NGN NCLEX 2026 • ENDOCRINE SYSTEM

Hyperthyroidism

Overproduction of thyroid hormones → hypermetabolic state affecting every body system. High-yield endocrine content for clinical judgment and prioritization.

⚡ Hypermetabolism | 🔥 Thyroid Storm | 💊 Antithyroid Rx | 👁️ Exophthalmos | 🧠 NCJMM Framework

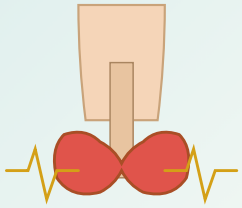
1 Definition & Overview

WHAT & WHY

What is Hyperthyroidism?

A clinical state in which the thyroid gland produces **too much T3 and T4**, driving the body into a **hypermetabolic overdrive**. Everything speeds up — heart rate, temperature, GI motility, and mental activity.

Why it Matters for NCLEX



ENLARGED, HYPERACTIVE THYROID

Untreated hyperthyroidism can escalate to **thyroid storm** — a life-threatening crisis with cardiovascular collapse, hyperthermia, and altered mental status. Early recognition and priority action save lives.

#1 CAUSE	NODULAR	INFLAMMATORY	IATROGENIC
Graves' Disease	Toxic Goiter	Thyroiditis	Iodine Excess

2 Pathophysiology (Simplified)

MECHANISM

1. **Trigger** — Autoimmune antibodies (TSI) or nodules stimulate the thyroid gland abnormally.
2. **Overproduction** — Thyroid releases excessive **T3 & T4** into circulation — no negative feedback control.
3. **Hypermetabolism** — ↑ O_2 consumption, ↑ heat production, ↑ protein breakdown, ↑ SNS sensitivity.
4. **Systemic Effects** — Cardiac, GI, neurologic, ocular, reproductive — **every system speeds up**.

Bottom Line:

Too much thyroid hormone = body runs on overdrive. Think *"hot, fast, and wired."* Lab findings: ↓ TSH, ↑ Free T4, ↑ T3.

3 Signs & Symptoms

RECOGNIZE THE CUES

Early / Classic

MILD–MODERATE

- **Weight loss** despite increased appetite
- **Heat intolerance**, warm & moist skin, diaphoresis
- Anxiety, nervousness, irritability, insomnia
- **Tachycardia**, palpitations, widened pulse pressure
- Fine tremors of hands, hyperreflexia
- Frequent bowel movements / diarrhea
- **Exophthalmos** (Graves'), lid lag
- Goiter — visible neck enlargement
- Amenorrhea / oligomenorrhea; fine, thinning hair

Thyroid Storm

LIFE-THREATENING

- **Hyperthermia** — temp up to 105–106°F (40.6–41°C)
- **Extreme tachycardia** (> 130 bpm), dysrhythmias
- Severe hypertension → may progress to shock
- **Altered mental status**: delirium, agitation, seizures, coma
- Severe N/V and diarrhea → dehydration
- Heart failure, pulmonary edema
- Triggered by: **surgery, infection, stress, trauma, DKA**

RED FLAG

Thyroid Storm: The "5 H's" of Crisis

A rapid-recognition mnemonic for the NGN case — each finding points to the same emergency.

H-1	H-2	H-3	H-4	H-5
High Fever	High HR	High BP	High Metabolism	High Mortality

Hyper vs. Hypo: Don't Mix Them Up

HYPERthyroid — "Fast"

↑ HR, ↑ BP, ↑ Temp

Weight LOSS with ↑ appetite

Heat intolerance, diaphoresis

Diarrhea

Anxious, insomnia, tremors

Exophthalmos

↓ TSH, ↑ T3/T4

HYPOthyroid — "Slow"

↓ HR, ↓ BP, ↓ Temp

Weight GAIN with ↓ appetite

Cold intolerance, dry skin

Constipation

Fatigue, depression, lethargy

Myxedema (puffy face)

↑ TSH, ↓ T3/T4

4 Priority Nursing Interventions

ABC • SAFETY • PRIORITIZE

ASSESS / MONITOR

- ✓ Vital signs — especially HR, BP, temp
- ✓ Continuous cardiac monitoring (dysrhythmia risk)
- ✓ Daily weights; I&O
- ✓ LOC and mental status changes
- ✓ Signs of thyroid storm

ENVIRONMENT & COMFORT

- ✓ Keep room **COOL and QUIET**
- ✓ Lightweight bedding and clothing
- ✓ Reduce stimulation (limit visitors)
- ✓ Private room if possible
- ✓ No caffeine / stimulants

NUTRITION & FLUIDS

- ✓ High-calorie, high-protein, high-carb diet
- ✓ 4000–5000 kcal/day if severe
- ✓ Small, frequent meals
- ✓ Encourage fluids (2–3 L/day unless contraindicated)
- ✓ Avoid spicy foods & stimulants

EYE CARE (EXOPHTHALMOS)

- ✓ Artificial tears Q4H
- ✓ Dark sunglasses outdoors

THYROID STORM — STAT

- ✓ **ABCs first** — oxygen, IV access
- ✓ Cooling blanket, tepid sponge bath

POST-THYROIDECTOMY

- ✓ Semi-Fowler's; support head/neck
- ✓ Tracheostomy tray at bedside

- ✓ Tape eyelids shut at night PRN
- ✓ Elevate HOB to ↓ periorbital edema
- ✓ Low-sodium diet

- ✓ **Acetaminophen — NOT aspirin**
- ✓ IV fluids (dehydration + hyperthermia)
- ✓ Administer PTU, beta-blockers, iodine, steroids

- ✓ Check for **hemorrhage** (behind neck!)
- ✓ Assess for **hypocalcemia** — Chvostek's, Trousseau's
- ✓ Voice check Q2H (laryngeal nerve)

5 Pharmacology

DRUGS YOU MUST KNOW

DRUG	MECHANISM	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
Methimazole ANTITHYROID (TAPAZOLE)	Blocks thyroid hormone synthesis	**Agranulocytosis**, rash, hepatotoxicity, GI upset	Monitor CBC & LFTs. **Report sore throat / fever immediately**. Avoid in 1st trimester.
PTU PROPYLTHIOURACIL	Blocks synthesis + peripheral T4→T3 conversion	Agranulocytosis, **hepatotoxicity (boxed warning)**, rash	**Preferred in 1st trimester pregnancy and thyroid storm.** Monitor LFTs and CBC.
Propranolol BETA-BLOCKER	Blocks SNS effects (not hormone levels)	Bradycardia, hypotension, bronchospasm	Symptom control: ↓ HR, tremors, anxiety. Hold if HR < 60. Caution in asthma/COPD.
SSKI / Lugol's POTASSIUM IODIDE	Decreases thyroid size & vascularity pre-op	Metallic taste, **stains teeth**, GI upset	**Dilute in juice or milk; use a straw**. Give 10–14 days pre-thyroidectomy.
Radioactive I-131 RADIOPHARMACEUTICAL	Destroys thyroid tissue via radiation	Hypothyroidism (expected), sore throat, sialadenitis	**CONTRAINDICATED in pregnancy/breastfeeding.** Flush toilet 2–3×, separate utensils, avoid close

DRUG	MECHANISM	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
			contact with children/pregnant women for several days.
Dexamethasone CORTICOSTEROID	Blocks peripheral T4→T3 conversion (storm)	Hyperglycemia, immunosuppression	Used in thyroid storm. Monitor blood glucose.

6 NCLEX Test Traps

DON'T FALL FOR THESE

⚠ Aspirin in Thyroid Storm

Aspirin **displaces T4 from protein-binding sites**, raising free hormone and worsening the storm.

Use ACETAMINOPHEN instead

⚠ PTU vs. Methimazole in Pregnancy

PTU is preferred in the **1st trimester**; switch to methimazole in 2nd/3rd. Don't reverse these — methimazole causes fetal scalp defects early on.

PTU = Preferred in Trimester 1

⚠ Cold vs. Radioactive Iodine

"Cold" iodine (SSKI/Lugol's) = **pre-op prep** to shrink gland. Radioactive iodine = **treatment** that ablates tissue. They are not interchangeable.

SSKI ≠ I-131

⚠ Post-Op Bleed — Check the BACK

After thyroidectomy, blood runs **behind the neck** due to supine positioning. Always slide your hand under the neck to check for bleeding.

Check behind, not in front

⚠ Hypocalcemia Post-Thyroidectomy

Parathyroid glands may be damaged → **hypocalcemia**. Look for Chvostek's sign (cheek twitch) and Trousseau's sign (carpal spasm with BP cuff).

⚠ Agranulocytosis — Sore Throat = STOP

On antithyroid meds, **sore throat + fever is NOT a cold** — it may signal life-threatening neutropenia. Hold med, call HCP, draw CBC.

Have IV calcium gluconate ready

Never dismiss "just a sore throat"

⚠️ Beta-Blockers Don't Fix the Thyroid

Propranolol only masks symptoms (HR, tremor). The client still has excess hormone — address the underlying issue with antithyroid drugs or I-131.

Symptom control ≠ cure

⚠️ Cool, Quiet Room — NOT Warm

Clients are heat intolerant and hypermetabolic. Students often default to warm blankets — this will worsen symptoms and may trigger storm.

Cool environment only

7 Patient Education

TEACH BEFORE DISCHARGE

💊 Medications

- → Take antithyroid drugs at the same time daily
- → Do NOT stop abruptly — risk of storm
- → Report sore throat, fever, unusual bruising
- → Avoid iodine-rich foods (seafood, seaweed, iodized salt)

☢️ Radioactive Iodine Safety

- → Flush toilet 2–3 times after use
- → Use separate utensils for 1 week
- → Avoid close contact with children & pregnant women for several days
- → No pregnancy for 6 months

🍎 Lifestyle & Diet

- → High-calorie, high-protein diet while symptomatic
- → Avoid caffeine, nicotine, stimulants
- → Rest periods throughout the day
- → Stress reduction (stress triggers storm)

👁️ Eye Care

- → Use artificial tears during the day

🩺 Follow-Up Labs

- → TSH, Free T4, T3 checked regularly

⚠️ When to Call HCP

- → Temp > 101°F (38.3°C)

- → Wear sunglasses outdoors
- → Tape eyelids shut at night if they don't fully close
- → Sleep with HOB elevated

- → CBC & LFTs on antithyroid meds
- → Lifelong monitoring after I-131 or thyroidectomy
- → Expect eventual hypothyroidism after ablation

- → Heart rate > 100 at rest
- → Severe agitation or confusion
- → Vomiting, diarrhea, dehydration
- → Neck hematoma after surgery

8 Memory Boosters

MNEMONICS • PATTERNS

H-Y-P-E-R : The 5-Letter Clue

H — **Hot** — heat intolerance, diaphoresis, fever

Y — **Yelling** — anxious, irritable, insomnia

P — **Palpitations** — tachycardia, dysrhythmias

E — **Eyes bulging** — exophthalmos, lid lag

R — **Rapid weight loss** despite eating more

PATTERN RECOGNITION

"Everything is UP — except weight & menses."

DRUG CUE

"PTU = Preferred Trimester 1 & Storm"

STORM CUE

"5 H's — High fever, High HR, High BP, High metabolism, High mortality"

SAFETY CUE

"Sore throat on antithyroid = STOP the drug."

IODINE CUE

"SSKI stains teeth — straw & juice."

9 NCJMM Clinical Judgment

RECOGNIZE • ANALYZE • PRIORITIZE • EVALUATE

STEP 1

Recognize Cues

Tachycardia, heat intolerance, weight loss with hunger, fine tremors, exophthalmos, goiter,

STEP 2

Analyze Cues

Hypermetabolic state → risk for dysrhythmia, heart failure, dehydration, and thyroid storm.

STEP 3

Prioritize Actions

ABCs → cardiac monitoring → cooling measures → administer PTU, beta-blocker, then iodine (1 hr after PTU) → IV fluids.

STEP 4

Evaluate Outcomes

HR < 100, temp WNL, weight stable, normal LOC, TSH trending up, client verbalizes med & safety teaching.

anxiety, diarrhea, ↓ TSH & ↑ free T4.

Identify triggers: infection, stress, surgery.

🧠 NGN-Style Clinical Scenario

> *A 32-year-old client is admitted with a temp of 103°F, HR 148, BP 172/94, restlessness, and a visibly enlarged neck. She had a dental procedure yesterday and reports nausea.*

Recognize: Fever, extreme tachycardia, hypertension, agitation, and recent stressor (dental procedure) in a client with probable hyperthyroid history → **thyroid storm**.
Analyze: Life-threatening hypermetabolic crisis; cardiovascular collapse is imminent.
Prioritize: ABCs → O_2, cardiac monitor, IV access → cooling blanket & acetaminophen (NOT aspirin) → PTU, propranolol, SSKI (after PTU), hydrocortisone → IV fluids.
Evaluate: Temp ↓ to 100°F, HR ↓ to 110, client oriented, UOP adequate within 2–4 hours.