
Recommendations

Treatment of Childhood Tuberculosis: Consensus Statement of IAP Working Group

In consonance with the decision of the Indian Academy of Pediatrics (IAP) to standardize protocols of diagnosis and management of common childhood diseases, a meeting of the IAP Working Group on the Treatment of Childhood Tuberculosis was held at Ahmedabad on January 7 and 8, 1997 (*Annexure*). After detailed deliberations on various issues concerning the treatment of childhood tuberculosis, the consensus outlined subsequently was arrived at. Recommendations were standardized to suit most of the clinical situations met with in routine practice and ensure ideal treatment. It is hoped that these recommendations will be implemented by the clinicians at all levels and will help to resolve the diversities and confusions hitherto prevailing in the treatment of childhood tuberculosis. However, special circumstances may merit deviations from the standard recommendations based on the individual clinician's judgement and p

Recommendations

Standard international abbreviations have been employed to denote the suggested drug regimens. The numbers preceding the drug abbreviations represent the recommended duration of therapy in months. The drug abbreviations are as follows: E-Ethambutol; H-Isoniazid/INH; R-Rifampicin; S-Streptomycin; and Z-Pyrazinamide.

In order to optimize treatment protocol, tuberculosis is classified into 5 groups based on clinical types. The suggested regimen for drug therapy in each of these groups is as follows:

Group 1 (Preventive Therapy) - 6 HR

Asymptomatic Mantoux positive < 3 years
Asymptomatic Mantoux positive < 5 years with Grades III or IV malnutrition
Mantoux +ve - Recent converter/no signs (Healed lesion - Normal chest X-ray or calcification/fibrosis)
Children < 3 years with H/O +ve contact*
Children < 5 years - Grades III or IV malnutrition with H/O +ve contact* *as defined later

Group 2 - 2 HRZ/4HR

Primary complex (Lungs)
Symptomatic Mantoux +ve < 3 years - without localization
Symptomatic Mantoux +ve < 5 years with Grades III or IV malnutrition - without localization
Isolated lymphadenitis
Pleural effusion

Group 3 - 2HRZE/4HR

Progressive pulmonary disease
Tubercular lymphadenitis - Multiple
(In case of non-resolution of lesion, extend continuation phase by 3 months)

Group 4 - 2 HRZE / 7 HR

Miliary/Disseminated disease
Cavitary disease/Bronchopneumonia
Osteoarticular disease
Abdominal, Pericardial, Genitourinary disease

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Group 5 - 2 HRZE /10 HRE

Neuro-tuberculosis

The dosage recommendations are summarized in *Table I*.

TABLE I-Recommended Doses.

Drug	Daily therapy (mg/kg)	Intermittent therapy (mg/kg)
Isoniazid	5+	15
Rifampicin	10	15
Pyrazinamide	25	30*
Ethambutol	20	30*
Streptomycin	20	30*
Prednisolone	1	

+ Never < 5 mg/kg; to be rounded of to the closest higher dose.

*No studies conducted in children.

Comments

All the drugs should be administered in a single daily dose on an empty stomach.

The drugs are safe if used in the recommended dosage schedule.

Vitamin B₆ is not necessary in children taking INH.

Hepatotoxicity may be seen in vulnerable patients, (malnutrition/disseminated disease)

Daily vs Intermittent Therapy

A daily treatment regimen is advised. Intermittent therapy regimen is not recommended as compliance is generally poor and there is an increased risk of drug resistance. However, it may be considered only if compliance is assured.

Single Drug or Fixed-Drug Combinations

Fixed-drug combination of Isoniazid and Rifampicin is acceptable. It is ideal to

use Pyrazinamide separately. Pharmacokinetic data regarding triple fixed dose combination in children is not adequate. Change in prescription from triple fixed dose combination to double fixed dose combination after first two months of treatment may be confusing to the patient.

Prednisolone

Indications:

- Neuro-tuberculosis
- Miliary tuberculosis
- Tuberculosis involving serous layers
- Endobronchial tuberculosis /Segmental lesions
- Genito-urinary tuberculosis/Sinus formation

Dose: 1-2 mg/kg/day for 4-8 weeks (neuro-tuberculosis 8-12 weeks)

Special Conditions

Pregnancy:

9 HRE (Streptomycin and Pyrazinamide are contraindicated)

In case of neuro-tuberculosis, PZA may be used - 2 HRZE / 7 HR

Baby Born to Mother with Tuberculosis (Diagnosed in 3rd Trimester or During Delivery)

Breastfeeding must be continued

BCG vaccine should be given at birth

If chest X-ray is normal, then 6 HR

If chest X-ray is abnormal, then 2 HRZ / 7HR

Congenital Tuberculosis: 2 HRZ / 7 HR

Hepatotoxicity

Clinical symptoms, hepatomegaly and jaundice merit laboratory tests and temporary stoppage of hepatotoxic drugs (H,R,Z). Routine monitoring of SGPT is not recommended.

Suggested Actions:

Stop Isoniazid, Rifampicin and Pyrazinamide.

Start Streptomycin and Ethambutol. When SGPT returns to near normal (usually 2-4 weeks), restart INH at 5 mg/kg. Continue Streptomycin and Ethambutol. Restart Rifampicin after 1 week. Stop Streptomycin and Ethambutol.

Restart pyrazinamide after 1 week (If stoppage occurred in intensive phase of therapy).

Defaulters

Defaulter - Treatment discontinued for > 1 week against medical advice.

Lost to treatment - Period of default > 1 month

Suggested Actions

Default period between one week to one month - continue the same phase of treatment for an additional one month.

If default period is > 1 month, restart full treatment.

Drug Resistance

If a patient on prescribed treatment does not respond, check drug compliance, confirm diagnosis and assess for probable adult contact with multidrug resistant tuberculosis. Arrange for bacteriological study, if possible.

A child with cavitary disease or history of past treatment for tuberculosis is vulnerable.

In case of suspected drug resistance in absence of bacteriological proof, the suggested drug regimen is **2 SHRZE /1 HRZE/ 6HRE.**

In case of proved drug resistance, the suggested drug regimen is summarized in *Table II.*

Relapse

Definition: Reappearance of signs and symptoms of tuberculous disease within 2 years of cure after completion of specified therapy.

Relapses are rare in children.

Suggested drug regimen: *Treat as suspected drug resistance in the absence of bacteriological proof.*

Contact

Definition: Any child who lives in a household with an adult taking anti-tubercular therapy or has taken anti-tubercular therapy in the past 2 years.

Indications of preventive therapy for contacts: < 3 yr/< 5 yr with Grades III and IV malnutrition/adolescents.

Close surveillance is necessary for 5-12 yr old contacts

Suggested preventive therapy for contacts: **6HR**

TABLE II—Suggested Drug Regimen for Proved Drug Resistance.

	Isoniazid	Rifampicin	Multidrug
HIV -ve	12 RZE	18-24 HZE	3 sensitive drugs for 2 yr after culture -ve
HIV +ve	18 RZE or 12 mo after culture -ve	18-24 HZE or 12 mo after culture -ve	3 sensitive drugs for 2 yr after culture -ve

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BCG Adenitis

If lymph node is small (< 1.5 cm), *no treatment is required.*

Increasing size or fluctuant - *Excision* or 3-6 H.

Sinus formation: *Excision*

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Annexure

Members participating in the meeting of IAP Working Group on Childhood Tuberculosis.

1. Dr. Y.K. Amdekar, Mumbai (Convener)
2. Dr. A. Balachandran, Chennai

3. Dr. Swati Y. Bhawe, Mumbai (General Secretary, IAP)
4. Dr. Kamlesh Chopra, New Delhi
5. Dr. T. Jacob John, Vellore
6. Dr. Lata Kumar, Chandigarh
7. Dr. M.R. Lokeshwar, Mumbai (President Elect, IAP)
8. Dr. M.K.C. Nair, Trivandrum
9. Dr. A.N. Pandit, Pune
10. Dr. H. Paramesh, Bangalore
11. Dr. A. Parthasarathy, Chennai (President, IAP)
12. Dr. Vimlesh Seth, New Delhi
13. Dr. R.C. Shah, Ahmedabad
14. Dr. N. Somu, Chennai
15. Dr. R.N. Srivastava, New Delhi (Immediate Past-President, IAP)
16. Dr. P.M. Udani, Mumbai