

# PERIOPERATIVE BLOCK

## ACADEMIC YEAR 2023 -2024

### Approach To Back Disorders

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**References:** Essential neurosurgery.  
neurosurgery handbook.



## Objective:

1. what is back disorders?
2. What is lower back pain and what is the chronic form ?
3. What is sciatica?
4. Red and yellow flags?
5. The differential diagnosis of back pain?
6. How can you manage patient with back pain?
7. Treatment



## What is back disorders?

Problems with the **vertebrae, joints, discs, muscle, tendon, or ligamenteuses** strain all can cause back disorders.

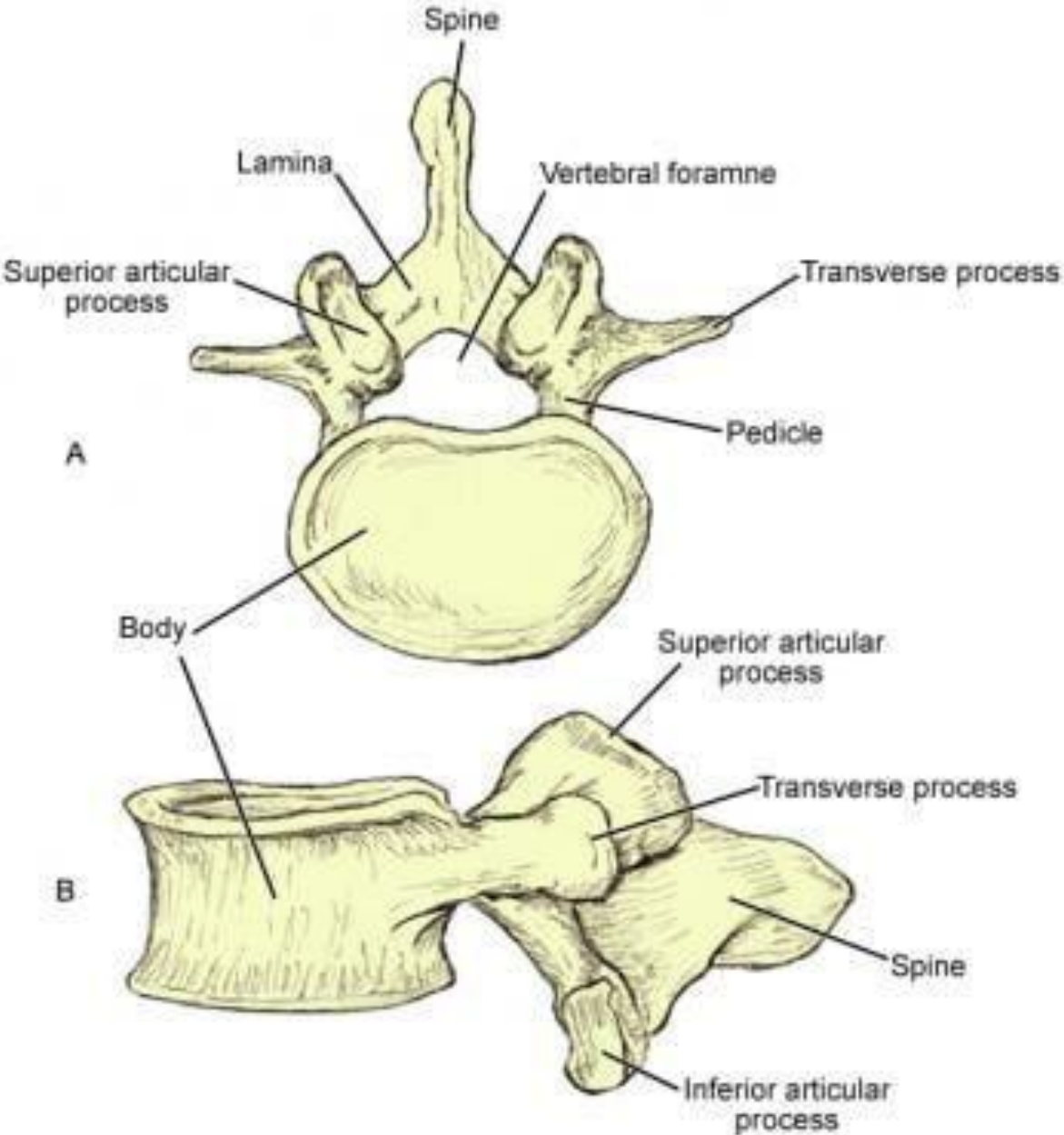
Back disorders can cause mild to very severe backache.

- ❖ About **90%** of the population suffer from low back pain at some time and **30%** of these will develop leg pain due to lumbar spine pathology.

## What is sciatica?

Sciatica is the clinical description of pain in the leg due to lumbosacral nerve root compression which is usually in the distribution of the sciatic nerve.





## Acute Low Back Pain:

It is defined as **pain below the costal margins and above the inferior gluteal folds**. Work-up for a complaint of acute low back pain should focus on ruling out more serious pathology by screening for **red flags**.

## Chronic back pain:

Chronic back pain is low back pain of unspecified pathology that persists longer than **3 months** duration; the evolution of chronic LBP is complex with physiological, psychological, and psychosocial influences. Depression is often associated with chronic back pain – malingering is uncommon. Work-up for chronic back pain (and acute LBP) should include a screen for **yellow flags**.



## **Red Flags** - Screen with Acute LBP

- Less than 20 or older than 50, with back pain for the first time.
- Trauma.
- The pain is constant and getting worse.
- Pain is worse at night or when supine.
- Previous cancer history.
- Steroid use, IV drug use, risk of UTI and/or immuno-suppressed.
- Fever and/or weight loss.
- Neurological signs such as weakness, numbness, saddle anesthesia or bowel/bladder incontinence.
- Thoracic pain.

## **Yellow Flags** - Screen with Chronic BP

- A belief that back pain is harmful or potentially severely disabling.
- Fear-avoidance behaviour (avoiding a movement or activity due to misplaced anticipation of pain) and reduced activity.
- Tendency to low mood and withdrawal from social interaction.
- Expectation of passive treatment(s) rather than a belief that active participation will help.
- Poor job satisfaction and hx of time-off.
- Overprotective family or lack of support.



## Differential Diagnosis of Back Pain

1. Most cases of back disorders aren't caused by underlying disease, **idopathic**. They're usually caused by aging, wear and tear, decreased muscle strength, and poor posture. **Obesity** and **smoking** are risk factors for back problems. There are a number of back disorders, each having a different cause.
2. **Ankylosing Spondylitis (AS)** :A seronegative arthropathy that most commonly affects **young men** and involves pain in lower back and gluteal area. It often features an insidious onset (**>3 months**) with increased pain and **stiffness in the morning (>30 minutes)**. Pain **decreases with exercise** and **increases with rest**. It is often associated with uveitis and colitis.



## Differential Diagnosis of Back Pain

**3. Disc Herniation** only 5% of presentations of back pain have a discogenic etiology. Disc herniation presents most commonly in those who are **30-40 years old**. The onset of pain occurs over hours to days, lasts weeks to months, and is **worse on flexion**. The pain is predominantly distributed in the lower part of the lower extremity and unlikely solely in the back. The pain is a sharp, lancinating quality often described as “shooting” and “shock-like”. The pain **worsens with sneezing or bending** over (maneuvers that increase intra-spinal pressure). Unilateral symptoms usually indicate a lateral herniation as opposed to a central disc herniation.

**Ninety-five percent** of disc herniations occur at the L4-L5 or L5-S1 vertebrae. In general, discogenic pain follows the nerve root distribution of one level below the herniated disc. For example, an L4-L5 herniated disc would result in a L5 distribution corresponding to pain sensation extending to the dorsum of the foot. However, in cases of far lateral disc herniations, the dermatomal distribution corresponds to the level of disc herniation.

Management of disc herniation is conservative and symptoms usually improve regardless of treatment within **6 weeks**. No investigations should be ordered in the absence of red flags.





## Differential Diagnosis of Back Pain

Referral for surgery is made only if neurological status worsens progressively or if pain persists without improvement for > 6 weeks.

However, central disc herniation in the lumbosacral area can lead to Cauda Equina syndrome, which is a surgical emergency

### **4. Lumbar Spinal Stenosis**

Uncommon before age 60. Presents with pain in both legs aggravated by walking, standing, or extension and relieved by sitting or bending forward which is called neurogenic claudication, it must be differentiated from vascular claudication. The latter presents with calf pain that comes on after a specific amount of exercise and only improves with rest, not with bending forward.



## Differential Diagnosis of Back Pain

**5. Facet Joint Pain** A fairly common cause of mechanical LBP. It features pain that has onset in minutes to hours, lasts days to weeks, and is worse on extension. Often associated with osteophytes that accompany osteoarthritis.

**6. Spinal Infection** Uncommon condition representing only 0.01% of all back pain. Patients generally have symptoms of infection including fever, rigors, and malaise. The pain is not relieved with rest and is provoked by weight bearing. On examination there will be focal tenderness at the involved spinous process.

**7. Tumour** Associated with focal tenderness at the involved vertebrae, and constitutional symptoms. Pain is **not relieved with rest** and is **unrelated** to position. On history, the patient describes **progressively** worsening pain. On physical, the pain **is made worse by lying down and percussion**. **Unrelenting night pain is considered tumor until proven otherwise..**



## Differential Diagnosis of Back Pain

### 8. Rheumatoid Arthritis

Generally associated with numerous other arthropathies, especially of smaller joints in a symmetrical pattern. Mostly affects **middle aged women** and features **morning stiffness** (>30 minutes), and possibly intermittent periods of flare-ups and remission.

**9. Osteoarthritis** Very common, especially with age, but unusual to have symptoms before middle age. Pain is **worse with use** and is slowly progressive. Affected joints show limited ROM.

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## Differential Diagnosis of Back Pain

**10. Fracture** Associated with osteoporosis, metastasis and with trauma. The pain will be **sudden** and may include neurologic symptoms. The bone will be **tender** to palpation. A vertebral fracture should be ruled out with imaging when complaints of acute back pain are accompanied with a history of trauma (such as a fall) or in an elderly patient. If osteoporosis is suspected, conduct a **bone mineral density** study.

### **11. Spondylolisthesis**

Slippage of vertebrae on another . Represents 2% of back pain, but is more common in **athletes** or in **women over 40**. Loss of lumbar lordosis is evident, and a **step vertebrae** is palpable. The back pain often radiates into the knees.

**12. Spondylolysis** Fracture of the pars interarticularis. Commonly occurs via stress fracture, and usually affects L5. Mechanism of injury often involves overtraining in sports like tennis, gymnastics and soccer.

Spondylolysis is the most common cause of spondylolisthesis in children.



## Differential Diagnosis of Back Pain

**13. Fibromyalgia** Women account for 75% of patients with fibromyalgia. Symptoms persist for >3 months and are worse in morning and at end of day. Patient suffers from severe fatigue, widespread pain, difficulty sleeping, and often anxiety/depression.

### **14. Cauda Equina Syndrome**

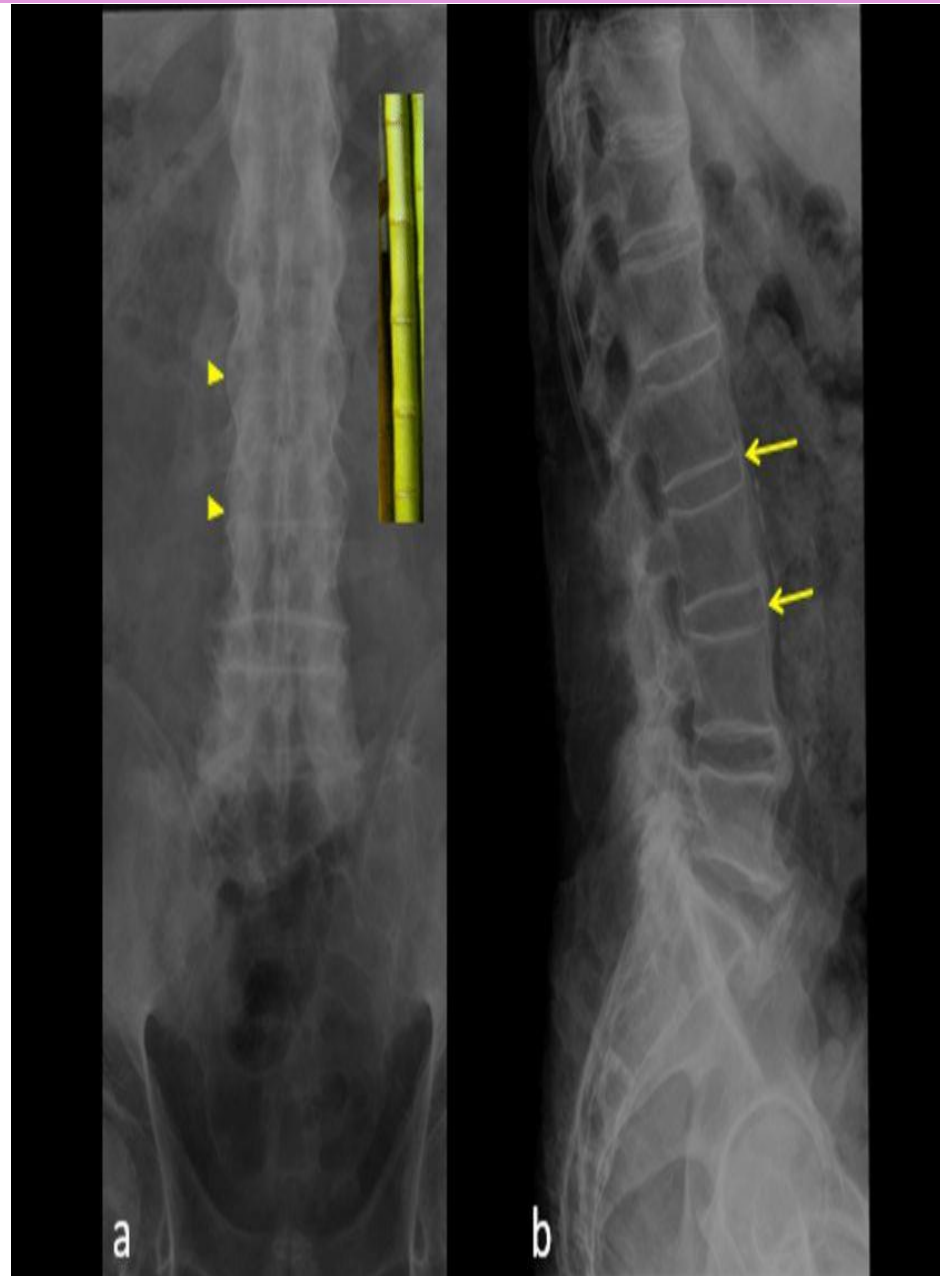
Low back pain, **unilateral or usually bilateral sciatica, saddle sensory loss, bladder and/or bowel dysfunction**, and variable lower extremity motor or sensory loss. It is a **surgical emergency**. Immediate referral to the ER for an emergency neurosurgical consult is important to prevent permanent neurological damage. Without treatment, the patient may suffer from paraplegia and bowel/bladder incontinence.

**15. Referral pain** from urinary, gynecological causes.....



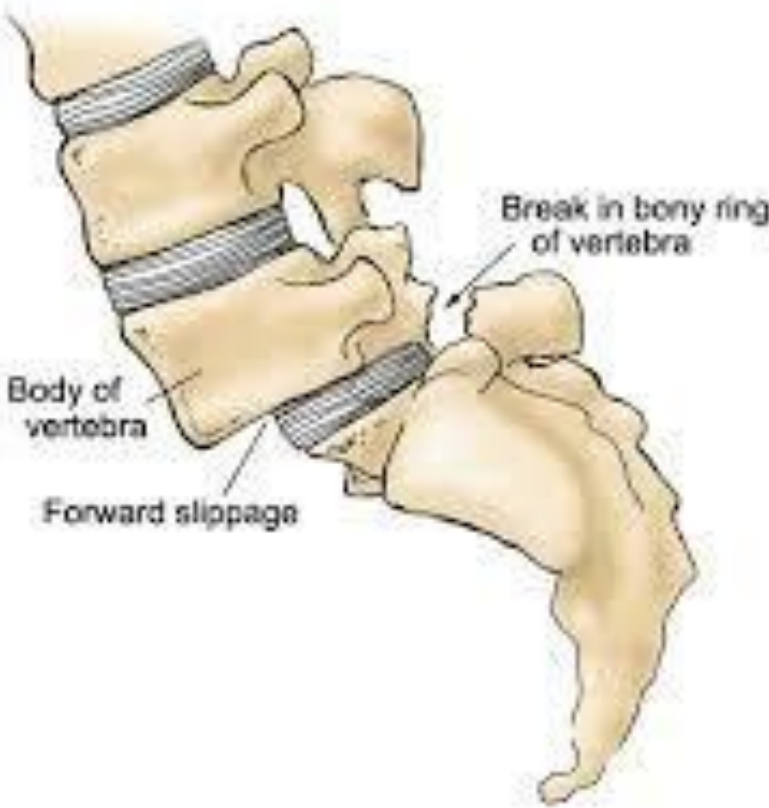


Disc Herniation





### Spondylolisthesis





# Approach to Back Pain

## History-taking

- Determine the nature of the back pain, including onset, severity, location, quality, duration, and aggravating and relieving factors.
- Find out the mechanism of injury and its relation to the onset of pain.
- Determine what medications or treatments have been utilized (NSAIDs, acupuncture, cold or hot compresses, etc.)
- Determine what functional limitations have resulted due to the pain (work, hobbies)
- Ask about emotional consequences of the injury, the goals of treatment and the visit, and concerns the patient may have (about return to occupation, possibility of being on disability, requirement for pain medications).
- Evaluate the possibility of more serious causes for the back pain - ask about symptoms that may indicate systemic disease or infection, or neurological impairments. **Do not forget red flag.**



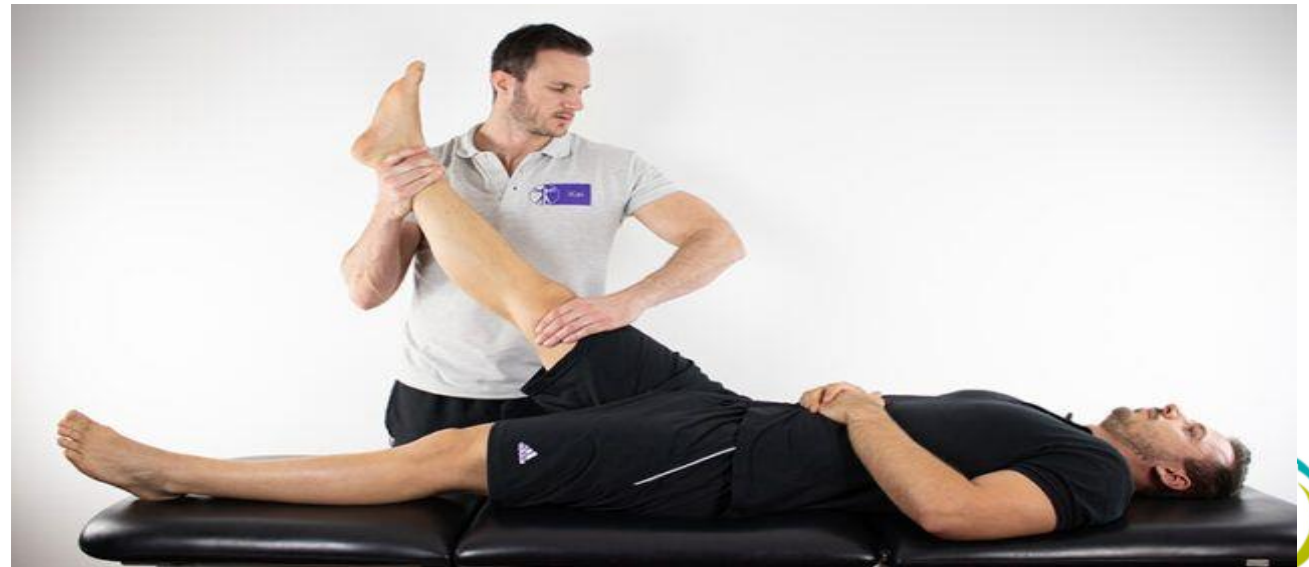
## Physical Exam.

- Complete a **thorough musculoskeletal exam**, including:
  - o **Inspection** – café-au-lait spots (?neurofibromatosis), hairy patches (?spina bifida).
  - o **Feel** - spinous process tenderness (? fracture, tumor, infection), SI joint pain (? ankylosing spondylitis), chest expansion <2.5cm (? ankylosing spondylitis), step at L5 (? spondylolisthesis)
  - o **Move**: pain on bending toward affected side, or on flexion (? Lumbar disc disease), pain on extension (? Facet joint or spinal stenosis), range of motion
  - o **Special Tests**
    - ☐ Schober's Test: assesses the amount of lumbar flexion. Make two pen-marks, one at 10cm above the PSIS, the other 5cm below it. Upon flexion, the distance should increase >5cm. Decreased ROM of lumbar spine suggests ankylosing spondylitis.



☐ Straight Leg Raise (Lasegue's sign): assesses the presence of radiculopathy – if pain is reproduced and radiates down into affected leg when the leg is raised between 10 and 60 degrees elevation. If the opposite leg produces a positive response, it is indicative of a large herniation. Valsalva maneuver may aggravate the pain.

- Complete a **thorough neurological exam**, including gait, ankle reflex (S1), knee reflex (L4), strength, sensation (look for saddle anesthesia and anal sphincter tone, plus check dermatomes along lower limb).



# Investigations

## A. Laboratory Investigations

It is recommended that **no** laboratory investigations be ordered for patients with **uncomplicated mechanical low back pain**. If there is suspicion about a systemic cause of low back pain such as inflammatory arthritis, connective tissue disease, or infection, then **CBC, ESR**, and other **markers may be appropriate**.

ESR is a sensitive but not very specific test for identifying patients who need further investigation. In general, **ESR** would be a good first investigation when an **infection or systemic** condition is suspected, such as RA or connective tissue disease.

## B. Imaging

**No** imaging is recommended for acute mechanical low back pain **in the absence of red flags**.

Keep in mind that imaging can be used to help confirm a clinical diagnosis, but cannot confirm that a particular structure is the cause of a patient's pain. **Patients with uncomplicated acute low back pain and no red flags, who are between 20 and 50 years old, do not require imaging.**



## Indications for Imaging Modalities

- 1. X-Ray** X-ray remains the imaging of first choice for investigation of suspected OA (disc space uniformity), tumor, trauma, spondylolisthesis, and ankylosing spondylitis. It is also acceptable to order x-rays of the lumbar spine in the case of chronic LBP.
- 2. CT** CT is the test of choice to investigate pain suspected to be from multi-segmental bony stenosis, and fracture. CT is most helpful if osseous abnormality is clinically suspected, as abnormal findings are commonly found on CTs of asymptomatic patients. CT is commonly used along with MRI to investigate spinal trauma or tumors and is also commonly used for OA.
- 3. Bone Scan** This is a useful test to investigate osteomyelitis, primary or metastatic bony neoplasms, occult fractures and spondyloarthropathy (ie. facet or SI joint pain). The test **is quite sensitive for infections and tumors**, but false positives are common in the elderly due to the presence of OA. False negatives may occur with diffuse bony metastases and multiple myeloma.



**4. MRI** MRI is the primary diagnostic tool when cauda equina or malignancy is suspected, or if there is a previous history of cancer or complaint of progressively worsening.



## Management of Acute Low Back Pain

- ❖ The key components in the strategy for acute low back pain management include **screening for red and yellow flags; patient reassurance and education; and symptom management.**
- ❖ **NSAIDs and acetaminophen** are the first line agents for pain relief. If NSAIDs are contraindicated (CHF, allergies, renal failure) **muscle relaxants or weak opioids** are alternatives. For **severe back pain, stronger** opioids can be used. Patients should be advised regarding the side effects associated with muscle relaxant and opioid use.
- ❖ *The most important aspect in managing acute LBP is to **encourage patients to take an active role** in their back pain management by **resuming their daily activities** including work. An early return to normal activity and work are related to lower rates of recurrence and disability. Strategies that may help in this regard include discussing **work modification** options (different responsibilities, part-time work) with both the patient and the employer. Patients may experience pain as they attempt to resume a normal course of activity.*



❖ Ongoing symptom review and management are also important. *The patient should be reassessed every two weeks after the initial assessment.* Each assessment should include a review of symptoms to screen for red/yellow flags. *Consider referral if the patient has unremitting pain 6 weeks after symptom onset.*

### ❖ **Non-medical Treatments**

There is currently weak or conflicting evidence for the utility of the following therapeutic modalities in treating acute LBP: acupuncture, TENS, back specific exercises, and spinal injections (e.g. facet, epidural). A recent Cochrane Review showed benefit from massage for chronic low back pain. If the patient is having difficulty following an active exercise program, a supervised exercise program/therapy may be of some benefit. Manipulation techniques may be beneficial in acute LBP.

### ❖ **Surgical intervention.**





## ***Overall Approach to Management of Chronic Back Pain***

- 1) Continue to pursue a conservative approach with massage, intensive exercise therapy, medications for pain and/or depression, etc.
- 2) Utilize a multi-disciplinary, intensive treatment regimen
- 3) Investigate for a specific diagnosis with joint blocks or discography and treat appropriately.
- 4) Consider opioids only for short term use in patients experiencing severe exacerbations of back pain or rarely for those who do not respond to other measures, who are at low risk of drug abuse.
- 5) Depression is common in patients with chronic back pain – screen for it and treat if present.



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