

Tricks of the Trade: Strategies for Medication Administration in Children

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Polling Question 1:

**Which of the following best describes your
experience with pediatric TB?**

A) I am currently managing care for a child or
adolescent with active TB or TB infection

B) I have never managed TB care for a child or
adolescent

C) I have some experience managing care for a child
or adolescent with active TB and/or TB infection

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Type in the Chat Box:

- **Which regimen do you use in your setting for treatment of TB infection in children?**

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Window Prophylaxis Strategies

- Explain to parents about the use of medication will prevent the growth of TB germ if present.
- Explain why in young children they may not initially respond to the TB testing due to immaturity of their immune system.
- Medication is safe, easy to administer, and will protect their child from TB disease.
- Answer questions with simple explanations so that they can understand the purpose of their treatment.
- Stress that when the second TB test is done, if it is negative the medication will be stopped.

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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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Case Presentation

- 2-year-old female
- Identified as a contact to her father
- The parents are separated, and the mother states that her three children rarely see their father
- Father is being treated for pulmonary TB
 - He has a cavitory lesion on CXR and history of a cough

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History

- Father is non-US-born from a high-risk country
- The child is US born
- Non-US-born link to a country where TB is endemic
 - Risk factor for TB exposure
- We were unable to gather information about any history of TB testing of the father when he came to the US
 - This can be a very important piece of information relating to missed opportunities to identify and treat new immigrants for TB infection

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Initial Evaluation of Child

- Medical History:
 - Born full term, NSVD
 - No newborn problems
 - No history of hospitalizations or serious illness
- Review of systems: Negative
 - No signs or symptoms of TB
 - Physical exam all within normal limits
 - Growth and development appropriate for age
- Chest x-ray negative for TB
 - Tuberculin skin test 0 mm

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2021 Redbook Recommendations

- All contacts < 5 years are treated for presumptive TB infection
 - Treatment for TB infection should be initiated even if initial TST or IGRA result is negative, once TB disease is excluded
- Infected children can have a negative TST or IGRA result because a cellular immune response has not yet developed
- Child was treated with INH 150mg (10mg per kg) by mouth daily until a second TB test was done

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Ongoing Evaluation

- TB testing should be repeated 8-10 weeks post contact with the index patient or 8-10 weeks post infectiousness of the index patient
- Repeat TST result was 20 mm
 - Child had developed a cough, but no fever or other ill symptoms
- CXR revealed left upper lobe airspace disease
- Treatment was initiated by DOT with:
 - INH 150mg-10mg per kg
 - Rifampin 300 mg-20mg per kg
 - PZA 500mg-30mg per kg rounded to nearest 100

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Following Sensitivity Patterns

- Ethambutol was not needed because the isolate from the index patient was pansensitive
- It is important to follow the sensitivity pattern of the index patient so that effective treatment can be given

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Evaluation of Siblings

- Of note, the two older siblings were found to have TB infection after repeat testing and were treated appropriately with RIF for 4 months
- All treatment was by DOT for patient and siblings with TB infection
 - Follow-up testing is a vital part of evaluation
- Siblings had TB infection and youngest child developed disease
- Remember that the mother stated the children had very little contact with their father

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Completion of Treatment

- The child with TB disease was treated for 6 months with excellent adherence
- The LUL airspace lesion was resolved. And there were no adverse effects from treatment
- The child was discharged from care

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Blood Drawing Tips

- IT'S ALL IN HOW THE CHILD IS HELD! CRITICAL TO SUCCESS
- Secure the elbow, so the arm does not twist. Keep the arm in proper alignment.
- This is usually a two-person task – one to hold, the other to draw the blood
- A warm, wet compress may help to locate a vein. Examine both arms for a vein.
- Ensure that the child is well hydrated before drawing. It makes it easier to find the vein and draw the blood.
- Request the parent to hold the child on the lap with the child's legs between the parent.
- Look before you stick - staff not proficient should not attempt this. After 3 attempts you should reschedule.
- Use a 23-gauge butterfly needle, bevel up, and approach the vein at a 45-degree angle.
- Do not hold the arm too tight, because this will prevent the blood from flowing freely.
- Remove the tourniquet as soon as the specimen is obtained.
- Use distractions such as music or soothing speech.

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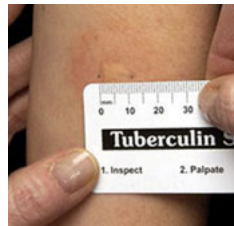
Tips for Administering TST

- Have a syringe prepared just before parent and child enter the room
- Have the parent hold the child, and, if needed, enlist the help of a coworker
- Insert a 27-gauge needle, bevel up, with 0.1mL (5 tuberculin units of PPD) intradermally into the volar surface of the right forearm.
- Creation of a palpable wheal 6 to 10mm in diameter is necessary for accurate testing
- Administration and reading of the TST should be done by experienced health care workers
- The test should be read in 48 to 72 hours. Measurement should be done with use of a ruler transversely to the long axis of the arm
- Measure only induration not erythema
- Positive results after 72 hours can be documented, but a 0 mm reaction after the 72-hour period cannot be recorded. In this scenario, the test must be repeated.
- Do not place any band aid on the testing site.

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Tips for Administering Mantoux TST



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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

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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

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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

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Tools of the Trade



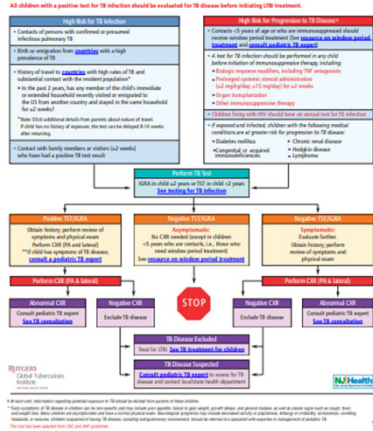
GTBI What Parents Need to Know about Tuberculosis Infection in Children
<http://globaltb.njms.rutgers.edu/downloads/products/tbpedsbrochure.pdf>

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Pediatric Risk Assessment Tool

Pediatric Tuberculosis (TB) Risk Assessment Tool

For diagnosis and appropriate treatment of disease, sputum tuberculosis infection (STB) remains readily and normally, being children with TB are at significant risk of progression to severe forms of TB disease. Infection is likely to be recent in children and adolescents and recent primary infection poses the greatest risk of progression. Contact a pediatric TB expert for evaluation of children who have symptoms of TB (e.g., cough, fever, night sweats, loss of appetite, weight loss, fatigue, failure to thrive, or an abnormal chest X-ray).



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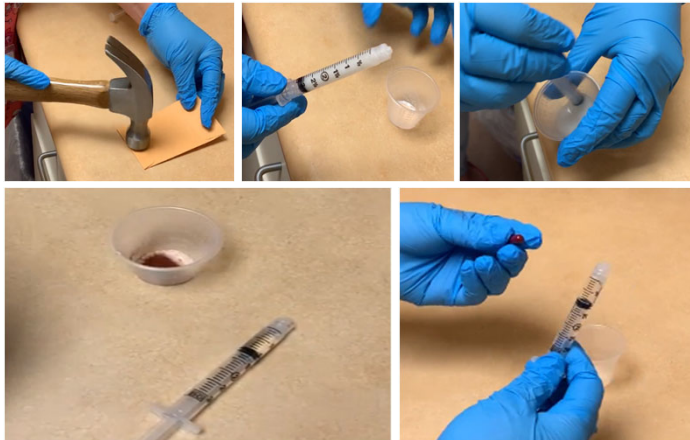
Pediatric Tuberculosis (TB) Risk Assessment



Please select **Yes** or **No** for each of the following questions to assist your child's pediatrician:

Does your child have any symptoms of TB (cough, fever, night sweats, loss of appetite, weight loss, less playful or energetic, slowing signs of being more tired than usual)?	<input type="radio"/> Yes	<input type="radio"/> No
Has your child spent time with anyone sick with TB?	<input type="radio"/> Yes	<input type="radio"/> No
In the last 12 months, has your child lived with or spent significant time with anyone with a long-lasting cough?	<input type="radio"/> Yes	<input type="radio"/> No
Has your child had a chest X-ray in the past year?	<input type="radio"/> Yes	<input type="radio"/> No
TB is more common in countries in Asia, the Middle East, Africa, Latin America, Eastern Europe and the former Soviet Union		
Were you or your child born in a country that is in an area listed above?	<input type="radio"/> Yes	<input type="radio"/> No
In the past 2 years, have you or your child traveled to a country that is in an area listed above? If yes, did you or child spend most of the time with family and friends or other people in the community?	<input type="radio"/> Yes	<input type="radio"/> No
In the past 2 years, have you had visitors from outside of the U.S. visit your home for at least 14 days? If yes, please write which country they visited from: _____	<input type="radio"/> Yes	<input type="radio"/> No
Does your child have HIV infection?	<input type="radio"/> Yes	<input type="radio"/> No
Does your child have diabetes?	<input type="radio"/> Yes	<input type="radio"/> No
Does your child have a serious kidney disease?	<input type="radio"/> Yes	<input type="radio"/> No
Has your child been diagnosed with a weakened immune system? If yes, is your child taking medication for this?	<input type="radio"/> Yes	<input type="radio"/> No
Is your child taking medication for nephrotic syndrome (a kidney disorder), rheumatoid arthritis, Crohn's disease, or similar conditions?	<input type="radio"/> Yes	<input type="radio"/> No
Is your child currently taking steroids, or have they ever taken steroids for 2 weeks or more?	<input type="radio"/> Yes	<input type="radio"/> No
Has your child had an organ transplant?	<input type="radio"/> Yes	<input type="radio"/> No

Demonstration



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Video on Administering Medicine - 1



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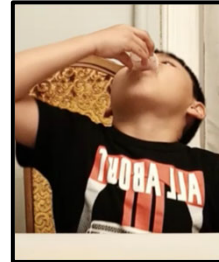
Video on Administering Medicine - 2



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Demonstration (2)



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Adherence



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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

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Tips to Ensure Adherence

- Assure parents that the medication is safe and has been used worldwide for many years
- Be concise, and keep the explanation simple
- Keep in touch with parents by phone or video to assess how the parent is managing administering the medication
- On the first encounter, demonstrate how to prepare and administer medication. A picture is worth a thousand words
- Developing a trusting relationship with a parent is critical to success

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Mother Administering Medication under Supervised DOT



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Polling Question 2:

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

A

Readminister immediately

B

Wait for a half-hour and readminister

C

Do not readminister medication

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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/nurse 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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Patient-Centered TB Care

- 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
 - 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

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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

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Team Work in Action



Even the Grinch is a team player!



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Directly Observed Therapy

DOT can be provided almost anywhere...

- Home or home of babysitter/other care giver
- Daycare
- School
- Health department
- Workplace
- In a car
- **Video DOT** – In process of verifying HIPAA compliance

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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

GTBI Tuberculosis Handbook for School Nurses 2015

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**Thank you for your attention
and participation!**

Questions?

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