TREATMENT INFORMATION

The treatment of TB in children should be undertaken in consultation with a physician experienced in its management, especially for patients with CNS, miliary, or multidrug-resistant (MDR) TB and with HIV infection.

- Treatment of tuberculosis benefits both the community as a whole and the individual patient; thus, **all public health programs and private providers must not only prescribe an appropriate regimen but also ensure adherence until treatment completion.**
- All new and suspected cases of TB should be reported to your state and local health departments so that source case or contact investigations can be conducted and case management provided.
- Children with active TB are often found to be smear and culture negative when clinical specimens (e.g., sputum, gastric aspirates, etc.) are examined; *these children should be treated as having active disease not culture-negative TB*. In such instances, when an isolate from a pediatric case is not available, drug susceptibility results from the adult source case can be used to guide therapy.
- Pulmonary disease is treated for 6 months: the initial (2-month) phase employs 4 drugs (INH, RIF, PZA, and EMB) and the continuation (4-month) phase consists of INH and RIF. The fourth drug (EMB) is continued until drug susceptibility studies demonstrate that the isolate is susceptible to first-line agents. Initial treatment with INH, RIF, and PZA alone is adequate if a source case with pansensitive TB has been identified. Isolated hilar adenopathy can be treated with 6 months of INH and RIF alone when drug resistance is not a concern.
- Extrapulmonary disease is treated the same as pulmonary disease except for CNS or miliary TB which are treated for 9-12 months. After expert consultation, the 4th drug may be EMB, an aminoglycoside, or ethionamide. Steroids are indicated for CNS TB and can be considered for pericardial and pleural effusions, abdominal disease and severe miliary and endobronchial disease. For skeletal TB, orthopedic intervention and prolonged therapy may be indicated.
- Treatment for MDR-TB (resistance to at least INH and RIF) is individualized and prolonged. Multiple second-line drugs are required for treatment. In such cases, consultation with an expert in MDR-TB is strongly recommended.
- The clinical manifestations and radiographic appearance of TB disease in children with HIV tend to be similar to those in immunocompetent children, but manifestations in these children can be more severe and unusual and can include extrapulmonary involvement. Optimal therapy has not been established; therapy should include at least 4 first-line drugs (INH, RIF, PZA, EMB) initially, and be continued for at least 9 months.

NEW JERSEY
MEDICAL SCHOOL
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INSTITUTE

TB INFOLINE: 1-800-4TB-DOCS WEBSITE: www.umdnj.edu/globaltb

225 Warren St.
Newark, NJ 07101-1709
(973) 972-3270

Treatment of Tuberculosis: Standard Therapy for Active Disease in Children 2009

Based on the Official Joint Statement of the American Thoracic Society, Centers for Disease Control and Prevention, and Infectious Diseases Society of America, Morbidity & Mortality Weekly Report, 2003:52 (RR-11) and the American Academy of Pediatrics 2009 Red Book: Report of the Committee on Infectious Diseases. This card is not intended as a complete reference for treatment of TB in children.

ANTI-TB DRUGS: FIRST-LINE MEDICATIONS — STANDARD THERAPY FOR ACTIVE DISEASE IN CHILDREN

Regimen — Regimens should include 4 different first-line anti-tuberculosis medications for the initial treatment of tuberculosis (TB) in children and adolescents. All patients should be started on **INH, RIF, PZA, EMB** unless there are contraindications, or if there is evidence of resistance to any of the drugs in the patient or source case.

Administration and Monitoring — Directly Observed Therapy (DOT) is the international standard of care for all patients with TB disease particularly with intermittent regimens. All anti-TB medications should be given concurrently, as a single dose, in order to prevent development of resistant organisms, enhance adherence, and achieve optimum serum blood levels. Adjust weight-based dosages as weight changes. Liver function tests are only recommended for children with severe TB disease or history of liver disease. Monthly medical examination is standard for all cases to assess disease process and medication toxicities.

DRUG	Dosage Forms	Daily mg/kg [Max Dose]	Twice Weekly[a] mg/kg [Max Dose]	Adverse Reactions	Comments
Isoniazid[b]  **INH:** PO	Scored tablets 100 mg, 300 mg Syrup 10 mg/mL	10-15 [300 mg]	20-30 [900 mg]	Mild hepatic enzyme elevation, hepatitis, peripheral neuropathy, hypersensitivity; gastrointestinal disturbance with use of syrup	When treated with INH, breastfed infants, pregnant adolescents, and symptomatic HIV-infected or malnourished patients and patients on milk and/or meat-deficient diets, should receive pyridoxine (B6) supplementation.
Rifampin[b]  **RIF:** PO	Capsules 150 mg, 300 mg Syrup formulated capsules	10-20 [600 mg]	10-20 [600 mg]	Hepatitis, influenza-like symptoms, orange discoloration of bodily fluids	RIF decreases serum levels of many drugs. Significant interactions can occur when patients are treated with certain HIV medications. For adolescents,oral contraceptives may also be ineffective.[c] Rifabutin is an alternative for use with HIV medications; use in children, however, has been limited. Educate patients about normal discoloration of bodily fluids.
Pyrazinamide[b]  **PZA:** PO	Scored tablets 500 mg	20-40 [2 g]	50 [2 g]	Hepatitis, hyperuricemia	Little known information about safety of PZA use during pregnancy. In pregnancy, use INH+RIF+EMB for 9 months.
Ethambutol  **EMB:** PO	Tablets 100 mg, 400 mg	15-25 [2.5 g]	50 [2.5 g]	Optic neuritis, decreased red-green color discrimination, gastrointestinal disturbance, hypersensitivity	If drug resistance is a concern, EMB may be added to the initial regimen. Conduct baseline and monthly monitoring for visual acuity and red-green color discrimination tests; however, in young children, monitoring for visual acuity may not be possible. In such cases, weigh risk vs. benefit.

[a]All intermittent regimens must be directly observed. [b]Fixed-dose combinations of INH+RIF+PZA (Rifater) and INH+RIF (Rifamate) are preferred when DOT is not used. Dosing, however, needs to be weight based. [c]See MMWR 2003; 52(RR-11), p. 47.