MUSCULOSKELETAL • NEUROLOGICAL

Low Back Pain
Management & Nursing Care

High-yield NGN NCLEX 2026 reference covering acute, subacute, and chronic lumbar pain — including the surgical emergency every nurse must recognize: **cauda equina syndrome**.

> 📚 **Source note:** This topic was not in the uploaded study notes — content drawn from standard NGN NCLEX 2026 references (Saunders, ATI, Lippincott).

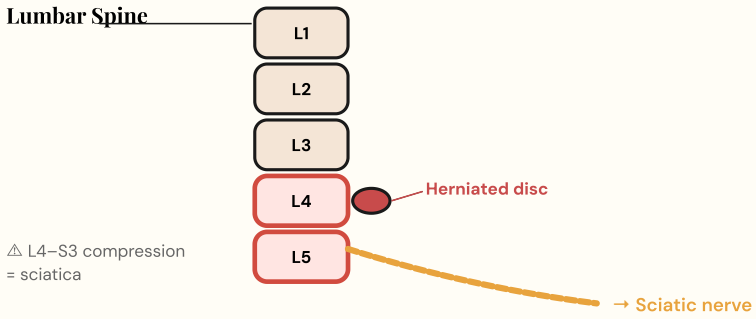
1 Definition & Overview

WHAT IT IS • WHY IT MATTERS

- **Low back pain (LBP)** = pain in the lumbar region (L1–L5), with or without radiation into buttocks or legs.
- **Classifications by duration:** Acute (< 4 weeks) • Subacute (4–12 weeks) • Chronic (> 12 weeks).
- **Top cause of disability and missed work** in the U.S. — ~80% of adults experience LBP in their lifetime.
- **Common causes:** muscle/ligament strain, herniated disc (HNP), spinal stenosis, sciatica, osteoarthritis, spondylolisthesis, vertebral compression fracture.

2 Pathophysiology

MECHANISM • STEP-BY-STEP



Mechanical strain / lifting / degeneration → Muscle/ligament injury OR disc tear → Inflammation + muscle spasm

Nucleus pulposus pushes through annulus fibrosus → Nerve root compression (L4–S3) → Radicular pain ± weakness / numbness (SCIATICA)

> **Key concept:** Pain that *radiates below the knee* = nerve root involvement, not just muscle strain. Pain that stays in the lower back = usually musculoskeletal.

3 Signs & Symptoms

MILD → SEVERE • RED FLAGS

• Mild / Mechanical

- Localized lumbar pain
- Muscle stiffness & spasm
- Pain worse with movement, better with rest
- Limited ROM
- Tenderness on palpation
- No neuro deficits

▲ Severe / Neurologic

- ▲ Radicular pain down leg (sciatica)
- ▲ Numbness / paresthesia in dermatomal pattern
- ▲ Weakness in legs / foot drop
- ▲ Diminished reflexes (patellar, Achilles)
- ▲ Positive straight-leg raise test
- ▲ Pain worse with cough, sneeze, Valsalva

🚨

CAUDA EQUINA SYNDROME — Surgical Emergency

Compression of the nerve bundle below L2. **Missing this on the NCLEX = wrong answer. Missing it in real life = permanent paralysis & incontinence.**

S	**Saddle anesthesia** — numbness in perineum, inner thighs, buttocks
A	**Anal sphincter tone loss** — bowel incontinence or fecal retention
V	**Voiding problems** — urinary retention OR new incontinence
E	**Emergency surgery** within 24–48 hr to prevent permanent damage

Action: Notify HCP *immediately* → STAT MRI → bladder scan → neurosurgical consult → NPO & prep for OR.

4 Priority Nursing Interventions

ABCS • SAFETY • PRIORITIZATION

- **Assess** pain — location, radiation, severity (0–10), quality, what makes it better/worse.
- **Perform neurovascular checks** — motor strength, sensation, reflexes, gait, bladder/bowel function.
- **Screen for red flags** every shift: saddle anesthesia, incontinence, progressive weakness, fever, unexplained weight loss.
- **Position** in *semi-Fowler's with knees flexed* (Williams position) — flattens lumbar curve, relieves pressure.
- **Encourage early mobilization** — prolonged bed rest > 2 days **worsens** outcomes.
- **Apply heat & cold** — ice first 24–48 hr for inflammation; heat after for muscle spasm.
- **Administer analgesics** as ordered; monitor effectiveness 30–60 min after dose.
- **Provide firm mattress** or place plywood board under mattress.
- **Teach proper body mechanics** before discharge (non-negotiable).
- **Monitor for opioid side effects** — constipation, sedation, respiratory depression.
- **Refer to PT** — strengthening & flexibility prevent recurrence.

5 Pharmacology

DRUGS • SIDE EFFECTS • CONSIDERATIONS

DRUG / CLASS	MECHANISM	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
NSAIDs Ibuprofen, Naproxen, Ketorolac	↓ Prostaglandins → ↓ inflammation & pain	GI bleed, renal impairment, ↑ BP	Give **with food**; monitor BUN/Cr; avoid in CKD & PUD; max ketorolac 5 days
Acetaminophen Tylenol	Central pain pathway inhibition	**Hepatotoxicity**	Max **4 g / 24 hr** (3 g if liver disease); no alcohol
Muscle Relaxants Cyclobenzaprine (Flexeril), Methocarbamol	Central CNS depression → ↓ muscle spasm	Drowsiness, dizziness, dry mouth, urinary retention	**No driving / operating machinery**; short-term use only; fall precautions
Opioids (short-term) Oxycodone, Hydrocodone, Tramadol	μ-opioid receptor agonist	Constipation, sedation, **respiratory depression**, dependence	Start stool softener; monitor RR & sedation; have **naloxone** available
Corticosteroids Prednisone, Dexamethasone, epidural injection	Powerful anti-inflammatory	↑ Glucose, ↑ BP, osteoporosis, immunosuppression, Cushingoid effects	Do **not stop abruptly**; taper; monitor glucose; give with food
Gabapentin / Pregabalin	Modulates calcium channels → ↓ neuropathic pain	Sedation, dizziness, peripheral edema, weight gain	For radicular / nerve pain; titrate up; do not stop abruptly
Topical agents Lidocaine patch, capsaicin, methyl salicylate	Local nerve / receptor effect	Skin irritation, burning	12 hr on / 12 hr off for lidocaine patch; wash hands after capsaicin

6 NCLEX Test Traps

WRONG ANSWERS STUDENTS PICK

✗ WRONG CHOICE	VS	✓ CORRECT
"Strict bed rest for 5–7 days will allow the back to heal."	VS	**Early mobilization** — prolonged bed rest > 2 days worsens deconditioning and outcomes.
"Pain radiating down the leg is expected and only requires reassurance."	VS	Radicular pain = **nerve root involvement.** Assess for red flags & report new neuro deficits.
"Saddle numbness will resolve on its own once the spasm settles."	VS	**Cauda equina = surgical emergency.** Notify HCP STAT — every hour of delay risks permanent damage.
"Bend at the waist when picking up objects — it's faster."	VS	**Bend at the knees**, keep object close to body, no twisting. Lift with legs, not back.
"Apply heat right after the injury to relieve pain."	VS	**Ice first 24–48 hr** (vasoconstriction ↓ inflammation), **heat after** for muscle spasm.
"Sleep on the stomach to take pressure off the back."	VS	**Side-lying with pillow between knees** OR supine with pillow under knees. Prone **worsens** lumbar lordosis.

7

Patient & Family Education

DISCHARGE TEACHING ESSENTIALS

Body Mechanics

Bend at the knees (not waist). Hold object close to body. No twisting while lifting.

Sleep Position

Side-lying with pillow between knees, OR supine with pillow under knees. Firm mattress.

Weight Management

Every pound of body weight = ~4 lb of pressure on lumbar discs. Healthy BMI is protective.

Smoking Cessation

Nicotine constricts blood vessels feeding the discs → accelerates degeneration.

Core Strengthening

Pelvic tilts, partial sit-ups, walking, swimming. Avoid high-impact & sit-ups with straight legs.

Posture & Sitting

No prolonged sitting/standing > 30 min. Use lumbar support. Feet flat. Take stretch breaks.

Footwear

Low heels (< 1 inch), supportive shoes. Avoid high heels — they shift center of gravity.

When to Call HCP

New leg weakness • saddle numbness • loss of bladder/bowel control • fever • pain with rest at night.

8 Memory Boosters

MNEMONICS • PATTERN RECOGNITION

★ "SAVE" — Cauda Equina Emergency

- **S** — **Saddle** anesthesia (perineum/inner thigh numbness)
- **A** — **Anal** sphincter tone lost — bowel incontinence
- **V** — **Voiding** dysfunction — urinary retention or incontinence
- **E** — **Emergency** surgery within 24–48 hr

★ "BACK" — Back Pain Red Flag Screen

- **B** — **Bowel/Bladder** changes — incontinence or retention
- **A** — **Anesthesia** — saddle numbness or new sensory loss
- **C** — **Constitutional** symptoms — fever, weight loss, night pain (rule out infection/cancer)
- **K** — **Kinetic** weakness — progressive leg weakness or foot drop

★ Pattern Recognition Tips

- **Pain below the knee** = nerve root (sciatica). Pain above the knee = usually muscle/ligament.
- **Williams position** (semi-Fowler's + flexed knees) = best for relieving lumbar pressure.
- **Ice first, heat later** — same rule as any acute musculoskeletal injury.
- **"Don't bend, hinge"** — keep spine neutral, bend at hips & knees.
- **Positive Straight-Leg Raise** (pain radiating down leg when raised 30–70°) = disc herniation likely.
- **Cough/sneeze/Valsalva worsens pain** = think disc herniation (↑ intrathecal pressure).

9 NCJMM Clinical Judgment Scenario

SIX-STEP FRAMEWORK • NGN-STYLE

SCENARIO

A 45-year-old male construction worker presents to the ED with sudden severe low back pain that began 2 hours ago after lifting a heavy steel beam. He reports pain rated 9/10 radiating down the right leg to his foot. He also tells you he "couldn't feel the toilet seat" and has been unable to urinate for the past 90 minutes. Bladder scan shows 750 mL.

1 Recognize Cues

Sudden severe LBP after lifting • radiating pain to foot (radicular) • **saddle anesthesia** ("couldn't feel toilet seat") • **urinary retention** (750 mL on bladder scan) • mechanism = heavy lifting.

2 Analyze Cues

Triad of **saddle anesthesia + urinary retention + radicular leg pain** = classic **cauda equina syndrome**. Likely from acute disc herniation compressing nerve bundle below L2. This is a time-critical emergency.

3 Prioritize Hypotheses

#1 Cauda equina syndrome (must rule out immediately — risk of permanent paralysis & incontinence). #2 Acute lumbar disc herniation with radiculopathy. #3 Acute muscle strain (least likely given neuro findings).

4 Generate Solutions

Notify HCP STAT • STAT MRI lumbar spine • neurosurgical consult • **insert urinary catheter** to decompress bladder • NPO status • IV access • prepare for emergent surgical decompression • baseline neuro exam documented.

5 Take Action

Notify provider immediately → place patient on bed rest in semi-Fowler's with knees flexed → straight cath for retention → IV NS established → MRI within 1 hr → keep NPO → monitor neuro status q15 min → prepare consent & pre-op checklist → emotional support to patient.

6 Evaluate Outcomes

Expected: Surgical decompression within 24–48 hr → return of bladder/bowel function → improving sensation in saddle area → motor strength preserved → pain controlled. **If not improving** (persistent retention, worsening weakness) → reassess, escalate, consider second imaging.