Tuberculosis Treatment Guidelines

Tuberculosis (TB) is a chronic infectious disease caused by bacilli of the **Mycobacterium tuberculosis complex**, primarily *Mycobacterium tuberculosis*. Other causative agents include *Mycobacterium bovis* and *Mycobacterium africanum*.

Mode of Transmission:
TB is spread via **airborne droplet nuclei** expelled during coughing, sneezing, speaking, or laughing by individuals with active pulmonary TB.

Clinical Forms of Tuberculosis

1. **Pulmonary Tuberculosis (PTB):** Affects the lungs; most common and infectious form.
2. **Extrapulmonary Tuberculosis (EPTB):** Involves organs outside the lungs such as:
    - Lymph nodes
    - Spine and bones
    - Kidneys, bladder
    - Liver
    - Gastrointestinal tract
    - Skin
    - Eyes

Signs and Symptoms

TB should be suspected in patients with a **persistent cough >2 weeks**, especially if accompanied by:

- Hemoptysis (blood-streaked sputum)
- Fever
- Night sweats
- Unexplained weight loss
- Chest pain
- Shortness of breath

Physical Examination Findings:

- Bronchial breath sounds
- Tachypnea
- Rales (crackles)
- Signs of consolidation

Basic Principles of TB Treatment

- **Never use monotherapy** (single drug): Prevents resistance.
- Use **combination therapy** with fixed-dose combinations (FDCs).

- Dosage is **weight-based** .
- Adherence is critical: **Directly Observed Treatment Short-course (DOTS)** is recommended.
- **Pyridoxine (Vitamin B6)** supplementation (25 mg/day) is necessary with isoniazid to prevent **peripheral neuropathy** .

First-Line Anti-TB Drugs

Drug	Abbreviation	Mechanism of Action
Isoniazid	H	Inhibits mycolic acid synthesis
Rifampicin	R	Inhibits RNA polymerase
Pyrazinamide	Z	Disrupts membrane metabolism
Ethambutol	E	Inhibits arabinosyl transferase
Streptomycin	S	Inhibits protein synthesis

Standard Adult TB Treatment Regimen

1. Intensive Phase (2 months):

- Drugs: **Rifampicin (R), Isoniazid (H), Pyrazinamide (Z), Ethambutol (E)**
- Administered daily under supervision.

2. Continuation Phase:

- Duration: **4–6 months**
- Options:
  - **RH** (Rifampicin + Isoniazid) – *for 4 months*
  - **RE** (Rifampicin + Ethambutol) – *for 6 months*

Summary:

2RHZE/4RH or **2RHZE/6RE**

Treatment of Retreatment Cases

Patients with relapse, treatment failure, or who return after default with smear-positive TB require an extended regimen:

- **2 months:** Streptomycin + RHZE (2SRHZE)
- **1 month:** RHZE
- **5 months:** RHE

Summary:

2SRHZE/1RHZE/5RHE

Weight-Based Dosing Guidelines (Adults)

Weight (kg)	IM Streptomycin	RHZE (FDC)	RHZ (FDC)	RH (FDC)	RHE	HE
>55 kg	1 g	4 tablets	4 tablets	4 tablets	4	2
40–55 kg	0.75 g	3 tablets	3 tablets	3 tablets	3	2
30–39 kg	0.50 g	2 tablets	2 tablets	2 tablets	2	2

Note : Patients under 64 years should not receive more than 0.75 g of streptomycin daily.

Pyridoxine (Vitamin B6) Supplementation

- **Adults:** 25 mg daily when on isoniazid to prevent peripheral neuropathy.
- **Children:** Not routinely required, unless:
  - Serum levels are low
  - Receiving high-dose INH (>10 mg/kg)