• NGN NCLEX 2026 • INFECTIOUS DISEASE / RESPIRATORY

Tuberculosis *(TB)*

A high-yield clinical judgment reference for the bacterial infection you must never miss — airborne precautions, the RIPE regimen, and the reasoning behind every nursing priority.

- Mycobacterium tuberculosis
- Airborne transmission
- Primarily pulmonary
- 6–12 month therapy
- Reportable disease

1 Definition & Overview

FOUNDATION

WHAT & WHY

An airborne bacterial infection of the lungs

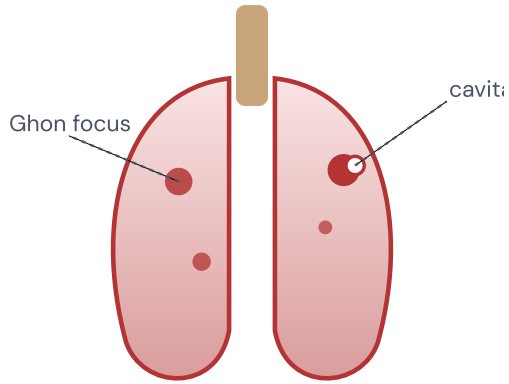
- Caused by the acid-fast bacillus **Mycobacterium tuberculosis** — a slow-growing, waxy-walled organism that hides inside macrophages.
- Transmitted via **inhaled droplet** (coughing, sneezing, singing, talking) — *not* by surfaces, food, or blood.

nuclei

- Can exist as **latent TB infection (LTBI)** — walled off, asymptomatic, not contagious — or **active TB disease**, which IS contagious and must be treated.

1 in 4
PEOPLE WORLDWIDE CARRY LATENT TB

~10%
OF LATENT CASES REACTIVATE



Upper-lobe cavitation & granulomas are the classic pulmonary TB findings on imaging.

2 Pathophysiology

MECHANISM

1. **Inhalation** — Droplet nuclei with **M. tuberculosis** reach the alveoli
2. **Macrophage ingestion** — Alveolar macrophages engulf — but can't kill — the bacilli
3. **Granuloma forms** — Immune cells wall off bacilli → **Ghon complex**
4. **Latent phase** — Bacilli dormant, client asymptomatic & not contagious
5. **Reactivation** — Immunosuppression → **caseous necrosis** & cavitation

Latent TB Infection (LTBI)

- PPD/IGRA **POSITIVE**

Active TB Disease

- PPD/IGRA positive + symptoms

- Chest x-ray **normal**
- Sputum culture **negative**
- **Not** contagious, no symptoms
- Treat with INH alone × 6–9 months

- Chest x-ray: upper-lobe infiltrates, cavitation
- Sputum AFB **POSITIVE**
- **IS** contagious — airborne precautions
- RIPE multi-drug therapy × 6–12 months

3 Signs & Symptoms

CLINICAL PRESENTATION

Early / Mild

EASY TO MISS

- 🌡️ **Low-grade afternoon fever** (classic TB timing)
- 💧 **Drenching night sweats** — soaks pajamas / sheets
- 😴 Fatigue, malaise, lethargy
- 🍽️ Anorexia & unintentional weight loss
- 🗣️ Persistent cough **> 3 weeks**

Late / Severe

RED FLAGS

- 🩸 **Hemoptysis** — blood-tinged / frankly bloody sputum
- 🫁 Productive cough with **mucopurulent sputum**
- 😮‍💨 Dyspnea on exertion
- ⚡ Pleuritic chest pain
- 🦴 Severe wasting — historic name "*consumption*"

🚨 **PRIORITY CUE:** *A cough lasting longer than 3 weeks — especially with night sweats and weight loss — warrants TB screening. Assume airborne isolation before confirmation if suspicion is high.*

4 Priority Nursing Interventions

ABC & SAFETY

A — Airway & Infection Control

- **Airborne precautions** — priority intervention before anything else
- Obtain **3 early-morning sputum** specimens for AFB smear & culture
- Encourage cough & deep breathe to mobilize secretions

B — Breathing & Oxygenation

- Auscultate lungs every shift — crackles in upper lobes
- Monitor SpO_2, respiratory rate, and work of breathing
- Semi-Fowler's position to optimize lung expansion

C — Circulation & Systemic

- Monitor **hemoptysis** — amount, color, frequency
- Assess nutrition & weight — offer high-protein, high-calorie meals
- Track **LFTs** (RIPE drugs are hepatotoxic) & vision (ethambutol)

🔐 Airborne Precautions Checklist

- ✓ **Private, negative-pressure room** (AIIR) with ≥ 6–12 air exchanges/hr
- ✓ Keep the **door closed** at all times
- ✓ **Nurse wears a fit-tested N95** (or PAPR) respirator before entering
- ✓ **Client wears a surgical mask** whenever leaving the room (not N95)
- ✓ Teach the client to cover cough, use tissues, perform hand hygiene
- ✓ Report confirmed cases to the **public health department**

5 Pharmacology — The RIPE Regimen

FIRST-LINE DRUGS

R *ifampin* I *soniazid* P *yrazinamide* E *thambutol*

2 months of all 4 → then 4 months of INH + Rifampin

DRUG	MECHANISM	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
Rifampin R · BACTERICIDAL	Inhibits bacterial RNA synthesis	**Hepatotoxicity**; orange/red discoloration of body fluids (urine, saliva, tears, sweat); GI upset; ↓ effectiveness of **oral contraceptives, warfarin, digoxin**	Reassure that **orange fluids are expected** — not a reason to stop. Teach backup contraception. Monitor LFTs; avoid alcohol.
Isoniazid (INH) I · BACTERICIDAL	Inhibits mycolic acid cell wall synthesis	**Peripheral neuropathy** (numbness/tingling); **hepatotoxicity**; can cause B6 deficiency	Give **vitamin B6 (pyridoxine)** daily to prevent neuropathy. Take on empty stomach. Avoid tyramine-rich foods & alcohol. Monitor LFTs.
Pyrazinamide P · BACTERICIDAL	Disrupts bacterial membrane transport	**Hepatotoxicity**; hyperuricemia → **gout flare**; photosensitivity; arthralgia	Monitor LFTs and uric acid. Encourage fluids. Teach sunscreen & protective clothing. Contraindicated in pregnancy.
Ethambutol E · BACTERIOSTATIC	Inhibits arabinosyl transferase (cell wall)	**Optic neuritis** — blurred vision, **red–green color blindness**, decreased visual acuity	**Baseline + monthly vision screening** (Snellen & color). Teach the client to report any vision change immediately — usually reversible if caught early.

⚠ **Shared hepatotoxicity warning:** R, I, and P are all hepatotoxic. Baseline and routine **LFTs** are mandatory. Teach the client to report *yellowing of skin/eyes, dark urine, RUQ pain, nausea, or anorexia*. **Absolutely no alcohol** during therapy.

6 NCLEX Test Traps

COMMON MISSES

1 "Positive PPD = active TB" — FALSE

A positive Mantoux only proves **exposure / infection**. Active disease requires a **positive AFB sputum culture** + symptoms + chest x-ray findings. Don't pick "start airborne precautions on a positive PPD alone" without other cues.

2 N95 for the nurse — surgical mask for the client

~~"Give the client an N95"~~ → **"Give the client a surgical mask when leaving the room."** An N95 must be fit-tested; the client can't achieve a proper seal and doesn't need to filter their own exhaled droplets.

3 Orange urine on rifampin = expected, not toxicity

If a client reports orange/red tears, urine, or sweat, **reassure them**. This is a harmless staining effect. Warn them it can permanently stain soft contact lenses. Stopping the drug is the wrong answer.

4 Induration — not erythema — is what you measure

Read the Mantoux at **48–72 hours**. Measure the **raised, hardened area (induration)** in mm — *not* redness. Cut-offs: ≥ 5 mm (HIV/immunocompromised), ≥ 10 mm (high-risk), ≥ 15 mm (low-risk/healthy).

5 Non-infectious criteria — all three must be met

A client is considered non-contagious only when: **(1)** consistent drug therapy ≥ 2–3 weeks, **(2)** clinical improvement, and **(3) three consecutive negative AFB sputum smears**. Missing any of these = still on airborne precautions.

6 Neuropathy on INH isn't a "stop the drug" answer

It's a "**give pyridoxine (B6)**" answer. B6 is co-prescribed prophylactically with INH. The priority is prevention, not discontinuation.

7 Patient Education

TEACH-BACK PRIORITY

💊 Medication Adherence

- ✓ Take **ALL** medications for the **FULL** 6–12 months — stopping early causes resistance (MDR-TB)
- ✓ Expect **Directly Observed Therapy (DOT)** from public health
- ✓ Take INH & Rifampin on an empty stomach when possible
- ✓ Never double a dose if one is missed — follow provider guidance

🏠 Home & Family Safety

- ✓ Open windows & maintain airflow — sunlight and ventilation kill TB bacilli
- ✓ Cover mouth/nose with tissue when coughing or sneezing; dispose carefully
- ✓ **All household contacts must be tested** (PPD or IGRA)
- ✓ Sleep in a separate room until cleared as non-infectious

🚨 Report Immediately

- ✓ **Vision changes** (ethambutol — optic neuritis)
- ✓ **Yellow skin/eyes**, dark urine, RUQ pain (hepatotoxicity)
- ✓ **Numbness/tingling** of extremities (INH neuropathy)
- ✓ Worsening cough, hemoptysis, or fever despite treatment

🥗 Lifestyle & Follow-Up

- ✓ **No alcohol** — dramatically increases liver toxicity risk
- ✓ High-protein, high-calorie diet — combat weight loss
- ✓ Use a backup contraceptive method (rifampin ↓ OCP effect)
- ✓ Keep all appointments: LFTs, sputum cultures, vision checks

8 Memory Boosters

MNEMONICS

FIRST-LINE DRUGS

RIPE

The 4-drug combo you start every active TB case on.

CLASSIC TB TRIAD

The 3 W's

Three signs that should always make you think TB.

R **Rifampin** — red-orange body fluids; hepatotoxic

I **Isoniazid (INH)** — needs B6; neuropathy; hepatotoxic

P **Pyrazinamide** — hyperuricemia (gout); hepatotoxic

E **Ethambutol** — eye issues (optic neuritis)

W **Weight loss** — unintentional, progressive

W **Wet pillow** — drenching night sweats

W **Worsening cough** — persistent > 3 weeks, eventually with hemoptysis

DRUG SIDE-EFFECT RECALL

Sound-alike Cues

Quick associations that stick before exam day.

🧡 **"Red-Orange Pee"** → Rifampin

👁️ **"Eye-thambutol"** → Ethambutol = eye toxicity

🧠 **"INH Is Not Happy without B6"** → give pyridoxine

🦶 **"Pyrazinamide + uric acid"** → think gout

ISOLATION SHORTCUT

TB Room Rules

Six-word recipe for the NCLEX isolation question.

N **Negative**-pressure private room

9 **N95** fit-tested respirator — for the nurse

5 **5** door rule — keep it closed

S **Surgical** mask — for the client when leaving

NCJMM Clinical Judgment — *Apply It*

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Scenario: *A 42-year-old client presents to the clinic with a 4-week productive cough, 15-lb unintended weight loss, and soaked sheets at night. Temp 100.4°F; crackles auscultated in the right upper lobe. PPD induration is 16 mm at 72 hours.*

STEP 1 · RECOGNIZE

Recognize Cues

Persistent cough > 3 weeks, weight loss, night sweats, low-grade fever, RUL crackles, positive PPD (≥ 15 mm).

STEP 2 · ANALYZE

Analyze Cues

Cluster matches active pulmonary TB. Positive PPD confirms exposure, not disease — must confirm with chest x-ray and 3 AFB sputum samples.

STEP 3 · PRIORITIZE

Prioritize & Act

PRIORITY: Place client in a **negative-pressure room immediately**; don an N95; obtain sputum × 3; initiate RIPE therapy; notify public health.

STEP 4 · EVALUATE

Evaluate Outcomes

After 2–3 weeks of therapy, expect 3 negative AFB smears, resolving cough, weight stabilization, and normal LFTs. Only then remove airborne isolation.