NGN NCLEX 2026 • NEURO / MUSCULOSKELETAL EMERGENCY

Cauda Equina Syndrome

A surgical emergency caused by compression of the lumbar–sacral nerve roots below L1–L2. Recognition within hours determines whether deficits become permanent. Saddle anesthesia + new urinary retention = CES until proven otherwise.

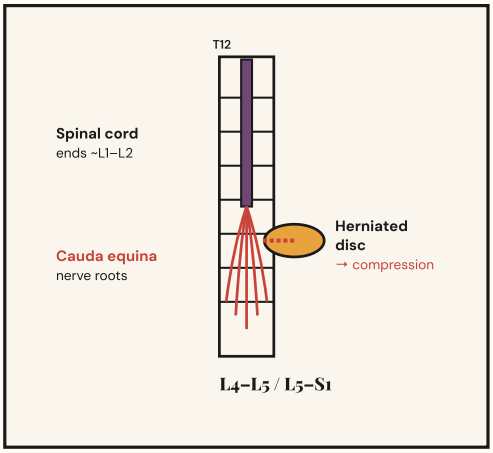
SURGICAL EMERGENCY | DECOMPRESS WITHIN 24–48H | L1–L2 AND BELOW

TEST PLAN: PHYSIOLOGICAL ADAPTATION

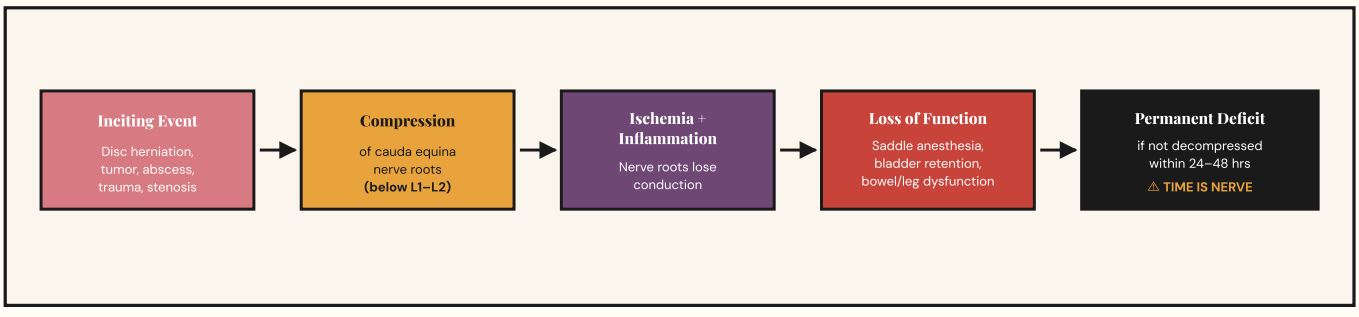
1 Definition / Overview

- **Cauda equina** = "horse's tail"; bundle of L2–S5 + coccygeal nerve roots descending below the spinal cord (which ends at L1–L2 in adults).
- **CES** = compression of these nerve roots → motor, sensory, bowel, bladder, and sexual dysfunction.
- **True surgical emergency** — outcomes depend on time to decompression. Optimal window is **< 24–48 hours** from symptom onset.
- Most common causes: **large central disc herniation** (esp. L4–L5, L5–S1), spinal stenosis, trauma/fracture, epidural abscess or hematoma, spinal tumor/metastasis, post-spinal procedure complication.

Anatomy Snapshot



2 Pathophysiology (Step-by-Step)



3 Signs & Symptoms

🟧 EARLY / RED FLAG

- **Severe low back pain** — often bilateral, with radiation down legs
- **Saddle anesthesia** 🚨 — numb/tingly perineum, buttocks, inner thighs ("the area touching a saddle")
- **New urinary retention** 🚨 — overflow incontinence, can't feel a full bladder
- **Bilateral sciatica / leg weakness** — heaviness, foot drop, gait change
- **Decreased anal sphincter tone** — loss of "wink" reflex
- **Sexual dysfunction** — loss of perineal sensation, erectile/orgasmic change

🟥 LATE / SEVERE

- **Bowel incontinence** 🚨 — loss of voluntary control
- **Complete urinary incontinence** — overflow becomes constant
- **Areflexia** — absent DTRs in lower extremities
- **Flaccid paralysis** of one or both legs
- **Permanent neurological deficit** if surgical decompression delayed beyond 48 hours
- **Chronic neuropathic pain**, depression, disability

🚨 **THE CES TRIAD — Saddle anesthesia + bowel/bladder dysfunction + bilateral leg weakness = call provider STAT, prepare for emergent MRI. Never label this as "muscle strain" or "ordinary sciatica."**

4 Priority Nursing Interventions

- **A·B·C** Maintain airway, breathing, circulation; if high lesion, watch respiratory effort.
- **RECOGNIZE** Identify CES triad *immediately* — notify HCP **STAT**; this is time-critical.
- **PREP** Anticipate **emergent MRI** (gold standard) → **surgical decompression** (laminectomy ± discectomy) within 24–48 h.
- **ASSESS** Detailed neuro: motor strength bilaterally, perineal/saddle sensation, DTRs, anal tone/wink, bowel sounds.
- **ASSESS** **Bladder scan / post-void residual** — retention > 200 mL is a critical cue.
- **INSERT** Indwelling urinary catheter for retention; strict I&O.
- **POSITION** Neutral spine alignment; **log-roll** for all turns; flat or low Fowler's per HCP.
- **PREVENT** DVT prophylaxis (SCDs, anticoagulant once cleared); skin/pressure-injury care q2h.
- **PAIN** Multimodal: opioids, NSAIDs (caution post-op), neuropathic agents (gabapentin/pregabalin).
- **PSYCH** Address fear, body image, sexual concerns; involve family early.
- **POST-OP** Watch for CSF leak (clear drainage, halo sign, positional headache), wound infection, new neuro deficit, hematoma.

5 Pharmacology

Drug / Class	Purpose & Key Cautions
Dexamethasone (corticosteroid)	↓ Cord/root inflammation & edema. Monitor BG, infection, GI ulcer; never stop abruptly.
IV antibiotics (e.g., vancomycin + ceftriaxone)	If **epidural abscess** is the cause. Draw cultures BEFORE first dose when possible.
Opioids (morphine, hydromorphone)	Severe pain. Monitor RR, sedation; **stool softeners** to prevent constipation.
Gabapentin / Pregabalin	Neuropathic pain. Dizziness, sedation; titrate slowly.
NSAIDs (ketorolac, ibuprofen)	Inflammation; hold pre-op due to bleeding risk. GI/renal precautions.
Enoxaparin / SCDs	VTE prevention from immobility. Hold pre-op per protocol.
Stool softeners (docusate)	For neurogenic bowel + opioid constipation. Bowel program is essential.

Drug / Class	Purpose & Key Cautions
Bethanechol (cholinergic, select cases)	May help neurogenic bladder; monitor for bradycardia, hypotension, bronchospasm.

6 NCLEX Test Traps ⚠️

❌ **Trap:** "Patient has low back pain after lifting — apply heat and give NSAIDs."	✅ **Right:** First **screen for CES** (saddle numbness, retention, bilateral weakness). If present, notify HCP STAT.
❌ **Trap:** Pick "monitor bladder function and reassess in 4 hours."	✅ **Right: Bladder scan now**, notify provider, prep for MRI — delay = permanent damage.
❌ **Trap:** Treating unilateral sciatica + CES the same way.	✅ **Right:** CES is usually **bilateral**, includes **saddle** + **bowel/bladder** changes — this is the differentiator.
❌ **Trap:** Choosing CT scan as the first imaging.	✅ **Right: MRI of the lumbar spine** is the gold standard for CES.
❌ **Trap:** "Surgery can wait until morning — it's the middle of the night."	✅ **Right:** Decompression is most effective **< 24–48 hrs** from onset — outcomes worsen with delay.
❌ **Trap:** Selecting "place patient supine with HOB at 90°."	✅ **Right: Neutral spine, log-roll**; avoid spinal flexion/rotation before stabilization.
❌ **Trap:** Confusing post-op clear drainage with normal serous fluid.	✅ **Right:** Clear, halo-ringed drainage = possible **CSF leak** → notify surgeon, test for glucose/β-2 transferrin.

7 Patient & Family Education

- **"Time is nerve"** — go to the ED immediately for new numbness in the saddle area, inability to urinate, new incontinence, or new bilateral leg weakness.
- **No BLT for 6–12 weeks** post-op: no **B**ending, **L**ifting (> 5–10 lbs), **T**wisting at the waist.
- **Body mechanics**: lift with the legs, keep the back straight, hold loads close to body.
- **Self-catheterization** training if retention persists; clean technique, signs of UTI.
- **Bowel program**: fiber, fluids 2–3 L/day (unless restricted), scheduled evacuation, stool softeners.
- **Pelvic floor / physical therapy** as ordered; gradual ambulation; brace use as prescribed.
- **Skin checks** daily — anesthetic areas are at high risk for unnoticed pressure injuries and burns.
- **Wound care**: keep incision clean and dry, report redness, drainage, fever > 101°F (38.3°C).
- **Mental health**: validate grief; refer to counseling, support groups, sexual health resources.
- **Follow-up**: scheduled neuro reassessment, MRI if indicated, PT/OT continuity.

8 Memory Boosters

"SADDLE" — Cardinal CES Features

S **S**addle anesthesia
A **A**reflexia (lower extremities)
D **D**ysfunction — bowel & bladder
D **D**ecreased perineal sensation
L **L**ower extremity weakness (bilateral)
E **E**mergency — surgical decompression!

"3 B's" of CES Red Flags

Back pain (severe, bilateral)
Bladder retention (new)
Bowel incontinence / saddle numbness

Quick Recall

🐴 **Cauda equina = "horse's tail"** — the nerve roots fan out like a horse's tail below the cord.
🪑 If it touches the saddle, it's the giveaway sign.
⏱️ **24–48 hour clock** — every hour matters.
🧲 **MRI** > CT for CES imaging.

9 NCJMM Clinical Judgment Scenario (NGN 2026)

SCENARIO: A 42-year-old client presents to the ED with severe low back pain that began 18 hours ago after lifting a heavy box. The client reports new numbness "in the area where I'd sit on a bicycle seat," tingling down both legs, and states "I haven't been able to pee since this morning." Vital signs: BP 138/82, HR 92, RR 18, T 37.1°C, SpO_2 98% RA. Bladder scan reveals 620 mL retained urine. Decreased rectal tone noted on exam.

1 Recognize Cues

Severe LBP after lifting, **saddle anesthesia**, bilateral leg paresthesia, **new urinary retention 620 mL**, **decreased rectal tone**, 18 hrs since onset.

2 Analyze Cues

Cluster forms the **classic CES triad**: saddle + bowel/bladder + bilateral neuro signs. The 620 mL retention & loss of rectal tone are objective evidence of nerve-root compression — not simple lumbar strain.

3 Prioritize Hypotheses

#1 — Cauda equina syndrome (most urgent; surgical emergency). Differentials: large disc herniation without CES, conus medullaris syndrome, epidural abscess. CES wins priority due to time-sensitive permanent-deficit risk.

4 Generate Solutions

Notify HCP STAT • emergent **MRI lumbar spine** • NPO & surgical consult • **indwelling catheter** • IV access + labs (CBC, BMP, coags, type & screen) • dexamethasone per order • pain management • log-roll precautions • DVT prophylaxis.

5 Take Action

Page neurosurgery, transport for MRI, insert Foley, establish 2 large-bore IVs, administer ordered steroid & analgesia, maintain spinal precautions, complete pre-op checklist, obtain informed consent, communicate & reassure family.

6 Evaluate Outcomes

Post-op: returning **saddle sensation**, voiding > 200 mL with PVR < 100 mL, intact rectal tone, bilateral motor 5/5, pain ≤ 4/10, no CSF leak, ambulating per PT. Plan: home with PT, bladder retraining, neuro follow-up in 1–2 weeks.