

Tricks of the Trade: Strategies for Pediatric TB Case Management

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Targeted Testing Recommendations

The American Academy of Pediatrics (AAP) recommends targeted TB testing only in high-risk groups:

- Contacts of person with infectious TB
- Recent immigrants from endemic regions of the world
- Those with recent travel to endemic regions of the world and/or significant contact with indigenous persons from these areas
- Incarcerated adolescents
- HIV-infected children or adolescents

What are Risk-Assessment Tools?

- Help decide which children are at risk for LTBI and TB disease
- TB testing using the Tuberculin Skin Testing (TST) or Interferon Gamma Release Assay (IGRA) can then be targeted at these at-risk children
 - The AAP indicates that some data support use of IGRAs in children as young as 3 years of age
 - Some experts will use an IGRA in children 2-4 years of age especially if they had BCG but have no significant risk factors
 - CDC recommends the use of IGRAs in all situations where the TST is indicated. IGRAs are preferred for all person ≥ 5 years of age who have received BCG. TST is the test preferred for children <5 years of age

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Starke, J.R. & Committee on Infectious Diseases. *Pediatrics* 2014; 134; e1773



What are Risk-Assessment Tools? (2)

- Risk of exposure to TB should be assessed at routine healthcare evaluations:
 - Use a risk assessment questionnaire
 - Only children with an increased risk of acquiring TB infection or disease should be considered for testing
 - It is important to check the child's immunization records for live vaccines. TST or IGRA should not be given until 4-6 weeks after a live vaccine. TST and IGRA can be done simultaneously with the live vaccine

Risk-Assessment Questionnaire

- Has a family member or contact had TB disease?
- Has a family member had a positive TB test?
- Was your child born in a high-risk country (i.e. outside US, Canada, Australia, New Zealand, or Western European countries)
- Has your child traveled to a high-risk country for >1 week with resident population?

Polling Question 1:

What additional question may you consider as part of a risk assessment?

Risk-Assessment Questionnaire

Depending on local epidemiology and priorities, other possible questions may include:

- Does your child spend time with anyone who has been in jail or a shelter, uses illegal drugs or has HIV?
- Has your child had raw milk or eaten unpasteurized cheese?
- Is there a household member who was born outside the U.S.?
- Is there a household member who has recently traveled outside the U.S.?

When to Use a Risk Assessment Questionnaire

- At first contact with child and every 6 months until age 2 years
- After age 2 years, ask risk assessment questions every year if possible
- Anytime the risk of TB is determined, a TST/IGRA should be performed

Transmission of *M. tuberculosis* to Children

- Children are usually infected by an adult or adolescent in the immediate household
- Casual extra-familial contact is much less often the source of infection
- Children rarely infect other children or adults:
 - Tubercle bacilli are relatively sparse in secretions
 - Children with pulmonary TB rarely cough
 - Cough, when present, lacks the force needed to aerosolize bacilli

Positive TST/IGRA in Children

Takes into account the following:

- Risk of infection (exposure)
- Risk of progression to disease
 - Immune status
 - Age (most concerned with those <4 years of age)

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Evaluation of the Child with a Positive TST/IGRA

Evaluation of all children with a positive TST/IGRA should include:

- A careful history
- Household source case investigation (for children 4 and under)
- Physical examination
- Chest radiographs (PA & lateral) for children 5 and over
 - (AP & lateral) for children 4 and under

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Managing Contacts

- Children <4 yrs, exposed to a person with active TB
 - Need a TB test and CXR to rule out active disease
 - Evaluation should be done within one week
- Treatment with INH or RIF is recommended even if TST/IGRA is negative
- If TST/IGRA is negative, retest in 8-10 weeks or when contact has been broken
 - If subsequent TST/IGRA is negative, discontinue INH
 - If 2nd TST/IGRA is positive, repeat CXR to rule out active disease
 - If 2nd TST/IGRA is positive, continue INH for a total of 9 months
- Infants under 3 months of age should not be retested until they are over 3 months old

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Polling Question 2:

Which regimen do you use in your setting for treatment of LTBI in children >8 years old?

Pediatric Treatment Regimens

- TB infection
 - INH for 9 months
 - RIF for 4 months
 - INH and Rifapentine for 12 weeks
- TB disease
 - 1st 2 months INH, RIF, PZA, EMB
 - Followed by an additional 4 months of INH and RIF
- Length of treatment can be longer depending upon the severity of disease and clinical response to treatment
- Medications need to be adjusted for weight and re-adjusted as child's weight changes

Medication Side-Effects

- In general, children tolerate TB medications well and adverse reactions are rare
- Patients and families should be educated about side effects of medications:
 - Orange or red-colored urine or tears, yellow skin or eyes, nausea, vomiting, abdominal pain, rash, dizziness, flu-like symptoms, easy bruising, joint pain or swelling, etc.
- Instruct parents to contact the TB clinic if these symptoms occur and when to stop medications for serious side effects or adverse drug reaction
- Public health staff providing DOT in the field can also question patients and report to the nurse or physician



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Growth Chart

Girls

2 to 20 years: Girls
Stature-for-age and Weight-for-age percentiles

This growth chart for girls plots stature (cm and inches) and weight (kg and lbs) against age (years) from 2 to 20. It features percentile curves for the 5th, 10th, 25th, 50th (median), 75th, 90th, and 95th percentiles. The chart includes a table for recording data and a 'myria' logo at the bottom.

Boys

Birth to 36 months: Boys
Length-for-age and Weight-for-age percentiles

This growth chart for boys plots length (cm and inches) and weight (kg and lbs) against age (months) from birth to 36 months. It features percentile curves for the 5th, 10th, 25th, 50th (median), 75th, 90th, and 95th percentiles. The chart includes a table for recording data and a 'CDC' logo at the bottom.

Medication Administration (1)

General tips for medication administration

- Administer the medication(s) at same time every day
- Start off on a positive note
- Avoid distractions
- Ignore behaviors that interfere with administration
- Assess problems and develop an intervention
 - Determine if intervention was successful and what adjustments are indicated in the process

Medication Administration (2)

General tips for administering medications to children unable to swallow pills or capsules

- Crush and mix with spoonful of food
- Sprinkle contents of capsule on food
- Use smallest amount of food possible
- Follow with plain food or liquid

Medication Administration (3)

General tips for administering medications to infants

- Dissolve medication in 1 teaspoon of warm water
- Mix with small amount of breast milk or formula
- Place in a nipple of bottle for administration
- An oral syringe can sometimes be beneficial
- Schedule at a time when the infant is hungry
- Rarely are more drastic measures needed such as an NG or gastrostomy tube
- It can take up to 2 weeks before a child takes medication without a struggle

Tools of the Trade





Assessing Adherence Barriers of Parents

Adherence can be influenced by:

- Parenting skills: Ability to take charge and encourage the child to take the medication
- Motivation: Understanding benefits of treatment, especially for window prophylaxis
- Personal health beliefs, stigma
- Other competing life circumstances
 - Work responsibilities
 - Financial stress
 - Housing status

Adherence



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Mother Administering Medication under Supervised DOT



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Polling Question 3:

If a child vomits after medications have been administered, what would you do?

Additional Factors that May Affect Adherence

Reactions to medication administration vary depending on:

- Length of medication regimen
- Relationships with caregiver or person administering the medication
 - Caregiver should administer the medication while the field worker observes
- Medication side effects
- Vomiting vs. spitting up – do not re-administer medication(s)
- Reactions of others – be positive and make it fun

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Age	Strategy
Infant 1 year	Educate parent about the importance of treatment Alleviate parents fears about medication side effects
Toddler 1-3 years	Use distraction Give simple explanations Use incentives for each dose if necessary Do not procrastinate
Preschooler 3-5 years	Give simple directions or explanations Allow child to have some choices - be consistent Offer verbal praise and rewards
School Age 5-12 years	Discuss treatment plan with child Provide simple and accurate information
Adolescent 12-18 years	Involve adolescent in decision-making Maintain confidentiality Provide rewards that are meaningful When indicated, provide peer support groups

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<h2>Patient Centered TB Care</h2> <ul style="list-style-type: none"> • Case manager, together with the patient and other healthcare providers, develops an individualized “case management plan” with interventions to address the identified needs • Patients should be involved in a meaningful way in making decisions concerning treatment and overall care <ul style="list-style-type: none"> – Helps to establish mutual trust and partnership in the patient-provider relationship – Empowers patients to become involved in TB (advocacy, social support, etc.) • Least restrictive public health interventions are used to achieve adherence, thereby balancing the rights of the patient and community 	

Family Centered TB Care

- **Dignity & Respect** - listening to patients and families - acknowledge their cultural background and incorporate into their care
- **Information Sharing** - communicate and share information so patients and families can participate in sound decision making
- **Participation** - patient and family support each other with their decisions made
- **Collaboration** - patient, family and health providers collaborate, develop a plan, implement and evaluate their plan of care

Team Work in Action



Even the Grinch is a team player!

Directly Observed Therapy

Directly observed therapy (DOT) involves a healthcare or outreach worker watching as a patient swallows their anti-tuberculosis medications

Polling Question 4:

Where can DOT be done?

Directly Observed Therapy (2)

DOT can be provided almost anywhere...

- Home or home of babysitter
- Daycare
- School
- Health department
- Workplace
- In a car
- Video DOT

Directly Observed Therapy (3)

Can be supervised by:

- Physician
- Health Department Nurse
- Trained Outreach Worker
- School Nurse

Should **not** be supervised by:

- Parents or other close family member

Negotiating a Plan for DOT

- Establish plan for DOT while patient is in the hospital or at first out-patient visit
- Plan should be discussed with child and family
- Plan can be renegotiated if non-adherence occurs
- Establish and maintain a good rapport with the family and child

DOT in the School Setting: Some Basics

- Obtain parental consent
- Maintain confidentiality
- Use DOT log and monitor adherence rates
- Ensure good communication between school and physician
- Get DOT report weekly
- Obtain school calendar to ensure DOT can be done in the home during school closing
- Field worker can arrange to do the DOT at the school if everyone consents

DOT in the School: Variables Affecting Adherence

- School nurse may be covering more than one school
- Lack of back-up or coverage
- Inflexible school schedule
- Poor communication between nurse and attendance office

GTBI Tuberculosis Handbook for School Nurses 2015

MDR-TB



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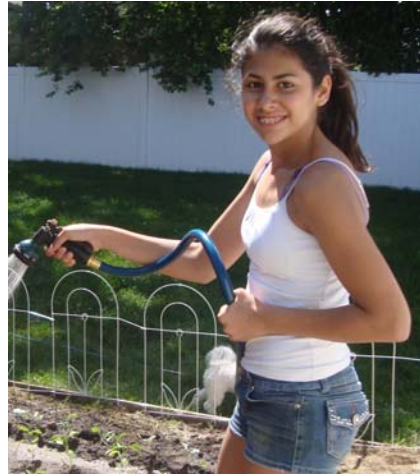
Infusion Therapy



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Treatment Completion



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