Case Study #3
Pediatric Tuberculosis

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Case Study

A four-year-old boy was taken for a routine well-child check up by his mother in preparation for him to start school in the fall.

The child lives in a remote area of New Mexico with his mother, father, and several extended family members.

During the well-child visit, the pediatrician performed a pediatric TB risk assessment utilizing the questions in the following table.

Questions for Determining Risk of TB Infection in Children in the United States

- Has a family member or contact had tuberculosis disease?
- Has a family member had a positive TST or IGRA result?
- Was your child born in a high-risk country (countries other than the United States, Canada, Australia, New Zealand, or Western and North European countries)?
- Has your child traveled to a high-risk country? If so, how much contact did your child have with the resident population?

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The child's mother answered "no" to all the questions and stated that her husband's brother used to visit frequently and now lives with them.

She also stated that he is a heavy smoker, has a terrible cough, recalls him mentioning something about TB, and that he was treated for "walking pneumonia" recently.

- **Based on the TB Pediatric risk assessment tool should the pediatrician perform a TB test?**

a. Yes

b. No

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The pediatrician explains to the mother that there are two types of tests that can be utilized to detect *Mycobacterium tuberculosis (M. tuberculosis)*; the Mantoux TB Skin Test (TST) and the Interferon Gamma Release Assay (IGRA) blood test.

- **Which is the best TB test to utilize for a 4-year-old child?**

a. IGRA

b. Mantoux TST

c. Either TST or IGRA can be used

d. No TB test is indicated at this time

Case Study

The mother preferred for a TB skin test to be placed so the pediatrician alerted the public health department who placed a TB skin test on the child. Arrangements were made for the public health nurse (PHN) to do a home visit to read the TST within 48-72 hours.

In preparation for the home visit, the PHN took some sputum containers to collect sputum on the child's uncle since he has a prolonged cough and history of pneumonia.

During the home visit the PHN read the child's TST as positive at 11 mm induration.

- **What is the next step for the PHN to take?**

A. Have the child's mother schedule a follow-up appointment with his primary care pediatrician who ordered he TST.

B. Review the signs and symptoms of active TB with the child's mother and only do a CXR if he develops a cough.

C. Assist the child's mother with making arrangements to have a CXR done later that day.

D. No follow-up is needed.

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The child's mother promptly takes him for a CXR; it revealed a finding of hilar lymphadenopathy. The pediatrician diagnosed the child with TB disease.

- **Is the child considered infectious? Why or Why not?**

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During a follow-up home visit, the PHN played a “coughing game” with the child outside and was able to collect a sputum specimen to send to the TB lab for acid-fast bacilli (AFB) smear, culture, Nucleic Acid Amplification Test (NAAT), and drug-susceptibility testing (DST).

The state TB laboratory notified the health department that the child’s uncle is 4+ sputum smear positive, NAAT positive and the culture is pending. However, the child’s sputum specimen is smear and NAAT negative. The child was initiated on TB treatment with two months of rifampin (RIF), isoniazid (INH), pyrazinamide (PZA) and ethambutol (EMB) daily by directly observed therapy (DOT) to be followed by four months of INH and RIF.

The health department works with the child’s family to find alternate housing for the uncle since he is very infectious. The mother tells the PHN that she prefers to give her son his daily TB medications rather than her drive out every day to their home.

What is the PHN’s response to the mother’s request?

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The PHN provides the child his TB medications daily by DOT, in his home. Upon arrival, the PHN crushed the INH, PZA, and EMB and opened the RIF capsule. The child was fussy about taking all the TB medications.

- **What should the PHN do to aid in the administration of the medicine?**

a. Mix the TB medications with jelly, applesauce, peanut butter, or marshmallow cream

b. Provide the child with a prize like stickers or toys.

c. A and B

d. Try to administer the medications the next visit

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- The PHN provided a variety of tasty treats to mix with the medications and also provided small prizes to the child when he took the medications each day.