



Public Health
England

Protecting and improving the nation's health

Pregnancy and tuberculosis (TB)

Information for clinicians



When to suspect tuberculosis (TB)?

Who is at risk of TB during pregnancy?

Recent research suggests that new mothers are at an increased risk of TB – including when they are pregnant.

The risk of TB in pregnancy is related to whether the mother is likely to have been exposed to TB and become infected with it. Women who have lived in parts of the world where TB is endemic, those who have been in prolonged close contact with a case of active TB disease or women who are immunosuppressed with, for example, HIV infection or by drug treatments are at particular risk.

What are the symptoms of TB during pregnancy?

Symptoms of active TB in pregnant women can be non-specific and may mimic the physiological changes that occur during pregnancy, for example increased respiratory rate, loss of appetite and fatigue.

Pulmonary TB is common. This presents with symptoms similar to those in non-pregnant women such as cough, fever and weight loss. TB can affect any organ and extra pulmonary disease such as lymph node swelling is frequently seen.

Outcome

How does pregnancy affect TB?

Pregnancy has no adverse impact on TB treatment outcome provided there is no delay in diagnosis, but the risk of late diagnosis is elevated because pregnancy can mask symptoms. If anti-TB treatment is started early in pregnancy, the outcome is the same as for non-pregnant women.

How does maternal TB affect the foetus and neonate?

The chance of the baby being infected with TB whilst in the womb is very small. Good outcomes for the baby can be achieved with early diagnosis and appropriate treatment. Substantial increased neonatal morbidity and mortality has been reported as a result of late diagnosis and treatment, and prematurity, growth retardation and low birth weight are seen, particularly in women with pulmonary TB disease. A mother with untreated pulmonary TB can infect her newborn baby.

How does maternal TB affect the mother?

Maternal outcome depends on the site of TB and the timing of the diagnosis in relation to delivery. Late diagnosis is associated with increased morbidity in pulmonary and extra-pulmonary TB. Increased obstetric morbidity and preterm labour are well documented complications.

Diagnosis

What tests should be performed in pregnant women suspected of TB?

Sputum microscopic examination and culture should be performed when a mother has respiratory symptoms suggestive of pulmonary TB. Women suspected of extra-pulmonary TB should be investigated in consultation with the local TB specialists.

Depending on the initial investigation (eg symptoms suggestive of TB or a positive tuberculin skin test (Mantoux) and interferon-gamma tests – IGRA), a plain chest X-ray with abdominal shielding should be carried out. Active TB should be excluded and an X-ray can be performed, if indicated, as it delivers a very small dose of radiation to the foetus.

Is assessment for TB recommended in all pregnant women?

Any pregnant woman suspected of active TB or those from a high risk group of TB should be thoroughly assessed in a standard manner, being aware of the possibility of non-specific TB presentations.

Apart from those women who have symptoms that suggest active TB, investigation should be considered for pregnant women who (a) have had recent exposure such as household or occupational close or social contact or (b) are immunosuppressed eg HIV positive.

Recommended tests include assessment of BCG status followed by tuberculin skin testing and/or other TB-specific immune-based (interferon-gamma release assay, IGRA) blood tests and chest X-ray where necessary. Further advice can be obtained from your local TB service.

If the skin test is negative should the mother be given BCG?

BCG is a live vaccine and is contraindicated in pregnancy. BCG is only provided to adults in specific occupational risk groups and to tuberculin-negative contacts of infectious TB, however restricted to those under the age of 16 (see Green Book). If eligible the BCG vaccination could be given after pregnancy, up to 3 months following a negative tuberculin test.

Treatment

Why is TB treatment important during pregnancy?

Taking the full course of prescribed anti-TB treatment will cure TB and prevent its spread to others including children in the home or a new born child. Untreated TB represents a far greater hazard to a pregnant woman and her foetus than does the medication to treat her disease.

Can TB drugs be safely used during pregnancy? What is the recommended treatment for TB?

The treatment for pregnant women is the same as for non-pregnant women and is usually organised by the TB team. The recommended standard treatment is a combination of 4 drugs: Isoniazid, Rifampicin, Pyrazinamide and Ethambutol and is usually for a total time of 6 months. The 6 months of treatment includes 2 months of the initial phase where 4 antibiotics and pyridoxine are prescribed. The last 4 months of treatment are known as the continuation phase whereby the treatment is reduced to 2 main antibiotics (rifampicin and Isoniazid) and pyridoxine

Although anti-TB drugs can cross the placenta and reach the baby, no adverse effects of these drugs on the foetus have been shown. Streptomycin should be avoided in pregnancy because it can damage the fetal VIII cranial nerve (responsible for hearing and balance).

What are tuberculin skin / blood testing for TB? Are they harmful for the mother or baby?

The 2 tests recommended in the UK for detecting TB are tuberculin skin test (TST), otherwise known as the Mantoux test and the blood test known as interferon gamma release assay (IGRA).

Skin test: For the TST, a standard dose of purified protein derivative (PPD) tuberculin is injected intra-dermally to measure delayed type hypersensitivity by assessing for induration 48-72 hours later. As PPD is not an infectious agent there is no risk of infection transmission to the mother or baby. Pregnancy does not alter the results or interpretation of TST.

Blood test: IGRA is a blood test that detects the presence of a cytokine called interferon gamma, produced following stimulation with synthetic TB-specific antigens. IGRA tests have been developed using antigens found in strains of *M. tuberculosis* which are absent from the BCG vaccine-strain of *M. bovis*. IGRA tests are therefore not influenced by previous BCG vaccination, whereas TST can be falsely positive in BCG vaccinated persons.

Both TST and IGRA blood tests are considered safe to use throughout pregnancy.

Current guidance is to use the better-understood TST (Mantoux) before proceeding to the blood test if required.

If the mother's TST and / or interferon-gamma blood test are positive but there are no symptoms what should be done?

Pregnant women with latent TB infection (ie those without symptoms and have normal chest X-ray but with positive PPD skin test and / or interferon gamma blood test) should be treated with TB prophylaxis if they are HIV positive, or are at high risk of having acquired the TB infection recently (eg contacts of known TB cases). This preventative treatment for LTBI is usually a single anti-TB drug (isoniazid) or rifampicin or combination of isoniazid and rifampicin, (Rifinah). Supplemental Pyridoxine (vitamin B6) should be considered. Isoniazid and rifampicin are generally safe for the baby and the mother. Very rarely these drugs can affect the liver; this is more common in the third trimester.

Is breastfeeding ok if the mother is being treated for TB?

Breastfeeding should always be encouraged for women being treated with first-line anti-TB drugs because the concentrations of these drugs in breast milk are too small to produce toxicity in the nursing newborn. Although drugs in breast milk are not an effective treatment for TB disease in a nursing infant, breastfeeding in combination with TB treatment could have some protective effect to the neonate. Breastfeeding women taking isoniazid should also take pyridoxine (vitamin B6) supplementation (10-25 mg per day).

Mother and newborn

Is the mother an infectious risk to the newborn baby?

Only women with TB of the lungs and larynx are potentially infectious. The presence of visible organisms in the sputum sample when viewed under the microscope (sputum smear positivity) suggests a greater infection risk. Patients with pulmonary TB are usually non-infectious after 2 weeks of treatment if this includes rifampicin and isoniazid.

Do newborn infants need to be separated from their mother if the mother has TB?

This is a rare situation and only occurs when, after careful risk assessment, there is felt to be a significant risk of transmission to the newborn which cannot be otherwise managed. It is only likely to be an issue for mothers with resistant types of TB or those diagnosed very close to the date of delivery.

What happens if the mother has had less than 2 weeks of treatment following confirmation of TB?

Infants who have been exposed to a mother with infectious TB (sputum smear positive) should be treated prophylactically to prevent progression to active disease. Contact tracing among the rest of the family and other close contacts must also be performed. This is to ensure that others are not infected with TB.

If the 3 months TST is negative and a subsequent TST and IGRA test are also negative, treatment can be stopped and BCG should be provided.

Is BCG vaccination effective in young infants?

BCG is effective at preventing severe disease in infants and young children. In the UK it is estimated to be between 70 – 80% effective at reducing the chance of a child developing severe TB disease (eg miliary or meningeal TB, as well as pulmonary TB).

For more information please go to the following websites:

- PHE website: <https://www.gov.uk/government/collections/tuberculosis-and-other-mycobacterial-diseases-diagnosis-screening-management-and-data>
- Royal College of Obstetricians and Gynecologists: <https://www.rcog.org.uk/en/about-us/>
- Tuberculosis – NICE Guidance: <https://www.nice.org.uk/guidance/ng33>
- Immunisation against infectious disease - 'The Green Book' - 2006 updated edition, Department of Health: <https://www.gov.uk/government/publications/tuberculosis-the-green-book-chapter-32>
- NHS: <https://www.nhs.uk/conditions/tuberculosis-tb/>

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