# Learn simply

## Tuberculosis

Passion profession same

**Screening for tuberculosis (TB)**

- Be aware of risk factors for TB[2]
- Take a history and perform a physical examination[3]
- Understand the risks to the fetus[4]

Perform a tuberculin skin test[5]

**Negative**

- Consider other diagnoses[6]
- Confirm gestational age
- Document fetal wellbeing

Continue routine prenatal care (no chest x-ray or antibiotic prophylaxis is needed)

**Positive**[7,8]

Perform a chest x-ray[9]

**Normal**

- **Recommend antibiotic prophylaxis**[10]
- Counsel about risk factors, including HIV infection and screening
- Confirm gestational age
- Document fetal wellbeing

Continue routine prenatal care

**Abnormal**

**Morning sputum specimens to exclude active TB**[11]

Active TB excluded

Active TB confirmed

**Treat immediately**[12]

1. Tuberculosis (TB) refers to infection with the organism, Myobacterium tuberculosis.
2. Most cases of TB in immunocompetent adults involve the lungs, but it can affect any organ system. Although it is now rare in developed countries, TB remains one of the leading causes of morbidity and mortality worldwide.
3. Risk factors for TB include:
   (i) a prior history of TB;
   (ii) a history of a positive tuberculin skin test;
   (iii) new immigrants (<5 years) from countries with a high prevalence of TB;
   (iv) travel to a high-prevalence area;
   (v) HIV infection; and
   (vi) a history of homelessness or incarceration.
4. Pregnancy itself does not predispose to infection with TB, although it may be associated with a higher rate of reactivation in women previously infected with TB.
5. A history should include questions about risk factors for TB (above).
6. Symptoms may be non-specific, including fever, weight loss, malaise, and sweats (especially drenching "night sweats").
7. In pulmonary TB, additional symptoms may include cough, hemoptysis (coughing blood), and shortness of breath.
8. In extra-pulmonary TB, symptoms may include local swelling or pain, a chronically-draining lesion, headache, or confusion. However, most infected women are symptomatic. Physical findings may include focal rales on pulmonary examination, evidence of pleural effusion, or a focal mass or lymphadenopathy.

1. Congenital disease resulting from transplacental transmission of TB is rare and occurs almost exclusively when the placenta is actively infected, which is seen more commonly with maternal extra-pulmonary disease.
2. As such, pulmonary TB alone poses little risk to the fetus. The greatest risk in women with pulmonary TB is transmission to the infant shortly after birth. Thus, the potential infectiousness of the mother should be resolved prior to delivery.
3. All pregnant women at risk should be screened for exposure to TB. Exceptions include:
4. (i) low-risk women who have already had such testing within the preceding year; and (ii) asymptomatic women who have previously had a positive tuberculin test and who have completed a full course of antibiotic prophylaxis.
5. Pregnancy itself does not alter the response to the tuberculin skin test. Such testing involves intradermal (not subcutaneous) injection of purified protein derivative (PPD), also called the tuberculin skin testing (TST), which measures the extent of induration (skin thickening, not redness) at the injection site 72 hours later.
6. If the patient has pulmonary symptoms, consider other diagnoses such as pneumonia (coccidioidomycosis), asthma, and pulmonary embolism.

1. Interpretation of the PPD test depends on the risk status of the patient: (i) in very high-risk women (HIV positive, abnormal chest x-ray, recent contact with an active case of TB), use ≥5 mm induration as positive; (ii) in high-risk women (foreign-born, IV drug use, medical conditions or immunosuppressant medications increasing the risk of TB), use ≥10 mm induration as positive; (iii) in low-risk women (no risk factors), use ≥15 mm induration as positive.
2. A positive PPD test implies that a woman has been exposed to M. tuberculosis, it does not mean that she has TB infection. The QuantiFERON®-TB Gold In-Tube test (QFT-GIT) and the T-SPOT®.TB test (T-Spot) are the two FDA-approved interferon gamma release assays (IGRAs) that have emerged as an alternate testing strategy for patients who have previously received a BCG vaccination, or are unlikely to return for their follow-up reading of their TST. It is not generally recommended or necessary to get a TST and IGRA.
3. The Bacillus Calmette-Guérin (BCG) vaccination is commonly used in developing countries. It does not prevent pulmonary TB, but does prevent complications such as TB meningitis. To maintain its efficacy, BCG should be boosted every 5 years. If >5 years has passed, a positive PPD cannot be attributed to BCG.

1. Chest x-ray is not a good screening tool for TB infection in low-risk populations, but is useful in PPD-positive and symptomatic patients. A normal chest x-ray is reassuring.
2. However, an abnormal x-ray cannot accurately distinguish between old and active disease. Women may be reluctant to have a chest x-ray in pregnancy. While it does expose the fetus to ionizing radiation, the amount is so small (<1 mRad) as to be non-significant.
3. ACOG has stated that up to 5 Rad (5,000 mRad) is completely safe in pregnancy. Waiting until after 12 weeks and appropriate shielding of the abdomen are reasonable recommendations. If a woman declines a chest x-ray in pregnancy, she should be separated from her baby immediately after birth until active TB infection can be excluded.
4. Women who are PPD-positive with a normal chest x-ray require antibiotic prophylaxis.
5. The recommended regimen is isoniazid (INH) 300 mg/day with pyridoxine (to decrease the incidence of INH neurotoxicity) for 9 months.
6. Prophylaxis can be deferred in women over the age of 35. Although INH crosses the placenta, there is no increased toxicity to the fetus. As such, INH can be started in pregnancy. Indeed, if the patient is very high-risk (see above), INH should be started immediately.
7. Alternatively, it can be deferred until 6 weeks' postpartum; it is not recommended to start INH prophylaxis in the immediate postpartum period because of the increased risk of hepatic toxicity. Breastfeeding is not contraindicated.

1. An abnormal x-ray cannot accurately distinguish between old infection (scarring) and active disease. As such, active pulmonary TB disease must be excluded in all asymptomatic patients who are PPD-positive with an abnormal chest x-ray. This is done by sputum examination for M. tuberculosis. Three negative early morning sputum specimens effectively exclude the diagnosis of active disease. While the sputum is being evaluated, patients should be started on treatment with INH and ethambutol, and, if in hospital, should be maintained on contact precautions and in a laminar flow room.
2. If sputum examination confirms active TB, the benefits of treatment in pregnancy dramatically outweigh any potential drug toxicity. Pregnancy does not affect the response to medications, but standard regimens should be modified (e.g., streptomycin is not used because of possible ototoxicity in the fetus). Pregnant women should be treated with a combination of INH, rifampin, and ethambutol for 9 months. Pyrazinamide should be added if drug-resistant TB is suspected.