

- ❖ Inflammatory arthritis
- ❖ Ankylosing spondylitis
- ❖ Psoriatic spondylitis
- ❖ Reiter syndrome
- ❖ IBD

Malignancy:

- Metastatic tumors are found mostly in patients older than 50 years.
- History of malignancy is important (male/female).
- Tumor could cause nerve destruction or compression.
- Patient usually has constitutional symptoms such as fever, weight loss, loss of appetite and N\V. With pain at night (nocturnal) and rest.

DDx:

- ❖ Multiple myeloma
- ❖ Metastatic carcinoma
- ❖ Lymphoma and leukemia
- ❖ Spinal cord tumor
- ❖ Retroperitoneal tumors
- ❖ Primary vertebral tumors

Role of primary health care in management:

General overview - Role of PHC:

- **Ask** about and address the patient's concerns and goals.
- **Relieve** the pain.
- **Improve** associated symptoms, such as sleep or mood disturbances or fatigue.
- **Maximize** functional status.
- **Educate** patients about the natural history of back pain.
- **Prevention** heavy lifting, socio-demographic factors such as smoking and obesity.
- **Referral** of complicated cases.

Why is PHC important?

A patient suffering from back pain books an appointment in a private hospital.
Does he really know where to go? Neuro? Ortho? Onco? .. etc
Family Medicine, in addition to the previous, is:

- Cost effective for the patient.
- Time effective.
- Patient-centered.

Approach of a family physician:

What to keep in mind?

- Redflags
- Differentials (ordered by the most common).
- Causes of referral \ indications for diagnostics.

Steps:

History, Examination, Management and Follow-up accordingly.

Diagnostic\ Lab tests\ Referrals if needed.

Management options:

Non-Pharmacological:

Advice to stay active.

Patient education.

Relative rest.

Application of superficial heat.

Exercises.

Physical therapy.

Pharmacological:

Analgesics (could be locally injected)

NSAIDs

Muscle relaxants

The CRAPRIOPS Management plan:

1. **Clarify** start by checking what the patient already knows and build on it
2. **Reassure** honest reassurance, avoid inappropriate reassurance
3. **Advise** the patient: regarding modification of his life style to promote his health and to prevent expected complication of the problem.
4. **Prescribe** if there's any medication needed
5. **Refer** if needed.
6. **Investigate** the patient to confirm the diagnosis or for purpose of follow up for any expected disease progression, complication or drug side effects.
7. **Observe** (follow up): according to the condition.
8. **Prevent** secondary prevention for the presenting illness or opportunistic preventions for other problems e.g smoking, depression,drug abuse ...etc
9. **Safety netting** tell the patient to visit you if anything happen like if he had weight loss, the pain increased...etc

Management of low back pain

- Explanation and reassurance
- Back education program
- Encouragement of normal daily activities, including work, according to degree of comfort
- Regular non-opioid analgesics (e.g. paracetamol)
- Physical therapy: stretching of affected segment, muscle energy therapy, spinal mobilisation or manipulation (if no contraindication)[11,13,15]
- Prescribe exercises (provided no aggravation)
- Review in about 5 days (probably best time for physical therapy)
- No investigation needed initially

- Acute pain = pain less than 6 weeks.
- Subacute pain = pain 6–12 weeks
- Chronic pain = pain greater than 12 weeks

A Clinical Practice Guideline From the American College of Physicians: 2017 Apr 4

Recommendation 1:

Given that most patients with acute or subacute low back pain improve over time regardless of treatment, clinicians and patients should select nonpharmacologic treatment with superficial heat (moderate-quality evidence), massage, acupuncture, or spinal manipulation (low-quality evidence).
If pharmacologic treatment is desired, clinicians and patients should select nonsteroidal anti-inflammatory drugs or skeletal muscle relaxants (moderate-quality evidence). (Grade: strong recommendation).

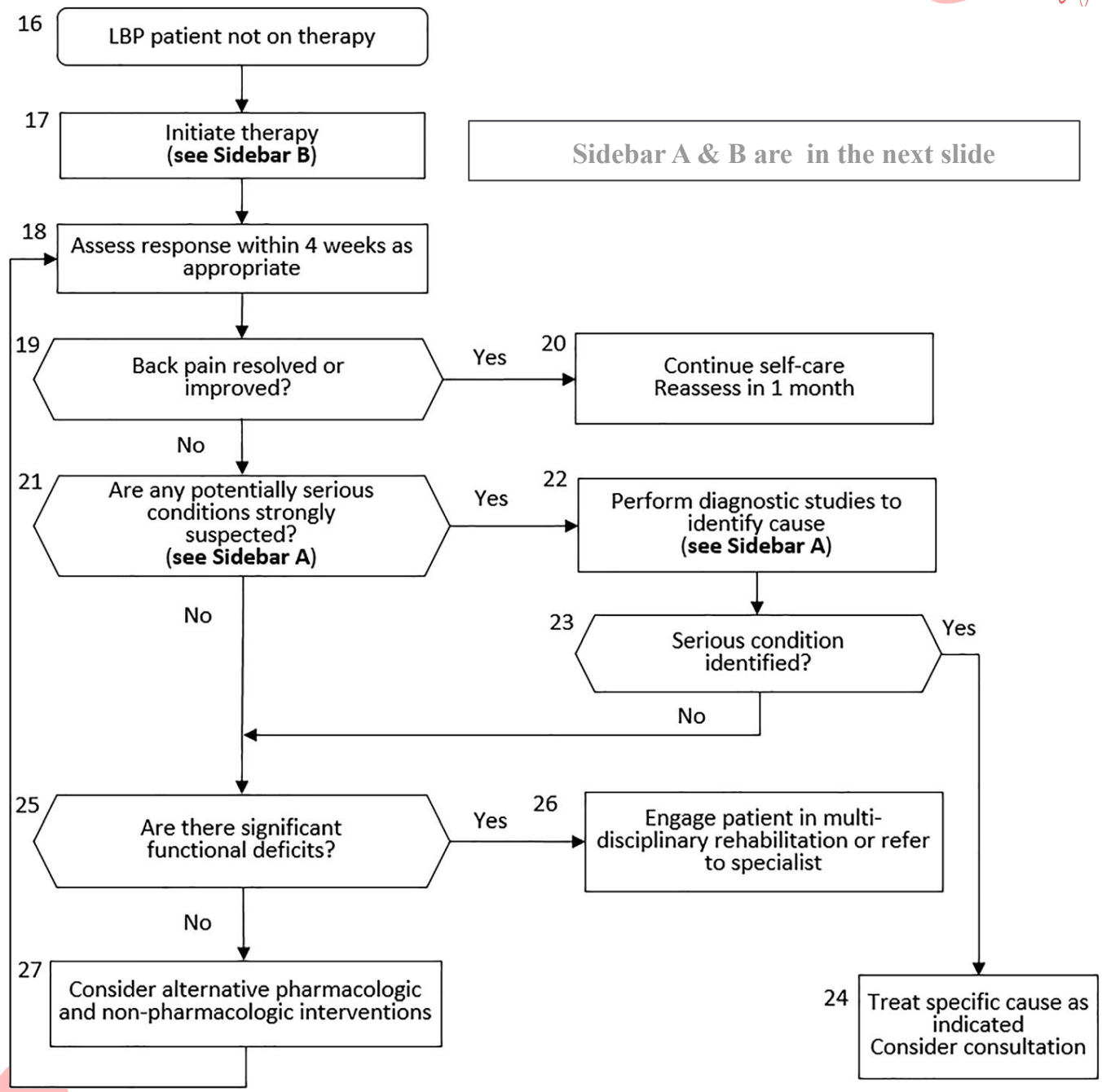
Recommendation 2:

For patients with chronic low back pain, clinicians and patients should initially select nonpharmacologic treatment with exercise, multidisciplinary rehabilitation, acupuncture, mindfulness-based stress reduction (moderate-quality evidence), tai chi, yoga, motor control exercise, progressive relaxation, electromyography biofeedback, low-level laser therapy, operant therapy, cognitive behavioral therapy, or spinal manipulation (low-quality evidence). (Grade: strong recommendation).

Recommendation 3:

In patients with chronic low back pain who have had an inadequate response to nonpharmacologic therapy, clinicians and patients should consider pharmacologic treatment with nonsteroidal anti-inflammatory drugs as first-line therapy, or tramadol or duloxetine as second-line therapy.
Clinicians should only consider opioids as an option in patients who have failed the aforementioned treatments and only if the potential benefits outweigh the risks for individual patients and after a discussion of known risks and realistic benefits with patients. (Grade: weak recommendation, moderate-quality evidence).

Management of back pain algorithm:



Sidebar (B) Intervention recommendations Table:

Sidebar B: Interventions			
		Low Back Pain Duration	
Category	Intervention	Acute < 4 Weeks	Subacute or Chronic > 4 Weeks
Self-care	Advice to remain active	X	X
	Books, handout	X	X
	Application of superficial heat	X	
Non-pharmacologic therapy	Spinal manipulation		X
	Clinician-guided exercise		X
	Acupuncture		X
	CBT and/or mindfulness-based stress reduction		X
	Exercise which may include Pilates, tai chi, and/or yoga		X
Pharmacologic therapy	NSAIDs	X	X
	Non-benzodiazepine skeletal muscle relaxants	X	
	Antidepressants (duloxetine)		X
Other therapies	Intensive interdisciplinary rehabilitation		X

Abbreviations: CBT: cognitive behavioral therapy; NSAIDs: nonsteroidal anti-inflammatory drugs

Sidebar (A) Diagnostic workup Table:

Table 2 Diagnostic Workup

Possible causes or conditions	Red flags or risk factors on history or physical examination	Suggested diagnostic imaging
Cancer	History of cancer with new onset of LBP Unexplained weight loss Failure of LBP to improve after 1 month Age > 50 years Multiple risk factors present	Lumbosacral plain radiography For inconclusive results, advanced imaging such as MRI with contrast* as appropriate
Infection	Fever Intravenous drug use Recent infection Immunosuppression	MRI with contrast* ESR and CRP
Fracture	History of osteoporosis Chronic use of corticosteroids Older age (≥ 75 years old) Recent trauma Younger patients with overuse at risk for stress fracture	Lumbosacral plain radiography For inconclusive results, advanced imaging such as MRI†, CT, or SPECT as appropriate
Ankylosing spondylitis	Morning stiffness Improvement with exercise Alternating buttock pain Awakening due to low back pain back pain during the second part of the night (early morning awakening) Younger age	Anterior-posterior pelvis plain radiography
Herniated disc	Radicular back pain (e.g., sciatica) Lower extremity dysesthesia and/or paresthesia Positive straight-leg-raise test or crossed straight-leg-raise test	None
	Severe/progressive lower extremity neurologic deficits Symptoms present > 1 month	MRI†
Spinal stenosis	Radicular back pain (e.g., sciatica) Lower extremity dysesthesia and/or paresthesia Neurogenic claudication Older age	None
	Severe/progressive lower extremity neurologic deficits Symptoms present > 1 month	MRI†
Cauda equina or conus medullaris syndrome	Urinary retention Urinary or fecal incontinence Saddle anesthesia Changes in rectal tone Severe/progressive lower extremity neurologic deficits	Emergent MRI† (preferred)

Acute Lower Back Pain

PHC	Persistent	Referral
• For acute lower back pain that is not improving, initial referral is usually for physical treatments.	• Patients with persistent symptoms despite physical treatments	• Orthopedists • Rheumatologists for diagnostic evaluation.

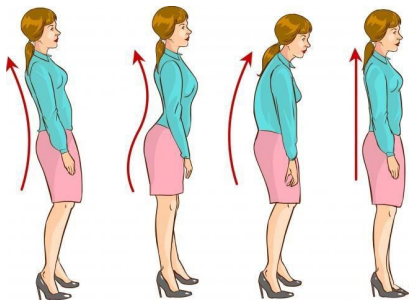
Prevention and education:

1-Losing weight:

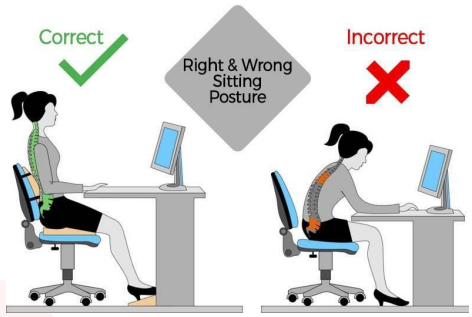
Too much upper body weight can strain the lower back.

2-Posture:

How you sit, stand and lie down can have an important effect on your back. The following tips should help you maintain a good posture:



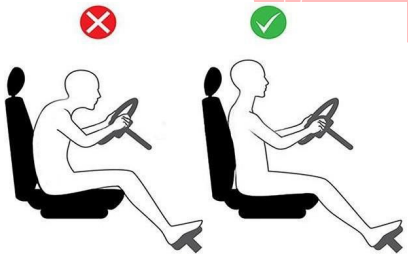
❑ **Standing:** Stand upright, with your head facing forward and your back straight. Balance your weight evenly on both feet and keep your legs straight.



❑ **Sitting:** Sit up with your back straight and your shoulders back.
Your knees and hips should be level and your feet should be flat on the floor.

2-Posture: (continued)

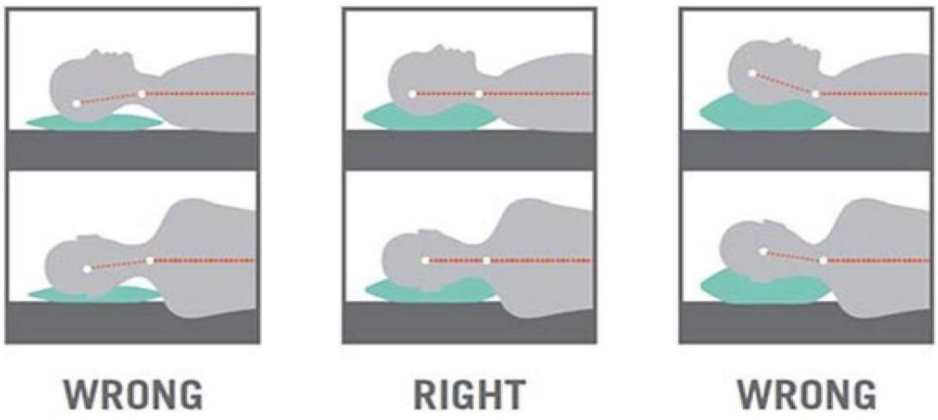
- **Driving:** Correctly positioning your wing mirrors will prevent you from having to twist around. If driving long distances, take regular breaks so that you can stretch your legs.



3-Sleeping

- Your mattress should be firm enough to support your body while supporting the weight of your shoulders and buttocks, keeping your spine straight.

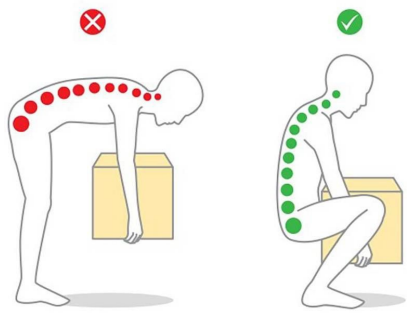
- Support your head with a pillow, but make sure that your neck is not forced up at a steep angle.



4-Lifting and carrying:

One of the biggest causes of back injury is lifting or handling objects incorrectly.

- Think before you lift: can you manage the lift?
- Start in a good position
- Keep your head up
- Know your limits
- Push rather than pull



5-Exercising:

Exercise is both an excellent way of preventing back pain and of reducing it, but should seek medical advice before starting an exercise programs if you've had back pain for six weeks or more.

Exercises such as walking or swimming strengthen the muscles that support your back or activities such as yoga.

6-Wearing proper shoes:

Wearing flat shoes with cushioned soles – these can reduce the stress on your back

Doctor's slides & MCQs: don't discuss this part with the doctor

A 28-Year-Old Man with Chronic Low Back Pain

- A 28-year-old man with chronic low back pain (LBP) comes to your office for renewal of his medication. He was injured at work 5 years ago while attempting to lift a box of heavy tools. Since that time, he has been off work, living on compensation insurance payments, and he has not been able to find a job that does not aggravate his back.

- On physical examination, the patient demonstrates some vague tenderness in the paravertebral area around L3 to L5. He has some limitations on both flexion and extension.

What classification of Back Pain does this patient have?

A. Acute
B. Sub-acute
C. Chronic
D. None of the above

ANS: C

Which of the following statements regarding chronic BP is <u>false</u>?

A. approximately 35% of patients with acute LBP will develop chronic LBP.
B. patients who develop chronic LBP account for up to 85% of workers' compensation claim cost.
C. patients older than 50 years of age are more likely to develop chronic LBP.
D. patients who miss work for up to 2 years are unlikely to return to work in any capacity, regardless of treatment.
E. there are multiple psychosocial factors that can lead to development of chronic LBP.

ANS: A

- ❏ Up to 90% of patients will improve within 3 months;
- ❏ the 10% who develop chronic LBP (lasting more than 3 months) account for up to 85% of the cost of workers' compensation claims.
- ❏ There are many psychosocial factors that contribute to development of chronic LBP, including depression, job dissatisfaction, education level, and having the case be a workers' compensation case.
- ❏ Patients older than 50 years of age are more likely to develop chronic LBP.
- ❏ Those who miss work for up to 2 years are unlikely to return to work in any capacity.

Regarding the pathogenesis of LBP, which of the following statements is true?

A. In up to 90% of cases of LBP, a definite anatomic or pathophysiologic diagnosis cannot be made.
B. Approximately 10% of patients with acute LBP will eventually require surgery.
C. Patients with acute LBP and no previous surgical procedures have a 20% to 25% chance of recovering after 6 weeks, regardless of the treatment used.
D. The anatomic structures causing LBP are identified clearly.
E. None of the above statements is true.

ANS: A

- For up to 90% of cases of LBP, a definite anatomic or pathophysiologic diagnosis cannot be made.
- Only 1% of patients with acute LBP eventually require surgery.
- Patients with acute LBP and no previous surgical procedure have a 80% to 90% chance of recovering after 6 weeks, no matter what treatment is prescribed.

Regarding the treatment of chronic LBP which of the following statements is <u>false</u>?

A. cognitive-behavioral therapy has been shown to decrease pain intensity.
B. studies have shown that treatment at back schools has no long-term effectiveness after 1 year.
C. of all the antidepressant classes, the tricyclic and tetracyclic classes have been shown to be of most benefit in the treatment of chronic LBP.
D. spinal decompression is a valid recommendation for the treatment of chronic LBP
E. none of the above
ANS: D

- Because of limited or conflicting evidence, lumbar decompression cannot be recommended in the treatment of nonspecific LBP.
- Cognitive-behavioral therapy has been shown to decrease pain intensity.
- Although back schools integrate education and exercise, studies have shown that this type of rehabilitation does not improve pain and function after 1 year.
- Tricyclic and tetracyclic antidepressants appear to produce moderate reductions in symptoms among patients with chronic LBP, but selective serotonin reuptake inhibitors do not appear to be of any benefit.

Which of the following is the most common cause of LBP?

A. Metastatic bone disease
B. Inflammatory back pain
C. Lumbosacral sprain or strain
D. Posterior facet strain
E. None of the above
ANS: C

- The most common diagnosis in LBP is lumbosacral sprain or strain, or mechanical LBP.
- Injury is thought to result from abnormal stress on normal tissues or normal stress on damaged or degenerated tissues.

Which of the following treatments has little support of its effectiveness in the treatment of chronic LBP?

A. physical therapy
B. acupuncture
C. osteopathic manipulation
D. proliferation therapy
E. massage therapy

ANS: D

A 64-Year-Old Man with Back and Leg Pain Aggravated by Walking

- A 64-year-old man comes to the office complaining of back and leg pain that is aggravated by walking. He tells you that the pain starts after he has walked two blocks. He gets relief when he is sitting or when he is walking and leaning forward. Physical examination reveals pain and decreased motion with backward bending of the lumbosacral spine. There is a negative straight leg raise test result, and there are no neurologic deficits.

What is the most likely diagnosis?

A. Vascular claudication
B. Reiter syndrome
C. Spinal stenosis
D. Herniated disk L5
E. Mechanical LBP

ANS: C

- The most likely diagnosis is spinal stenosis.
- Back pain that is associated with exertional leg pain (claudication) often represents spinal stenosis.
- On examination, there is usually pain with backward bending or extension of the lumbosacral spine.
- To differentiate from vascular claudication, symptoms often occur on standing up, and to relieve symptoms, patients need to sit down (simply stopping walking usually will not relieve symptoms).

Which of the following is not indicative of inflammatory back pain such as ankylosing spondylitis?

A. insidious onset
B. onset before 40 years of age
C. pain for more than 3 months
D. morning stiffness
E. aggravation of pain with activity

ANS: E

- Inflammatory back pain (ankylosing spondylitis) is an important subset of chronic LBP, although accounts for few cases of acute or chronic LBP.
- Diagnostic clues to inflammatory LBP include the following:
    1. insidious onset of back pain;
    2. onset before the age of 40 years;
    3. pain 3 months or more in duration;
    4. morning stiffness (longer than 30 minutes);
    5. pain relief with activity;
    6. pain forcing patient from bed;
    7. history of psoriasis, Reiter disease, colitis, or ankylosing spondylitis;
    8. limitation of lumbar spine in sagittal and frontal planes;
    9. chest inspiratory expansion of less than 2 cm;
    10. evidence of sacroiliitis during physical examination; and
    11. evidence of peripheral inflammatory joint disease.
    12. activity does not increase the pain but actually may provide some relief.

Which of the following statements regarding the history and physical examination of a patient with LBP is true?

A. the positive predictive value of the history in LBP is high
B. the positive predictive value of the physical examination in LBP is high
C. The positive predictive value of the radiographic investigations for patients with LBP is high
D. the positive predictive value of serum blood and chemistry for LBP is high
E. none of the above statements is true

Ans E

One of the problems with the diagnosis, physical examination, laboratory investigation, and radiographic investigation of chronic LBP is that the sensitivity, specificity, and positive predictive value of the assessments, procedures, and other diagnostic modalities produce false-positive results and many false-negative results. From this, it follows that the patient ends up with misinformation that actually may "create" disease (anxiety, worry, and increased pain) where none existed before.

Which of the following is (are) characteristic of a history of mechanical LBP?

A. Relatively acute onset
B. History of overuse or a precipitating injury
C. pain worse during the day
D. A and B
E. A, B and C

Ans E

- The history of mechanical back pain is typically one of relatively acute onset of pain, often with known precipitating injury or history of overuse. The pain is worse during the day, is relieved by rest (although the pain might worsen with prolonged rest), and is worse with activity.
- In contrast, the history of inflammatory back pain is classically an insidious onset of pain and stiffness, worse at rest and improved with activity, and often worse at night and in the morning. Many patients need to get up at night to find a comfortable position to partially relieve the pain and stiffness.

Which of the following is (are) a "red flag(s)" or danger signal(s) relative to the diagnosis of LBP?

A. bowel or bladder dysfunction
B. Impotence
C. weight loss
D. significant night pain
E. all of the above

Ans E

Cancer Related Red Flags

1. History of cancer
2. Unexplained weight loss >10 kg within 6 months
3. Age over 50 years or under 18 years old
4. Failure to improve with therapy
5. Pain persists for more than 4 to 6 weeks
6. Night pain or pain at rest

Infection Related Red Flags

1. Persistent fever
    a. Poor Test Sensitivity for Spinal infection
2. History of Intravenous Drug Abuse
3. Severe Pain
4. Lumbar spine surgery within the last year
5. Recent Bacterial Infection
    a. Urinary Tract Infection or Pyelonephritis
    b. Cellulitis
    c. Pneumonia
    d. Wound (e.g. Decubitus Ulcer) in spin region
6. Immunocompromised states
    a. Systemic Corticosteroids
    b. Organ transplant
    c. Diabetes Mellitus
    d. Human immunodeficiency virus (HIV)
7. Rest Pain

436 STUDENT MCQS:

Q1) Which one of the following is the leading cause of sciatica?

A. Piriformis syndrome
B. Spinal stenosis
C. Spinal disc herniation
D. Spondylolisthesis

ANS: D

Q2) Why are traumatic injuries to the sciatic nerve relatively uncommon?

A. the nerve is highly resistant to traumatic
B. the nerve repairs itself very quickly so damage is often not noticed
C. the nerve runs deep to a lot of tissue and so is protected
D. the nerve has a thick fibrous coating for protection

ANS: C

Q3) Which one of the following is the most common site for disc herniations?

A. L5-S1
B. L4-L5
C. T1-T2
D. T10-T11

ANS: A

Q4) Which one of the following is the most common cause for lower back pain?

A. Ankylosing spondylitis
B. Muscle strain
C. Vertebral fracture
D. Spinal stenosis

ANS: B

Q5) A 44 years old women came to the physician because several months history of low back pain that started gradually. Pain is worst in the morning and associated with stiffness which become better throughout the day.

Which one of the following is most likely the cause of her pain?

A. Muscle strain
B. Vertebral fracture
C. Spinal disc herniation
D. Ankylosing spondylitis

ANS: D

Q6) Which of the following is the most common cause of Lower Back Pain?

A. Metastatic bone disease
B. Inflammatory back pain
C. Lumbosacral sprain or strain
D. Herniation

ANS: C

Q7) Which of the following is considered as Red flag in Lower Back Pain?

A. History of dysmenorrhea
B. Steroid use
C. Night pain
D. Age more than 40

ANS: B

Q8) Which of the following is a feature of inflammatory process?

A. Usually acute in progression
B. Worse while exercising
C. 60 minutes of morning stiffness
D. Age more than 50

ANS: C

Q9) Patient came to FM clinic complaining of intermittent LBP for 2 years that radiates to thigh and legs, it gets worse with prolonged standing and relieved by forward flexion. No motor deficits or any other worrisome symptoms.
How would you manage this patient ?

A. Increase physical activity time
B. Bed rest
C. Analgesia (NSAIDS)
D. Refer to neurology

ANS: C

Q10) Positive Adams Forward bending test indicates ……?

A. Lordosis
B. Kyphosis
C. Compression fracture
D. Scoliosis

ANS: D

Q11) A 53 year old female Saudi patient, complaining of back pain when she bends forward or prays. What is the most likely cause?

A. Vertebral fracture
B. TB
C. Osteoarthritis
D. Disc herniation

ANS: D

Q12) A 40 year old male Patient claims of sharp shooting pain while doing straight leg raising test. What should you think of?

A. Osteoarthritis
B. Ankylosing spondylitis
C. Sciatica
D. Fracture

ANS: C

Q13) A 35 Y/O male came to you complaining of back pain, urinary retention, loss of anal tone, anesthesia in the perineal space.
Which of the following is the best thing to do next ?

A. Reassurance and treat him conservatively
B. Order an x-ray and ask him to come back after 2 weeks
C. Refer him soon to an orthopedic
D. Refer him to the ER

ANS: D

436 STUDENT CASES:

A case of Lumbar muscle strain/sprain

Senario:

51 year old woman presents to your clinic with a complaint of low back pain, which began acutely 2 weeks earlier, 1 day after a 10 km run. The pain is described as achy, intermittent, and located in the central region of her low back. It is associated with an occasional electrical sensation shooting down her left leg. The pain is aggravated by rolling over in bed, prolonged sitting, and running; it is relieved by rest, changing positions, and ibuprofen.

- **The most common source of back pain**

- **Clinical presentation**

- Sharp intense pain for 1 to 2 days; muscle spasm; most patients recover within 3 months
- Stiffness, and/or soreness of the lumbosacral region (underneath the twelfth rib and above the gluteal folds) persisting for < 12 weeks

- **Risk factors**

1. Lifting a heavy object, or twisting the spine while lifting
2. Sudden movements that place too much stress on the low back, such as a fall
3. Poor posture over time
4. Sports injuries, especially in sports that involve twisting or large forces of impact

❖ **What is the difference between strain and sprain?**

- **Investigations**
  - < 4 Weeks ….. Clinical diagnosis
  - > 6 Weeks …. Lumbar Spine X Ray, MRI, CT and Labs

Acute (< 4 Weeks)	**Subacute (4-12 Weeks)**	**Chronic (> 12 Week)**
1st Line: Patient Education + Normal Activity.	1st Line: Patient Education + Normal Activity.	1st Line: CBT
+: Self care temp. treatment Heat ,Ice	Adjunctive: Active physiotherapy and exercise therapy.	Adjunctive: Rehabilitation/TCA/Opioid /Surgery.
Adjunctive: Analgesics/Muscle relaxant.		

A case of Herniated disc

Senario:

A 45 year old man without significant past medical history presents with severe back pain after lifting boxes at work two days ago. Other than his back pain his review of symptoms is negative, the pain radiates from his lower back down his posterior thigh to his great toe, when you perform both a straight leg raise test and a contralateral leg raise are positives. His strength sensation, and reflexes are preserved.

- **Clinical presentation**

- Low back pain with or without the concurrence of radicular lower limb symptoms in the presence of radiologically confirmed degenerative disc disease.
- The pain is exacerbated by activity, but may be present in certain positions, such as sitting.
- It is associated with radiating lower extremity pain in a dermatomal distribution
- History of bowel or bladder dysfunction, bilateral sciatica, and saddle anesthesia may be symptoms of severe compression of the cauda equina.
- Positive straight leg raise or contralateral straight leg (reproduced below 60 60°of hip flexion); positive femoral stretch test may suggest upper lumbar disc herniation.

- **Investigations**

- MRI: herniated disc

- **Management**

Saddle anesthesia, sphincter dysfunction, bladder retention, and leg weakness = Cauda Equina Syndrome (CES)
Urgent referral to the hospital with emergency decompression of

< 3 Months	> 3 Months
1st Line: Paracetamol	1st Line: Continue pain management
Adjunctive: Topical analgesics /Opioid /Muscle Relaxant	Refer to pain clinic. If with Axial back pain: + Physiotherapy

A case of Spinal stenosis

Senario:
A 63 year old woman presents with low back pain and cramping in both posterior thighs and numbness radiating into the feet with ambulation. It worsens with standing and walking and improves with sitting and bending forward. She has no bowel or bladder complaints.
On examination, she has full strength, normal sensation, reflexes are symmetric, and she has 2 + peripheral pulses. Straight leg raise is negative.

- **Clinical presentation**

- Symptoms result from neural compression of the cauda equina, exiting nerve roots, or both.

- Intermittent pain radiating to the thigh or legs, Worse with prolonged standing , activity, or lumbar extension.

- Pain is typically relieved by sitting, lying down, and/or lumbar flexion; patient may describe intermittent burning, numbness, heaviness, or weakness in their legs, unilateral or bilateral radicular pain, motor deficits, bowel and bladder dysfunction, and back and buttock pain with standing and ambulation.

- Patients walk with a forward flexed gait; patients with vascular claudication have diminished pulses and typical skin changes, such as mottled discoloration, thinning and shiny skin.

- **Investigations**
- MRI:

- **Management**

<table>
<tr><th>significant acute neurological deficit</th><th>No significant acute neurological deficit: pain affecting quality of life and/or functional activities</th><th>Chronic symptoms</th></tr>
<tr><td rowspan="3">1st Line: surgical decompression</td><td>1st Line: analgesics (NSAIDs)</td><td>1st analgesics</td></tr>
<tr><td>Adjunct: non-pharmaceutical measures* /Oralcorticosteroids</td><td rowspan="2">Adjunctive: Non-pharmaceutical measures* / Chronic pain agents / Surgery</td></tr>
<tr><td>2nd Line: epidural corticosteroid injection</td></tr>
</table>

*Non Pharmaceutical measures

- Temporary reduction in physical activity is recommended; patients should be careful to avoid bending, lifting, or twisting movements until the pain subsides.
- Bed rest is not recommended Prolonged bed rest (> 4 days) is contraindicated, especially in older patients as it may lead to rapid deconditioning and increased risk of DVT.