



PRIMARY HEALTHCARE TEAMWORK

Approach To A Patient With Back Pain

Objectives:

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

Color index:

Original text **Important** Doctor's notes **Golden notes** Extra

Introduction

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%.
- **Back Pain is Classified based on the duration into:**
 - Acute pain: Pain less than 6 weeks.
 - Subacute pain: Pain 6–12 weeks.
 - Chronic pain: Pain greater than 12 weeks.
- At least **50%** of these people will **recover within 2 weeks** and **90% within 6 weeks (3 months)**, but recurrences are frequent.
- **10%** will develop **chronic** low back pain (**lasting more than 3 months**).
- Up to 90% of cases of LBP, a definite anatomic or pathophysiologic diagnosis cannot be made.
 - **Our rule is to identify the cause. But, if we couldn't, we must deal with patient pain.**
- The **most common** diagnosis in Lower Back Pain is **lumbosacral sprain/strain or mechanical low back pain (LBP)**.
 - Injury is thought to result from abnormal stress on normal tissues or normal stress on damaged or degenerated tissues.
- How can you approach a patient with back pain?
 - We start by history and physical examination.
 - **History and physical examination is enough in the diagnosis of back pain.**

Key Facts About Acute Back Pain

- 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.
- Only 1% of patients with acute LBP eventually require surgery.

Key Facts About Chronic Back Pain

- Patients older than 50 years of age are more likely to develop chronic LBP.
- The 10% who develop chronic LBP 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.
- Those who miss work for up to 2 years are unlikely to return to work in any capacity.
- 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.

Red & Yellow Flags

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:

1. A great mnemonic for them is **TUNA FISH** → Ask about them during history.
 - **T**rauma, **U**nexplained weight loss, **N**eurological symptoms, **A**ge >50
 - **F**ever, **I**ntravenous drug use, **S**teroid use, **H**istory of Cancer

2. **Cancer Related Red Flags:**

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

2. **Infection Related Red Flags**

- Persistent fever:
 - Poor Test Sensitivity for Spinal infection.
- History of Intravenous Drug Abuse → Osteomyelitis.
- Severe Pain.
- Lumbar spine surgery within the last year.
- Recent Bacterial Infection:
 - Urinary Tract Infection or Pyelonephritis.
 - Cellulitis.
 - Pneumonia.
 - Wound (e.g. Decubitus Ulcer) in spin region.

T	TRAUMA
U	UNEXPLAINED WEIGHT LOSS
N	NEUROLOGIC SYMPTOMS
A	AGE >50
F	FEVER
I	INTRAVENOUS DRUG USE
S	STEROID USE
H	HISTORY OF CANCER

4. **Immunocompromised States:**

- Systemic Corticosteroids.
- Organ transplant.
- Diabetes Mellitus.
- Human immunodeficiency virus (HIV).

5. **Other Redflags Are:**

- Rest Pain.
- **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.

Cauda Equina Syndrome

Facts

Cauda equina syndrome (CES) occurs when the nerve roots of the cauda equina are compressed and disrupt motor and sensory function to the lower extremities and bladder.

History / PE

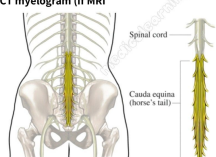
- Low back pain
- Saddle anesthesia
- Sciatica
- Bowel/bladder dysfunction
- Poor rectal tone

Treatment

- 1) IV steroids, usually dexamethasone (prevent further damage)
- 2) Emergent MRI spine or CT myelogram (if MRI contraindicated)
- 3) Surgical emergency

Associated with

- Trauma
- Lumbar disk disease
- Malignancy
- Abscesses



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.



Causes & Differentials

Common Causes & Differential Diagnosis of Back Pain

Mechanical Causes (Most common)

1

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

Systemic Causes

2

- **Malignancy**
 - Primary
 - Secondary (Metastasis)
- **Infections**
 - Osteomyelitis
 - TB (Pott's disease)
 - Brucellosis
- **Inflammation**
 - Spondylitis

Referred Pain

3

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

Mechanical Pain (Most Common)

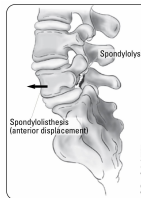
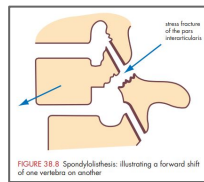
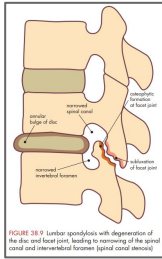
- Can develop suddenly or gradually.
- Tends to get better or worse depending on your position. For example, it may feel better when sitting or lying down.
- Typically feels **worse when moving**.
- Poor posture or lifting something awkwardly, but often occurs for no apparent reason.
- May be due to a minor injury.
- Major causes of low back pain and their patient presentation percentages shows that 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

Mechanical Back Pain

Mechanical Back Pain Causes:

- **Lumbosacral Strain/Sprain:** The most common cause.
- **Lumbar Spondylosis:**
 - Lumbar spondylosis is a degenerative changes in the lumbar spine it is the second most common cause of back pain (10%) also known as degenerative osteoarthritis or osteoarthrosis, is a common problem of wear and tear in the older age group.
 - Stiffness of the low back is the main feature of lumbar spondylosis. Although most people live with and cope with the problem, progressive deterioration can occur, leading to spinal canal stenosis.
- **Transitional Vertebrae Spondylosis:** Is a congenital anomaly of the spine.
- **Spondylolysis:** Degeneration of the joint structures that normally stabilize the vertebrae. Leading to Spondylolisthesis.
- **Spondylolisthesis:**
 - 5% of the population have spondylolisthesis but usually asymptomatic.
 - It's a forward sliding of a vertebra (slip) over the vertebra below commonly L5 or S1.
 - Usually happen in older children because the articular facets are congenitally absent or because of a stress fracture.
 - Pain is typically aggravated by standing, walking exercise that is relieved by sitting.
 - Diagnosis confirmation is by standing lateral and oblique X-rays.
- **Nerve Root Compression / Herniated Disc:**
 - Characterized by radicular pain arising from nerve root impingement due to herniated discs.
 - Radicular pain: Pain that radiates into the lower extremity directly along the course of a spinal nerve root.
 - Pain aggravated by sitting (usually) and improved with standing indicates a discogenic problem.
 - Mostly settle with time (6–12 weeks).
 - The two nerve roots that account for most of radiculopathy problems are L5 and S1 and sometimes L4–5, closely followed by L5–S1. A disc can be confined, extruded or sequestered.
 - Risk factors: Age, Smoking, Physically demanding jobs, Obesity or Trauma.
 - Causes of lumbar disc herniation:
 - Trauma or injury to the disc.
 - Disc degeneration (inflammatory process).
 - Congenital predisposition.
- **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).



Mechanical Back Pain Causes :

- **Congenital Disease - Severe Scoliosis and Kyphosis:**
 - Kyphosis is the normal curve of the thoracic spine when viewed from the side. An excessive angle (>45– 50 °) occurs with a kyphotic deformity.
 - In children a congenital cause is likely (present from infancy).
 - In adolescents it is usually due to Scheuermann disease or is postural.
 - In adults consider ankylosing spondylitis
 - In elderly consider osteoporosis.
 - Children with significant kyphosis should be referred for management which includes exercises, bracing or surgery.
- **Osteoporotic Fracture:**
 - Especially in people over 60 years, including both men and women, must always be considered in such people presenting with acute pain.
 - Kyphosis may be generalised, with the back having a smooth uniform contour, or localised where it is due to a collapsed vertebra, such as occurs in an older person with osteoporosis.
 - X-RAY
- **Traumatic Fracture:**
 - Dysfunction of the joints of the thoracic spine in children and particularly in adolescents is very common and often related to trauma such as a heavy fall in sporting activities or falling from a height (e.g. off a horse). Fractures, of course, have to be excluded.
 - Always X-ray the thoracic spine following trauma, especially after motor vehicle accidents.
- **Discs And/Or Facets Degeneration.**
- **Compression Fracture.**
- **Sciatica:**
 - L5 and S1 -The leg pain discs- nerve root lesions represent most of the cases of sciatica presenting in general practice. They tend to present separately but can occur together **with a massive disc protrusion.**
 - Radicular pain = Intense sharp or stabbing (superimposed on a dull ache).
 - Management: Sciatica is a more complex and protracted problem to treat, but most cases will gradually settle within 12 weeks:
 - Acute Sciatica:
 - Explanation and reassurance.
 - Back education program.
 - NSAIDs for 10–14 days.
 - Consider a course of corticosteroids for severe pain.
 - Chronic Sciatica:
 - Reassurance that problem will subside.
 - Consider amitriptyline.
 - Consider epidural anaesthesia (if slow response).

Systemic Causes of Back Pain

A. Inflammatory Back Pain

- 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:
 - **Age at onset of back pain < 40-45 years.**
 - **Insidious onset of back pain.**
 - **Night pain forcing patient from bed.**
 - Many patients need to get up at night to find a comfortable position to partially relieve the pain and stiffness.
 - **Pain increased by rest.**
 - **Relieved by activity.**
 - **Early morning stiffness (longer than 30 minutes).**
 - Early morning pain and stiffness lasting more than one hour.
 - **Back pain 3 months or more in duration.**
 - Tenderness/inflammation over the joint.
 - Evidence of sacroiliitis during physical examination.
 - Evidence of peripheral inflammatory joint disease.
 - History of psoriasis, reiter disease, colitis, or ankylosing spondylitis.
 - Activity does not increase the pain but actually may provide some relief.
 - Limitation of lumbar spine in sagittal and frontal planes.
 - Chest inspiratory expansion of less than 2 cm.
 - Differential Diagnosis
 - Inflammatory arthritis.
 - Ankylosing spondylitis.
 - Psoriatic spondylitis.
 - Reiter syndrome.
 - IBD.

TABLE 1

The ASAS inflammatory back pain criteria (must meet 4 of 5)¹⁰

Age at onset < 40 years
Insidious onset
Improvement with exercise
No improvement with rest
Pain at night (with improvement upon getting up)

ASAS, Assessment of SpondyloArthritis international Society.

Inflammatory Vs Mechanical Back Pain

Inflammatory back pain	Mechanical back pain
<40 years	Any age
Insidious onset: Slowly progressive	Variable onset: Relatively acute
Pain improves with activity	Pain worsen during the day & with activity
Pain is worse with rest, at night and in the morning	Pain often improves with rest (although the pain might worsen with prolonged rest)
Significant early morning stiffness >30min	Onset often sudden and precipitated by injury, history of overuse, lifting or bending

Systemic Causes of Back Pain

B. Malignancy Back Pain

- Tumours of the spine are uncommon.
- Metastatic spine tumors are more common than primary.
- Metastatic tumors are found mostly in patients older than 50 years.
- The three most common metastatic malignancies to the spine are those originating in the lung, breast and the prostate. The less common are the thyroid, kidney, adrenals and malignant melanoma.
- Primary malignancies that develop in the vertebrae include multiple myeloma and sarcoma.
- Osteoid osteoma is aggravated by consuming alcohol and relieved by aspirin.
- **Pain is usually at rest, constant, at night, in multiple sites and unresponsive to treatment.**
- 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 and rest.
- Differential Diagnosis:
 - Multiple myeloma.
 - Metastatic carcinoma.
 - Lymphoma and leukemia.
 - Spinal cord tumor.
 - Retroperitoneal tumors.
 - Primary vertebral tumors.

C. Infectious Back Pain

- Infective conditions that can involve the spine include osteomyelitis, tuberculosis, brucellosis, syphilis and Salmonella infections. Such conditions should be suspected in young patients (osteomyelitis), farm workers (brucellosis) and migrants from South-East Asia and third world countries (tuberculosis). The presence of poor general health and fever necessitates investigations for these infections.

Investigations

Investigations

1. Radiology (Back pain usually doesn't require imaging)

X-Ray	<p>X-Ray:</p> <ul style="list-style-type: none"> The main investigation is an X-ray, which may exclude the basic abnormalities and diseases, such as osteoporosis and malignancy. 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. <p>Indications:</p> <ul style="list-style-type: none"> Vertebral fracture suspected in Osteoporotic bone (elderly, corticosteroid use) with minimal or no trauma.
CT or MRI	<p>MRI or CT Scans:</p> <ul style="list-style-type: none"> These scans generate images that can reveal herniated disks or problems with bones, muscles, tissue, tendons, nerves, ligaments and blood vessels. <p>Indications of MRI:</p> <ul style="list-style-type: none"> Major risk factors for cancer. Risk factors for spinal infection. Severe neurological deficits. Signs of cauda equina syndrome: Urinary retention, faecal incontinence, saddle anaesthesia. Progressive motor weakness, motor deficits at multiple neurological levels. <p>Indications of CT:</p> <ul style="list-style-type: none"> If an MRI is contraindicated or unavailable and the above diagnosis are suspected a CT lumbar spine may be indicated after discussion with a neurosurgeon and radiologist. Vertebral fracture suspected with significant trauma.
Bone Scan	<p>Bone Scan: In rare cases, your doctor might use a bone scan to look for bone tumors or compression fractures caused by osteoporosis.</p>

2. Lab Tests

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

3. Other Tests

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).

Diagnostic Approach Diagram

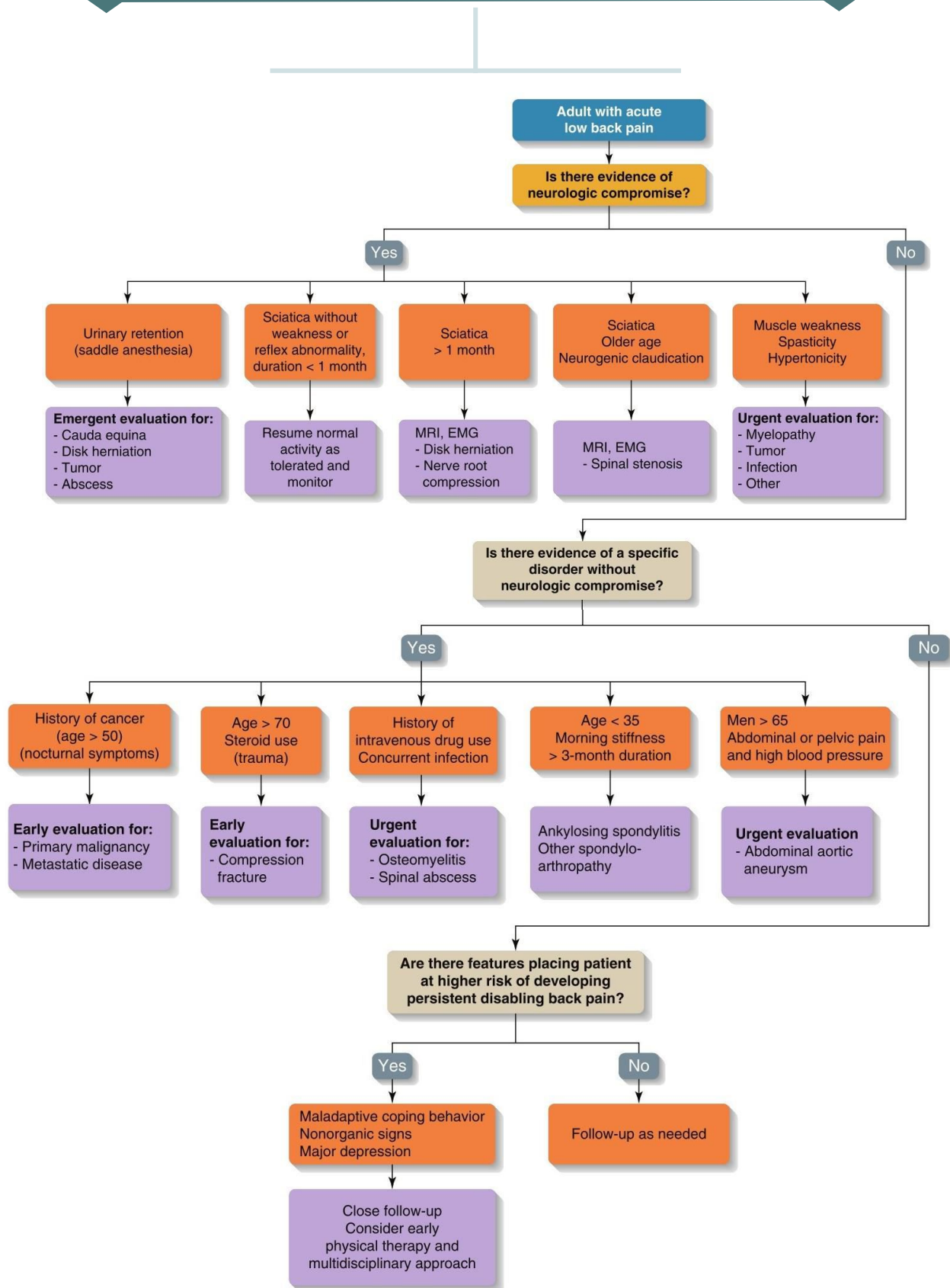


FIGURE 54-1 Diagnostic approach: Low back pain. EMG, electromyography; MRI, magnetic resonance imaging.

Management of Back Pain

The CRAPRIOPS Management Plan:

- **Clarify:** Start by checking what the patient already knows and build on it.
- **Reassure:** Honest reassurance, avoid inappropriate reassurance.
- **Advise:** The patient: regarding modification of his lifestyle to promote his health and to prevent expected complication of the problem.
- **Prescribe:** If there's any medication needed
- **Refer:** If needed.
- **Investigate:** The patient to confirm the diagnosis or for purpose of follow up for any expected disease progression, complication or drug side effects.
- **Observe (Follow up):** according to the condition.
- **Prevent:** Secondary prevention for the presenting illness or opportunistic preventions for other problems e.g smoking, depression, drug abuse ...etc
- **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

Pharmacological & Non-Pharmacological Management Options

A. Non-Pharmacological:

- Advice to stay active.
- **Exercises.**
- **Patient education.**
- Relative rest.
- Application of superficial heat.
- Physical therapy.

B. Pharmacological:

- Analgesics. (could be locally injected)
- NSAIDs.
 - These are useful where there is clinical evidence of inflammation, especially with the spondyloarthropathies, severe spondylosis and in acute radicular pain, to counter the irritation on the nerve root.
- Muscle relaxants.

Management of Back Pain

Acute & Subacute Back Pain Management

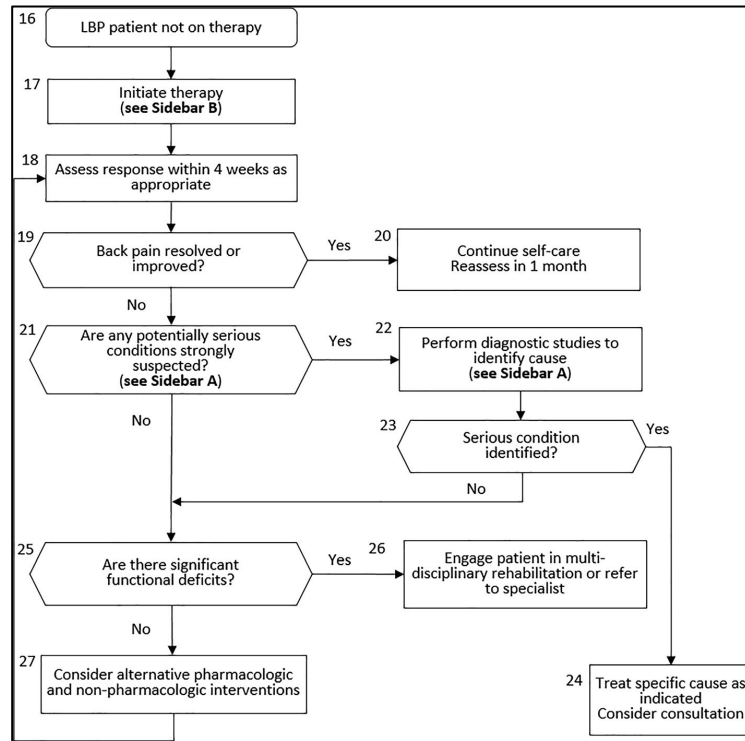
- A. Given that most patients with **acute or subacute** low back pain improve over time regardless of treatment, clinicians and patients should select nonpharmacologic treatment with superficial heat (moderate-quality evidence), massage, acupuncture, or spinal manipulation (low-quality evidence).
- B. If pharmacologic treatment is desired, clinicians and patients should select nonsteroidal anti-inflammatory drugs or skeletal muscle relaxants (moderate-quality evidence). (Grade: strong recommendation). American College of Physicians Guideline. 2017 Apr 4.

Chronic Back Pain Management

- A. 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).
- B. 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**.
- C. 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). American College of Physicians Guideline. 2017 Apr 4.
- D. **Evidence in regard to the management options of chronic LBP:**
 - Cognitive-behavioral therapy has been shown to decrease pain intensity.
 - Lumbar decompression cannot be recommended in the treatment of nonspecific LBP. due to limited or conflicting evidence, .
 - 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.**

Management Guideline of LBP

Algorithm For Management Of Low Back Pain:



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	Lumbosacral plain radiography For inconclusive results, advanced imaging such as MRI, CT, or SPECT as appropriate
Ankylosing spondylitis	Younger patients with overuse at risk for stress fracture 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)	Anterior-posterior pelvis plain radiography
Herniated disc	Younger age Radiculopathy back pain (e.g., sciatica) Lower extremity dysesthesia and/or paresthesia Positive straight-leg-raise test or crossed straight-leg-raise test Severe/progressive lower extremity neurologic deficits Symptoms present > 1 month	None MRI†
Spinal stenosis	Radiculopathy back pain (e.g., sciatica) Lower extremity dysesthesia and/or paresthesia Neurogenic claudication Older age Severe/progressive lower extremity neurologic deficits Symptoms present > 1 month Urinary or fecal incontinence	None 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)

Sidebar (B) Intervention Recommendations Table

Sidebar B: Interventions			
Category	Intervention	Low Back Pain Duration	
		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

Role of PHC In Management

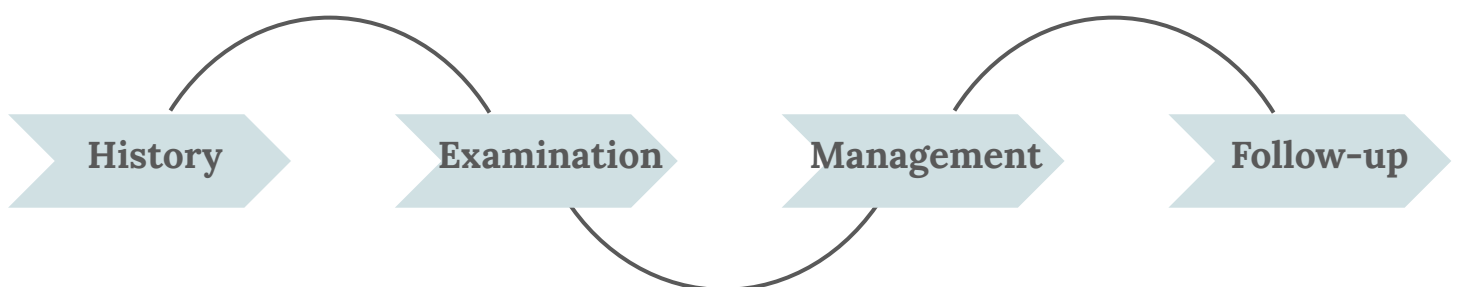
Why is PHC Important?

- 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.

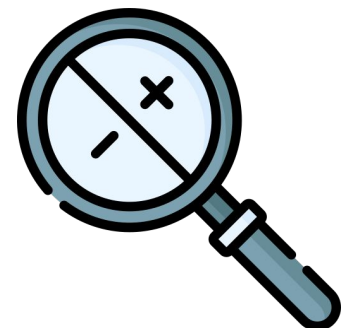
General Overview - Role of PHC

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

Approach Of A Family Physician



- **What to keep in mind?**
 - **Redflags.**
 - Differentials (ordered by the most common).
 - Causes of referral \ indications for diagnostics.
- **If needed:**
 - Diagnostic \ Lab tests.
 - Referrals.



Role of PHC In Management

When To Refer?

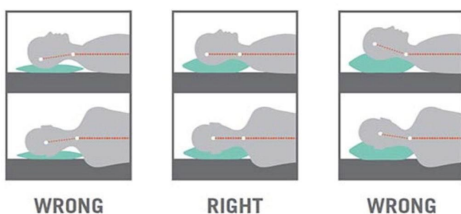
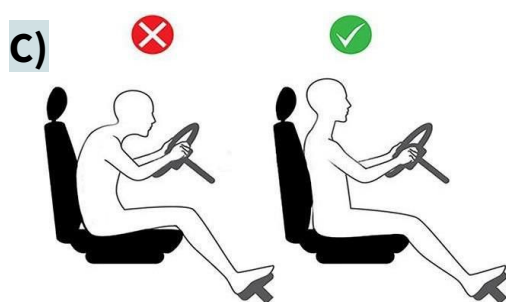
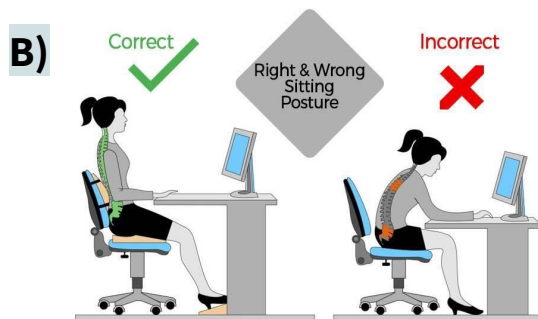
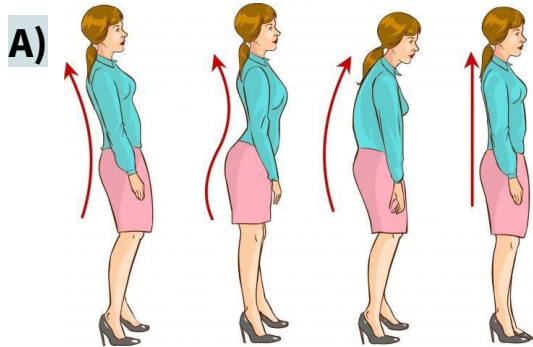
- **Refer to surgery when:**
 - **Urgent/Emergency referrals which requires immediate evaluation:**
 - Cauda equina syndrome.
 - Fracture.
 - **Elective:**
 - Herniated lumbar disc.
 - Spinal stenosis.
- **Refer for diagnostic evaluation when:**
 - Consider referral if a serious spine condition is suspected such as :
 - Redflags.
 - Tumor.
 - Infection.
 - Fracture.
 - Other suspected space-occupying lesion.
- **In patient with:**
 - Sciatica
 - Abnormal nerve root findings (abnormal strength, sensation, reflex)
 - **Role of the PHC is to apply Conservative therapy & referral to:**
 - Neurologist.
 - Orthopedic.
 - Neurological surgeon.
- **In patient with acute lower back pain:**
 - For acute lower back pain that is **not improving**, initial referral is usually for physical treatments.
 - Patients with persistent symptoms despite physical treatments of PHC. Next step is refer to:
 - Orthopedists.
 - Rheumatologists for diagnostic evaluation.

Prevention & Education



A. Losing Weight

Too much upper body weight can strain the lower back.



B. 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:

- (Picture A) Standing: Stand upright, with your head, facing forward and your back straight. Balance your weight evenly on both feet and keep your legs straight.

- Picture (B) 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.

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

C. Sleeping

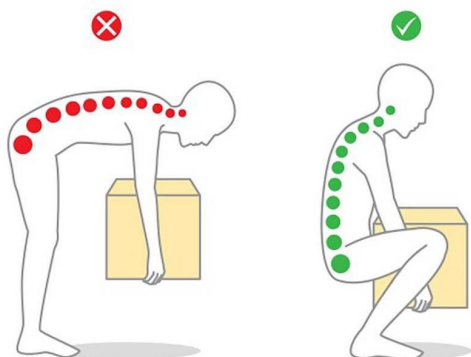
- Your mattress should be firm enough to support your body while supporting the weight of your shoulders and buttocks, keeping your spine straight.
- Support your head with a pillow, but make sure that your neck is not forced up at a steep angle.

Prevention & Education



D. 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.
- Stretching and strengthen are both good for back pain as prevention and treatment.
- Exercises such as walking or swimming strengthen the muscles that support your back or activities such as yoga.



E. Lifting & 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.



F. Wearing Proper Shoes

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

History Taking OSCE

History Taking Of Back Pain

- In case of an OSCE:
 - Start with personal info. (Name - Age -Occupation) then chief complaint (what - when- where) then HPI.
 - 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).

1. 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?

2. Constitutional Symptoms & Redflags

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

T	TRAUMA
U	UNEXPLAINED WEIGHT LOSS
N	NEUROLOGIC SYMPTOMS
A	AGE >50
F	FEVER
I	INTRAVENOUS DRUG USE
S	STEROID USE
H	HISTORY OF CANCER

History Taking OSCE

3. Past Medical & Surgical History

- Past medical history: (Including cancer, psychiatric issues and infections).
- Past surgical history.
- Past trauma.
- History of blood transfusion.
- Medication and allergies: Corticosteroids? Immunosuppressive medications? Anticoagulants? Allergies?

4. Family & Social 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.

5. ICE

- How does it affect the patient functionally and mentally?
 - Idea.
 - Concerns.
 - Expectations.

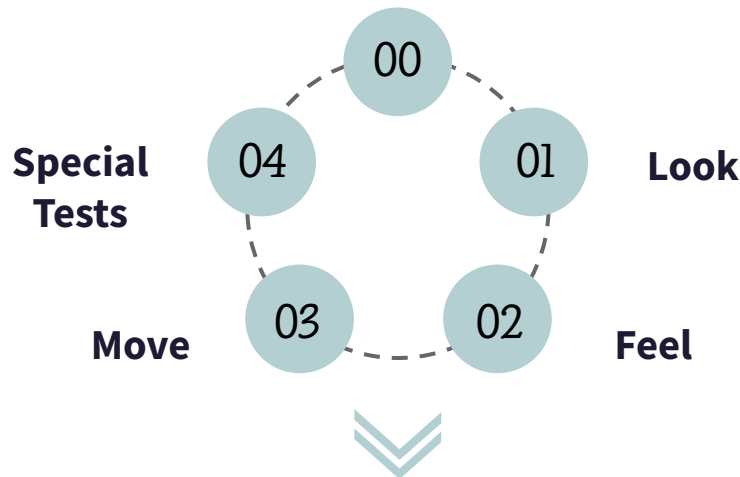


Physical Examination Back Pain

Physical Examination of Back Pain



Approach in both standing and supine positions



01 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** (Click on the underlined for a video):
 - Abnormal gait types:
 1. **Antalgic** (leg pain),
 2. **Trendelenburg** (Hip pain or defective hip abductors),
 3. **Waddling** (Weakness of thigh proximal muscles).
 - Heel and toe walking for nerve roots.
 - Heel walk = Examining L4
 - Toe walk = Examining S1

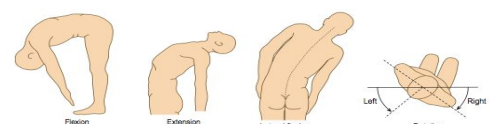
02 Feel (Palpation)

- 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.



03 Move

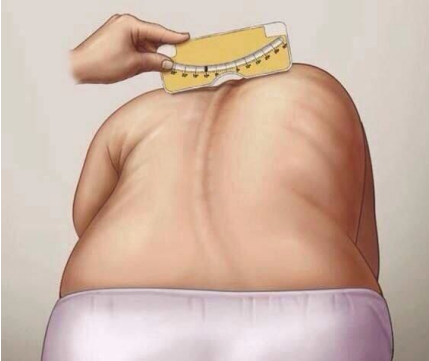
- There are three main movements of the lumbar spine:
 - Flexion, Extension
 - Lateral bending
 - Rotation



Physical Examination Back Pain

04

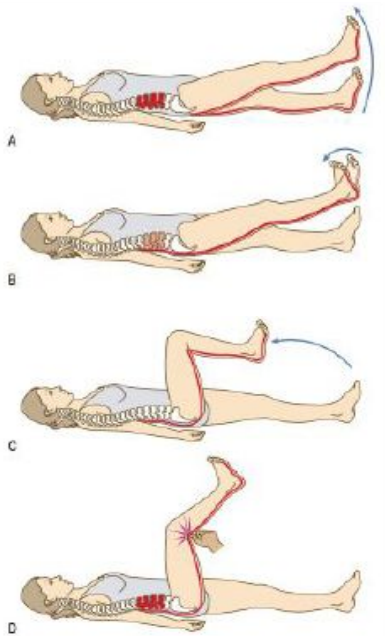
Special Tests



A. Adams Forward Bending Test

- To test for Scoliosis.
- Full forward flexion until back is horizontal to the floor.
- If thoracic **scoliosis** is present, then **rib hump** will become visible.

B. Straight Leg Raising (SLR) Test



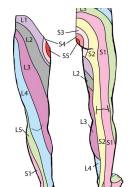
- Done while the patient lying in **supine position**.
- Tension **increased** by dorsiflexion of foot (**Bragard's test**).
Root tension **relieved** by flexion at the knee.
- Pressure over the center of popliteal fossa **causes pain** locally and radiation into the back.
- **Positive test** mean that the **L4, L5 and S1** nerve roots are involved. (Sciatica)
- 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.

C. Vascular Examination

- Pedal pulses (dorsalis pedis & posterior tibial artery).
- Capillary refill (normal < 2 seconds).

D. Neurological Examination

1. **Motor:**
 - Hip flexion=L2
 - Knee extension=L3
 - Ankle dorsiflexion=L4
 - Big toe extension=L5
 - Ankle plantar flexion=S1



2. **Sensory:** dermatomes.
3. **Tone:** normal, flaccid or rigid.
4. **Reflexes:** knee & ankle jerks
5. If there is nerve roots compression patient will have pain, paresthesia, anesthesia and weakness, extend into the leg.

Dr. Cases

Case Study 1

- 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

C

Which of the following statements regarding chronic BP is false?

- 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.

A

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.

A

Dr. Cases

Case Study 1 Cont..

Regarding the Tx of chronic LBP which of the following statements is false?

- 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 statements is false

D

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

C

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

D

Dr. Cases

Case Study 2

- 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

C

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

E

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

E

Dr. Cases

Case Study 2 Cont..

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

E

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

E



Reference Summary

1 Nature of the pain

The nature of the pain may reveal its likely origin. Establish where the pain is worst—whether it is central (proximal) or peripheral. The following are general characteristics and guides to diagnosis:

- aching throbbing pain = inflammation (e.g. sacroiliitis)
- deep aching diffuse pain = referred pain (e.g. dysmenorrhoea)
- superficial steady diffuse pain = local pain (e.g. muscular strain)
- boring deep pain = bone disease (e.g. neoplasia, Paget disease)
- intense sharp or stabbing (superimposed on a dull ache) = radicular pain (e.g. sciatica)

2 **Table 38.4** Comparison of the patterns of pain for inflammatory and mechanical causes of low back pain⁸

Feature	Inflammation	Mechanical
History	Insidious onset	Precipitating injury/previous episodes
Nature	Aching, throbbing	Deep dull ache, sharp if root compression
Stiffness	Severe, prolonged Morning stiffness	Moderate, transient
Effect of rest	Exacerbates	Relieves
Effect of activity	Relieves	Exacerbates
Radiation	More localised, bilateral or alternating	Tends to be diffuse, unilateral
Intensity	Night, early morning	End of day, following activity

3 Summary of diagnostic guidelines for spinal pain

- Continuous pain (day and night) = neoplasia, especially malignancy or infection.
- The big primary malignancy is multiple myeloma.
- The big three metastases are from lung, breast and prostate.
- The other three metastases are from thyroid, kidney/adrenal and melanoma.
- Pain with standing/walking (relief with sitting) = spondylolisthesis.
- Pain (and stiffness) at rest, relief with activity = inflammation.
- In a young person with inflammation think of ankylosing spondylitis.
- Stiffness at rest, pain with or after activity, relief with rest = osteoarthritis.
- Pain provoked by activity, relief with rest = mechanical dysfunction.
- Pain in bed at early morning = inflammation, depression or malignancy/infection.
- Pain in periphery of limb = discogenic → radicular or vascular → claudication or spinal canal stenosis → claudication.
- Pain in calf (ascending) with walking = vascular claudication.
- Pain in buttock (descending) with walking = neurogenic claudication.
- One disc lesion = one nerve root (exception is L5–S1 disc).
- One nerve root = one disc (usually).
- Two or more nerve roots—consider neoplasm.
- The rule of thumb for the lumbar nerve root lesions is L3 from L2–3 disc, L4 from L3–4, L5 from L4–5 and S1 from L5–S1.
- A large disc protrusion can cause bladder symptoms, either incontinence or retention.
- A retroperitoneal bleed from anticoagulation therapy can give intense nerve root symptoms and signs.

4 Practice tips

- Feelings of anaesthesia or paraesthesia associated with thoracic spinal dysfunction are rare.
- Thoracic back pain is frequently associated with cervical lesions.
- Upper thoracic pain and stiffness is common after 'whiplash'.
- The T4 syndrome of upper to mid-thoracic pain with radiation (and associated paraesthesia) to the arms is well documented.
- Symptoms due to a fractured vertebra usually last 3 months and to a fractured rib 6 weeks.
- The pain of myocardial ischaemia, from either angina or myocardial infarction, can cause referred pain to the interscapular region of the thoracic spine.
- Beware of the old trap of herpes zoster in the thoracic spine, especially in the older person.
- Consider multiple myeloma as a cause of an osteoporotic collapsed vertebra.
- Examine movements with the patient sitting on the couch and hands clasped behind the neck.
- Spinal disease of special significance in the thoracic spine includes osteoporosis and neoplasia,

continued

continued

- while disc lesions, inflammatory diseases and degenerative diseases (spondylosis) are encountered less frequently than with the cervical and lumbar spines.
- It is imperative to differentiate between spinal and cardiac causes of chest pain: either cause is likely to mimic the other. A working rule is to consider the cause as cardiac until the examination and investigations establish the true cause.
- Always X-ray the thoracic spine following trauma, especially after motor vehicle accidents, as wedge compression fractures (typically between T4 and T8) are often overlooked.

436 Cases

Case Study 1:

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 Likely Diagnosis: Lumbar muscle strain/sprain.**
- **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:**
 - Lifting a heavy object, or twisting the spine while lifting.
 - Sudden movements that place too much stress on the low back, such as a fall
 - Poor posture over time.
 - Sports injuries, especially in sports that involve twisting or large forces of impact
- What is the difference between **strain** and **sprain**?
 - A sprain injures the bands of tissue that connect two bones together, while a strain involves an injury to a muscle or to the band of tissue that attaches a muscle to a bone.
- **Investigations:**
 - < 4 Weeks Clinical diagnosis
 - > 6 Weeks Lumbar Spine X Ray, MRI, CT and Labs
- **Management:**

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/Surg ery.
Adjunctive: Analgesics/Muscle relaxant.		

Case Study 2:

Scenario: 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.

- **The Most Likely Diagnosis: Herniated Disc.**
- **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 the spinal canal within 48 hours after the onset of symptoms

< 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

436 Cases

Case Study 3:

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.

- **The Most Likely Diagnosis: Spinal stenosis.**
- **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:**
 - Check the 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.

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

Lecture Quiz

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

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

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

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

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

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

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

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

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

Q9) Positive Adams Forward bending test indicates

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

Lecture Quiz

Q10) 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

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

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

Q13) A35 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

THANKS!!

The lecture is done by:

- Mohammad Alshoieer



Team Leader:
Raed Alojairy

*Send us your feedback:
We are all ears!*