SCI

NGN NCLEX · 2026 TEST PLAN · NEUROLOGICAL SYSTEM

Spinal Cord *Injury* & Shock States

A complete clinical judgment review of SCI levels, spinal shock, neurogenic shock, and autonomic dysreflexia — with priority interventions mapped to the NCJMM framework.

HIGH-YIELD | PRIORITIZATION | SAFETY / ABC | NCJMM ALIGNED

01 Definition / Overview

WHAT IT IS

SCI

DEFINITION

Damage to the spinal cord causing temporary or permanent changes in motor, sensory, or autonomic function below the level of injury.

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TYPES

Complete: total loss of motor/sensory below injury. **Incomplete:** some preserved function.

T6

CRITICAL LEVEL

Injuries at **T6 and above** place the client at risk for autonomic dysreflexia — a medical emergency.

02 Pathophysiology

STEP-BY-STEP

1. **Primary Injury**
   Mechanical trauma — compression, contusion, laceration, or transection of the cord.
2. **Secondary Injury**
   Ischemia, edema, inflammation, and hemorrhage extend damage beyond the initial site.
3. **Neuronal Death**
   Cell death and axonal disruption interrupt signals below level of injury.
4. **Functional Loss**
   Loss of motor, sensory, and autonomic function below the lesion — pattern depends on level.

03 Levels of Injury & Management

KNOW THE FUNCTION

RULE OF THUMB

"C3, C4, C5 keep the diaphragm alive." Injuries at or above C4 often require mechanical ventilation for life.

LEVEL	FUNCTIONAL OUTCOME	PRIORITY MANAGEMENT
C1 – C3	**Ventilator-dependent quadriplegia; cannot breathe independently.** ABC	Mechanical ventilation, tracheostomy care, total ADL assistance, constant airway vigilance.
C4	**Phrenic nerve involved; quadriplegia; may wean from vent.** ABC	Respiratory support, suctioning, sip-and-puff chair control, pressure injury prevention.

LEVEL	FUNCTIONAL OUTCOME	PRIORITY MANAGEMENT
C5	Shoulder and elbow flexion; dependent for most ADLs.	Adaptive devices, ROM, skin care, assist with feeding and grooming.
C6	Wrist extension (tenodesis grip); can self-feed with adaptive devices.	Teach self-catheterization assistance, transfer techniques, hand splints.
C7 – C8	Triceps and some hand function; largely independent in ADLs and transfers.	Manual wheelchair, independent transfers, bowel/bladder training.
T1 – T6	Paraplegia, full use of arms/hands. AD RISK	Wheelchair independence, AD prevention, bowel/bladder program, skin checks.
T7 – T12	Improved trunk control and balance; independent transfers.	Strengthening, wheelchair sports, bowel/bladder program, driving adaptations.
L1 – L2	Hip flexion present; short-distance ambulation with long leg braces.	Gait training, braces, bladder program, fall prevention.
L3 – L4	Knee extension; ambulation with short leg braces and crutches.	Ambulation training, orthotics, continued bladder/bowel management.
L5 – S3	Foot movement; possible independent ambulation.	Functional ambulation, skin care, bladder training.
S2 – S4	Bowel, bladder, and sexual function affected.	Bowel/bladder retraining, sexuality counseling, pelvic floor education.

04 Spinal Shock vs Neurogenic Shock

MUST DISTINGUISH

Spinal Shock

TEMPORARY · ANY LEVEL

ONSET	Immediately after injury
HALLMARK	**Flaccid paralysis**; loss of ALL reflexes below injury
SENSATION	Absent below level
BLADDER / BOWEL	Atonic; urinary retention, paralytic ileus
DURATION	Days to weeks (up to months)
RESOLUTION	Return of reflexes (bulbocavernous reflex returns first)
PRIORITY	Immobilize spine · prevent complications · monitor for autonomic return

Neurogenic Shock

DISTRIBUTIVE · T6 & ABOVE

ONSET	Within 30 min to hours of injury
HALLMARK TRIAD	**Hypotension · Bradycardia · Warm dry skin** (loss of sympathetic tone)
SKIN	Warm, dry, flushed below injury (NOT cold/clammy)
TEMP	Hypothermia — poikilothermia (body takes on room temp)
DURATION	Up to 6 weeks; resolves as sympathetic tone returns
PRIORITY	IV fluids · vasopressors (norepinephrine) · atropine for bradycardia · warming
RED FLAG	Bradycardia + hypotension = NEUROGENIC, not hypovolemic

05 Autonomic Dysreflexia (AD)

EMERGENCY · T6 AND ABOVE

MEDICAL EMERGENCY

Autonomic Dysreflexia

A sudden, exaggerated sympathetic response to a noxious stimulus below the level of injury in clients with SCI at **T6 or above**. Can cause stroke, seizure, or death if not treated within minutes.

Classic Signs

- Severe **hypertension** (SBP often > 200)
- **Bradycardia**
- Pounding, throbbing **headache**
- **Flushed / diaphoretic** above injury
- **Pale, cool, goosebumps** below injury
- Nasal stuffiness · blurred vision · anxiety

Common Triggers

- **Full bladder** (most common) · kinked catheter
- **Fecal impaction** · constipation
- Tight clothing, shoes, restraints
- Pressure injury or skin breakdown
- Ingrown toenail · cold draft
- Sexual activity · menstruation · labor

⚡ PRIORITY ACTIONS (IN ORDER)

1. **Sit client UP** (HOB to 90°) to use gravity to lower BP
2. **Loosen** tight clothing / restrictive devices
3. **Check the bladder FIRST** — catheterize or unkink catheter
4. **Check for impaction** — use anesthetic jelly before digital exam
5. Check skin for pressure, wounds, or irritants

⚠ DO NOT DO THIS

- Do NOT lay the client flat — this raises BP further
- Do NOT leave the client alone
- Do NOT give antihypertensives before identifying the trigger
- Do NOT treat AD like hypovolemic shock — fluids can worsen HTN
- Do NOT perform digital rectal exam without topical anesthetic

6. **Notify HCP** · monitor BP every 2–5 min
7. Administer antihypertensive (nifedipine / nitrates) as ordered

06 Priority Nursing Interventions

ABC · SAFETY

A Airway & Breathing

- → **Assess** respiratory rate, depth, O_2 sat, ABGs
- → **Monitor** for ascending edema (C3–C5 danger zone)
- → Prepare for intubation if diaphragm impaired
- → Suction as needed; avoid prolonged suctioning (vagal bradycardia)

C Circulation & Spine

- → **Immobilize** — cervical collar / halo / log roll only
- → **Monitor** BP and HR continuously (neurogenic shock)
- → Administer IV fluids and vasopressors as ordered
- → **Atropine** available for symptomatic bradycardia

N Neuro Assessment

- → Serial motor and sensory checks (dermatomes)
- → Assess for return of reflexes (end of spinal shock)
- → Watch for rising level of injury (secondary edema)
- → Monitor LOC and pupils

S Skin & Mobility

- → **Reposition q2h** — pressure injury prevention
- → ROM exercises to prevent contractures
- → Sequential compression devices — DVT prophylaxis
- → Specialty mattress; heel protectors

E Elimination

- → Indwelling catheter acutely; transition to **intermittent cath**
- → Scheduled bowel program — stool softeners, suppositories
- → Monitor for paralytic ileus during spinal shock
- → High-fiber diet and adequate fluids

P Psychosocial

- → Assess for grief, depression, suicidal ideation
- → Include client in decision-making — restores autonomy
- → Refer to rehab, peer support, and spiritual care
- → Educate family on long-term adaptation

07 Pharmacology

KNOW THE WHY

DRUG / CLASS	MECHANISM / USE	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
Methylprednisolone	High-dose IV corticosteroid; may reduce secondary cord injury (use is controversial).	Hyperglycemia, infection, GI bleeding, poor wound healing.	Give within 8 hours of injury; monitor glucose; PPI for GI protection.
Norepinephrine (Levophed)	Vasopressor — raises BP in neurogenic shock.	Extravasation → tissue necrosis; reflex bradycardia.	Central line preferred; titrate to MAP ≥ 85; monitor urine output.
Atropine	Anticholinergic — treats symptomatic bradycardia.	Dry mouth, urinary retention, tachycardia.	Have at bedside for T6+ injuries; use before suctioning if needed.
Nifedipine / Nitrates	Antihypertensives — acute AD management.	Hypotension, headache, reflex tachycardia.	Only after removing AD trigger; monitor BP q2–5 min.
Baclofen	Muscle relaxant — treats spasticity after spinal shock	Drowsiness, weakness; never stop abruptly (withdrawal seizures).	Taper on discontinuation; assess fall risk.

DRUG / CLASS	MECHANISM / USE	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
	resolves.		
Enoxaparin (Lovenox)	LMWH — DVT prophylaxis (high risk due to immobility).	Bleeding, thrombocytopenia (HIT).	Monitor platelets; no IM injections; pair with SCDs.
Docusate / Bisacodyl	Stool softener / stimulant — bowel program.	Cramping, diarrhea.	Scheduled dosing; establish regular bowel routine.

08 NCLEX Test Traps

WHAT STUDENTS CONFUSE

TRAP 01

Spinal shock ≠ Neurogenic shock

Spinal shock is loss of reflexes below injury (temporary). **Neurogenic shock** is loss of sympathetic tone causing hypotension + bradycardia + warm skin.

TRAP 02

Sit UP, don't lay down

For AD, the first action is **elevate HOB to 90°**. Laying flat is correct for most shock states — but NOT for AD, which is a hypertensive crisis.

TRAP 03

Bradycardia + Hypotension

In hypovolemic shock you see **tachycardia**. If a SCI client is bradycardic AND hypotensive, think **neurogenic shock** — not bleeding.

TRAP 04

Warm, dry, pink skin

Classic shock = cold, clammy. **Neurogenic shock skin is WARM and DRY** because vessels below injury are dilated — a distractor on the exam.

TRAP 05

Bladder FIRST in AD

TRAP 06

Log-roll only

After sitting the client up, check the bladder before anything else — a **full bladder or kinked Foley** is the most common trigger.

Never allow the client to bend, twist, or move the spine independently. Always use **log-rolling** with multiple staff until stabilization is confirmed.

TRAP 07

C3–C5 danger zone

Ascending cord edema in a C5/C6 injury can rise to **C4 (phrenic nerve)** — watch respiratory effort closely for the first 48–72 hours.

TRAP 08

AD only at T6 and above

Autonomic dysreflexia is **not** a risk for injuries below T6 — the splanchnic outflow is spared, so the exaggerated sympathetic response does not occur.

09 Patient Education

SELF-MANAGEMENT

Skin Integrity

- ✓ Perform **skin checks every 2 hours** with a mirror
- ✓ Pressure reliefs (wheelchair push-ups) every 15 min
- ✓ Avoid heating pads — sensory loss masks burns
- ✓ Keep skin clean, dry, and moisturized

Bowel & Bladder Program

- ✓ Establish a consistent **daily bowel routine**
- ✓ Intermittent self-catheterization (clean technique at home)
- ✓ High-fiber diet, adequate fluids (unless restricted)
- ✓ Report signs of UTI promptly

Autonomic Dysreflexia

- ✓ Teach **client and family** to recognize warning signs
- ✓ Sit up, find the trigger, call 911 if unresolved
- ✓ Carry a medical alert card describing AD

Lifestyle & Coping

- ✓ Engage in **rehabilitation** and adaptive sports
- ✓ Screen for depression — common after SCI
- ✓ Sexuality and fertility counseling are appropriate

- ✓ Know baseline BP — SCI baseline is often 90/60
- ✓ Connect with peer support and community resources

10 NCJMM Clinical Judgment Framework

NEXT GEN NCLEX

Step 1 · Recognize Cues	Step 2 · Analyze	Step 3 · Prioritize	Step 4 · Evaluate
Recognize	**Analyze**	**Prioritize**	**Evaluate**
Flaccid paralysis, loss of reflexes (spinal shock); warm/dry skin with bradycardia (neurogenic); sudden HTN + headache (AD).	Link the triad: injury level → expected complication. T6+ = AD risk. C4+ = airway risk. Distinguish shock types by skin + HR.	ABCs first · Spine stabilization · Treat the deadliest cue (AD, respiratory failure) before comfort or mobility needs.	Did BP normalize? Did reflexes return? Are O_2 sats maintained? No skin breakdown? Client able to verbalize emergency plan?

11 Memory Boosters

PATTERN RECOGNITION

C3 · C4 · C5

AIRWAY MNEMONIC

"C3, C4, C5 keep the **diaphragm alive**." Injury at or above C4 = likely ventilator.

HBH

NEUROGENIC SHOCK TRIAD

Hypotension · **B**radycardia · **H**ypothermia (warm skin, cool core).

T6

AD CUTOFF

AD only happens at **T6 and above**. Below T6, splanchnic outflow is intact — no dysreflexia.

SIT

FIRST ACTION FOR AD

Sit up · **I**nvestigate bladder/bowel · **T**reat BP last.

WDF

NEUROGENIC SKIN

Warm · **D**ry · **F**lushed. NOT cold and clammy — that's hypovolemic.

BBB

AD TRIGGERS

Bladder full · **B**owel impacted · **B**reakdown (skin). Check in that order.
