TB in pregnancy

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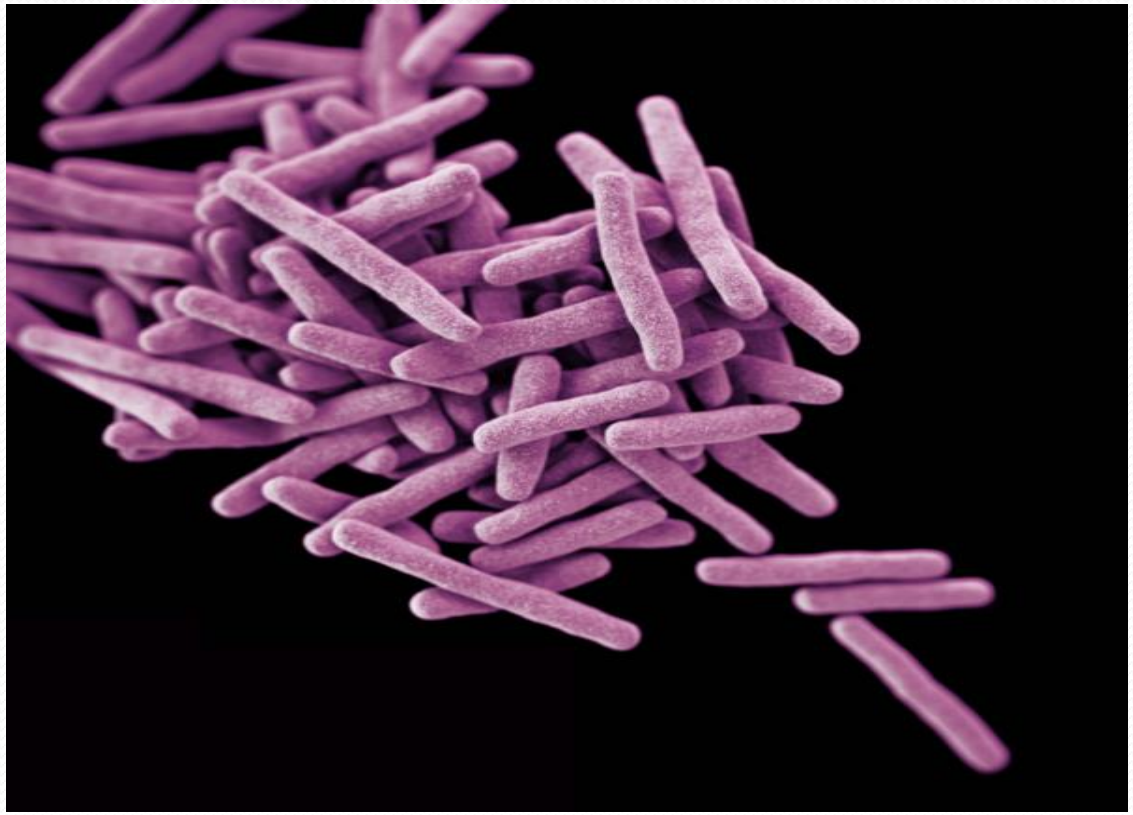
Outline

1. Definition and Epidemiology of tuberculosis
2. Risk factors and Clinical features of tuberculosis
3. Effects of pregnancy on tuberculosis and effect of tuberculosis in pregnancy
4. Screening, diagnosis & Management of tuberculosis in pregnancy and post partum period
5. TB and the newborn
6. Family Planning for TB patients

Definition and epidemiology of tuberculosis

- Tuberculosis (TB) is a chronic infectious disease caused by Mycobacterium tuberculosis, an acid fast rod shaped bacillus.



- Although TB is found in most parts of the world, over 90% of new TB cases and deaths occur in developing countries.
- In some parts of Asia and Africa, 0.5-1% of the adult population is sputum positive for TB.
- TB is one of the leading infectious causes of morbidity and mortality among women of reproductive age.

- Kenya ranks 13 th on the list of 22 high-burden tuberculosis (TB) countries in the world and has the fifth highest burden in Africa.
- According to the World Health Organization's (WHO's) Global TB Report 2010, Kenya had approximately 132,000 new TB cases and an incidence rate of 142 new sputum smear-positive (SS+) cases per 100,000 population.
- In the last decade TB case notification in Kenya has been increasing at an average of 7% annually.

- Tuberculosis remains a major cause of morbidity and mortality in Kenya.
- It affects all age groups, but has its greatest toll in the most productive age group of 15 to 44 years.
- The major factor responsible for the large TB disease burden in Kenya is the concurrent HIV epidemic. HIV+ persons have 10% annual risk and 50% lifetime risk of developing TB disease.
- TB is the leading cause of mortality in PLHIV. It is important to note that HIV is prevalent in pregnant populations and this puts mothers at increased risk of contracting TB.
- Hence pregnancy, labor and the postpartum period provides a unique opportunity for TB screening and management.

Factors leading to the increase in TB Cases

- HIV pandemic
- Poverty
- Overcrowding
- Poor nutrition
- Limited access to health services

- Chronic diseases (diabetes, carcinoma, silicosis etc)
- Immune suppressing therapy
- Males are usually more susceptible than females, as are persons at the extremes of age.

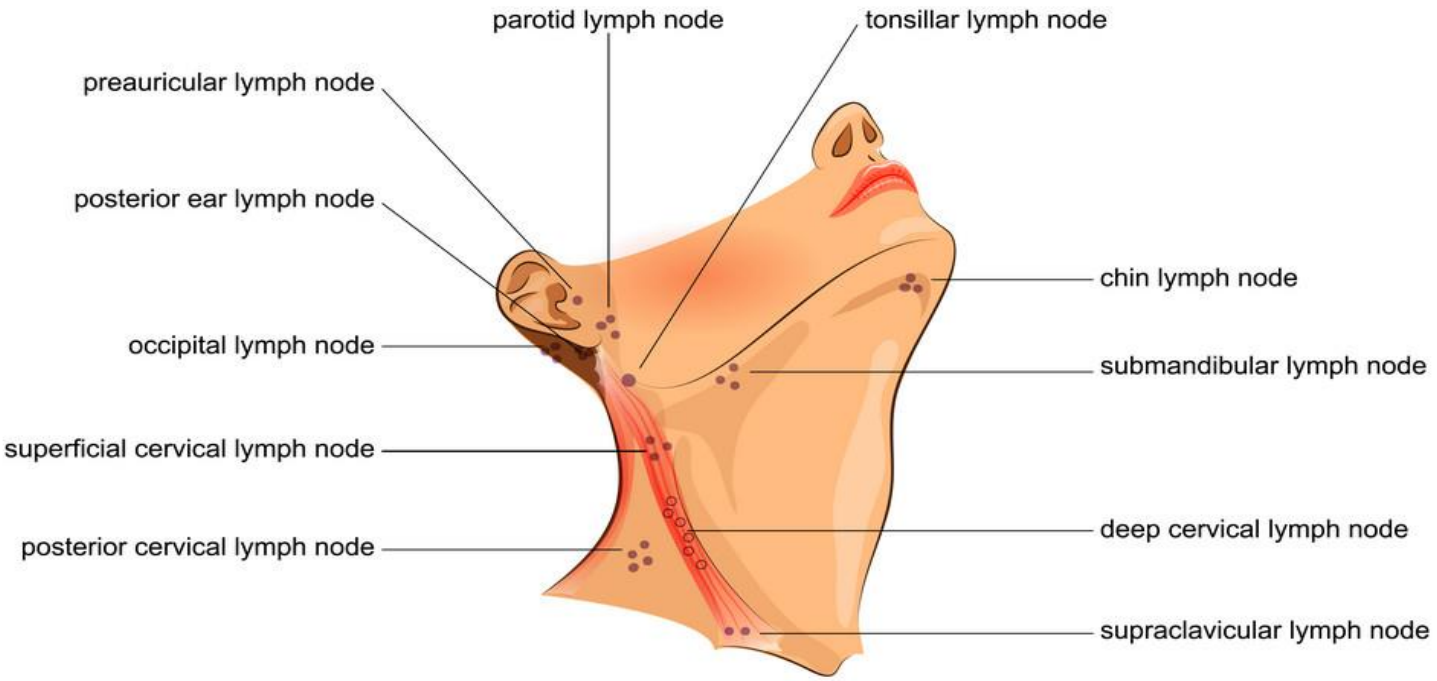
Risk of TB infection

- The risk of one being infected with the TB bacillus depends on:
- Exposure to bacilli
- Intensity of exposure
- Duration of exposure
- Presence of undetected smear positive TB
- Presence of poorly treated previous TB

Types of Tuberculosis

- Tuberculosis for epidemiological purposes is classified according to the organ affected.
- Pulmonary Tuberculosis (PTB) is the most common and infectious type of TB. It affects the lungs and accounts for majority of TB cases. PTB can either be smear positive or smear negative.
- Extra Pulmonary Tuberculosis is TB of organ other than the lung. It can involve any organ of the body such as the kidney, bladder, ovaries, testes, eyes, bones or joints, intestines, skin or glands, and the meninges which is TB meningitis. The most common extra pulmonary TB is TB of the glands, also called TB Lymphadenitis. The most severe extra pulmonary TB is pleural effusion and meningitis

ANATOMY OF CERVICAL LYMPH NODES



Signs and Symptoms of Pulmonary (Lung) Tuberculosis:

- These include:
- Persistent cough lasting for more than two weeks with or without blood stained sputum
- Excessive night sweats
- Intermittent fever
- Loss of body weight

- Excessive tiredness and generally feeling unwell
- Chest pain
- Shortness of breath
- Loss of appetite

Symptoms of TB- ACRONYM

- **C**- Coughing
- **W**- Weight loss
- **F**- Fever
- **N**- Night Sweats
- **G**- Enlarged glands

Effect of Pregnancy on TB

- Pregnancy has no adverse impact on TB if there is no great delay in diagnosis.
- The diagnosis of TB may be delayed in pregnancy.
- Pregnant patients with pulmonary TB are more likely to be asymptomatic at the time of diagnosis, compared with non-pregnant women with pulmonary TB.
- They are also more likely to have non-specific symptoms and to experience a delay in obtaining a chest X-ray. The clinical manifestations of pulmonary TB, if present, are the same as in nonpregnant women.
- The tuberculin reaction is not altered in pregnancy.

- Obstetric morbidity and perinatal mortality have been found to increase in patients whose treatment was started late in pregnancy.
- Infant and maternal mortality rates from untreated active TB are 30-40 per cent.
- With adequate treatment, a pregnant woman with TB has a prognosis equivalent to that of a comparable non-pregnant woman.

Effect of TB on pregnancy

- In the chemotherapy era, the outcome of pregnancy is rarely altered by the presence of TB except in the rare cases of congenital TB.
- Most studies have not shown that TB increases complications of childbirth. The general consensus is that the risk of an adverse pregnancy outcome is no greater among pregnant women on anti-tuberculous drugs than among healthy pregnant women.
- Untreated TB however represents a far greater hazard to a pregnant woman and her fetus than does the treatment of her disease. In which case it may lead to: pregnancy wastage, LBW, preterm delivery, IUFD, increased NMR, maternal morbidity and mortality.

- Congenital infection may occur as a result of transplacental spread or aspiration or ingestion of infected amniotic fluid in utero or of infected genital secretion during birth.
- These routes of infection are extremely rare. Most cases of neonatal TB occur as a result of airborne spread after delivery

Antenatal care

- All pregnant women should be screened for TB routinely
- Pregnant women suspected to have TB should have their sputum collected and tested for TB
- Pregnant women suspected to have TB should be referred to the TB clinic for treatment
- Pregnant women with sputum smear positive TB and with children under 5 years should be requested to get the children screened for TB
- NB: Negative Sputum does not exclude TB!

Screening for TB in pregnancy

- During history taking, ask the pregnant woman the following questions:

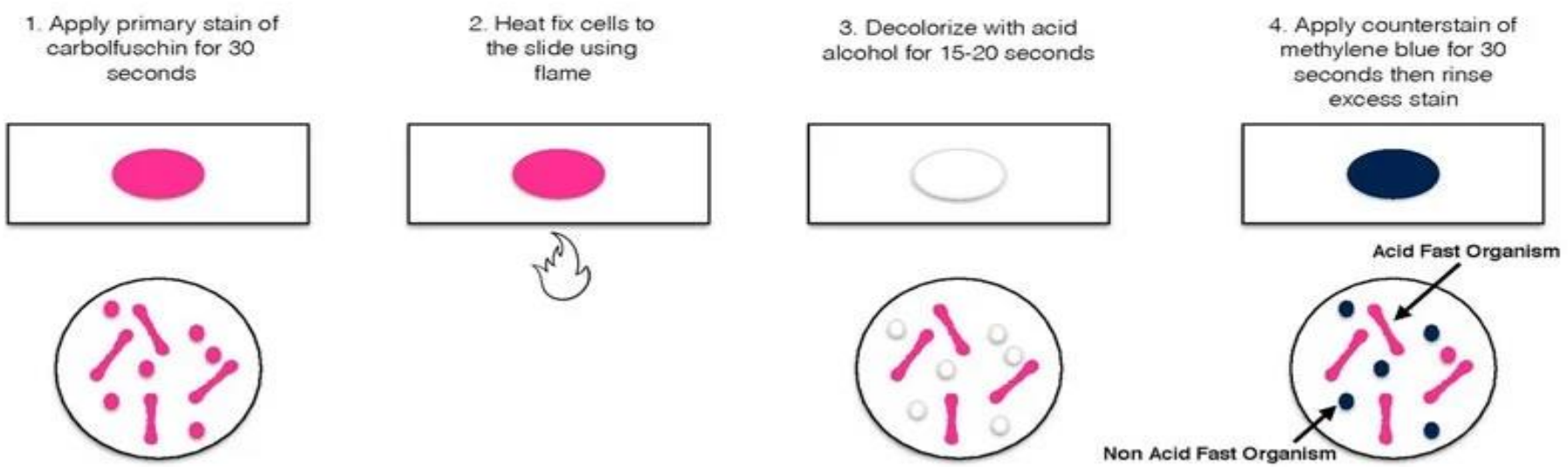
1. Have you had persistent cough for more than two weeks with or without blood stained sputum?
2. Have you experienced excessive sweating at night?
3. Have you lost weight?
4. Do you have chest pain?
5. Have you been in contact with anyone who has TB?
6. Do you have swollen glands? (Response can be confirmed during head to toe examination)

- For HIV negative women any one of the following signs may indicate TB infection;
- Cough of more than 2 weeks
- Haemoptysis (blood stained sputum even once)
- Chest pain for more than one month
- For HIV positive women YES to any of the screening questions may indicate TB.

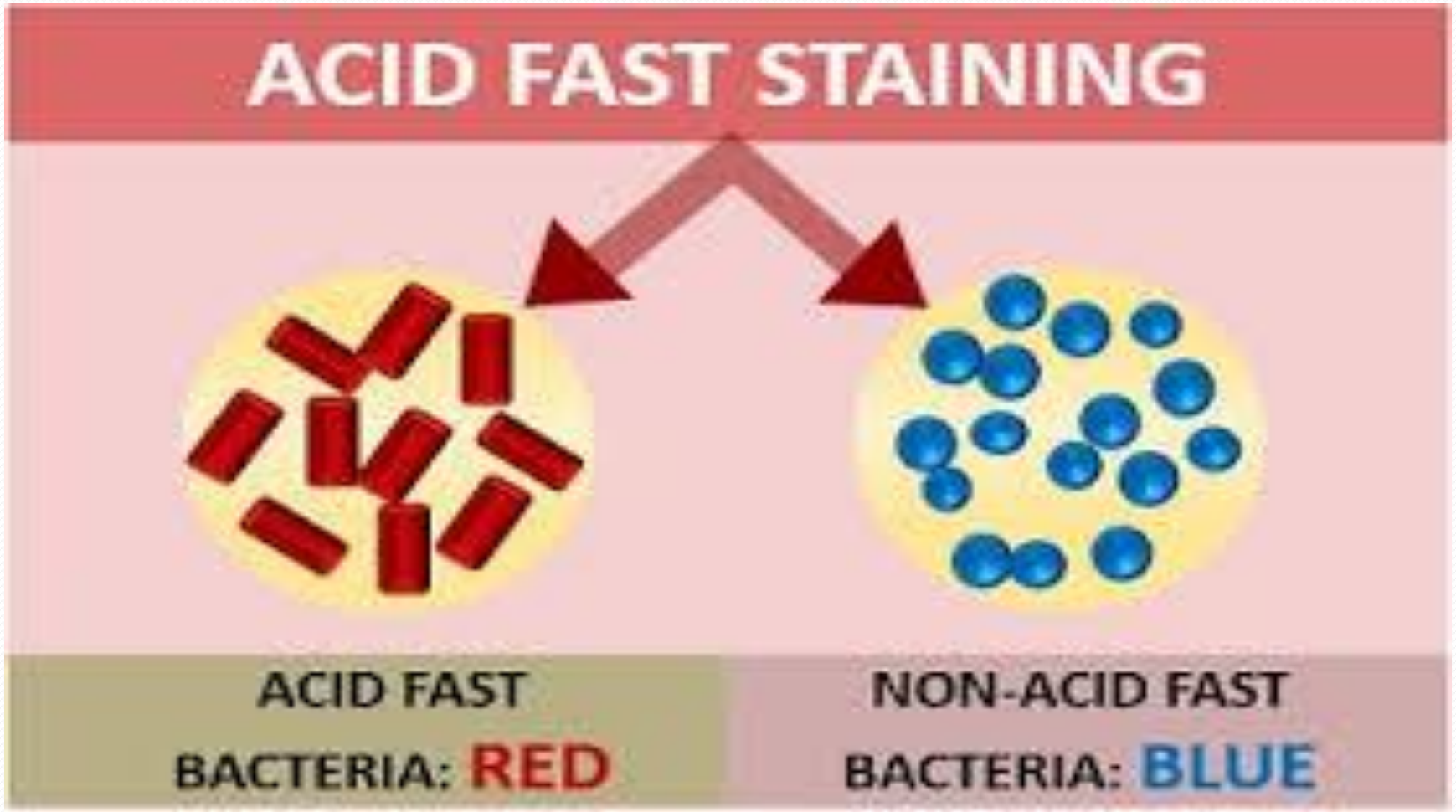
Investigation

- PTB detection /Diagnosis PTB is confirmed by examining two separate sputum specimens including an early morning sample which should be collected within a 24 hour period.
- Two specimens are collected and examined by direct smear for acid fast bacilli (AFB).
- A negative smear test for TB does NOT exclude TB infection.
- In case of negative smear, consider other signs and symptoms. The process of collection involves collecting a Spot and a Morning sample (Spot" refers to a specimen obtained immediately TB is suspected)

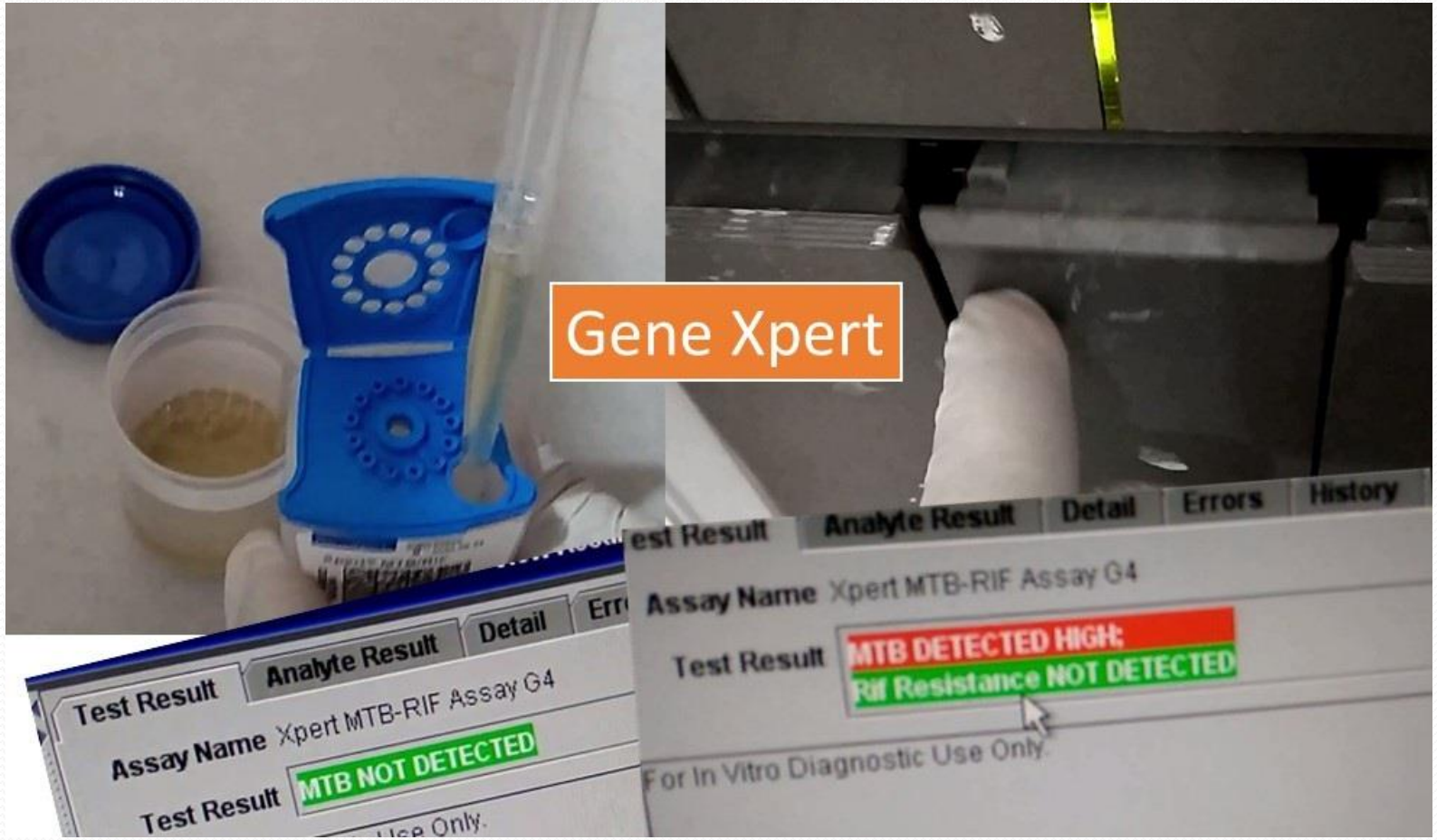
Procedure for Ziehl-Neelsen Staining



Laboratory findings



Gene expert


Gene Xpert
Test Result
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Assay Name Xpert MTB-RIF Assay G4
Test Result MTB NOT DETECTED
Analyte Result
Detail
Errors
History
Assay Name Xpert MTB-RIF Assay G4
Test Result
MTB DETECTED HIGH
Rif Resistance NOT DETECTED
For In Vitro Diagnostic Use Only.

Counselling for TB during pregnancy

- If the pregnant woman has been confirmed to have TB;
- Explain that treatment for TB is free
- Explain that TB is treated over an six to eight month period and the drugs are safe to use during pregnancy and breastfeeding
- Explain the importance of drug compliance and contact invitation
- Explain that after delivery, discussions on methods of family planning are necessary as some TB drugs (rifampicin) interfere with the absorption of hormonal contraceptives
- Explain the need for high nutritious diet obtained from locally available sources

Treatment

- Most countries have standard drug treatment regimens in their national anti - TB programmes.
- Generally treatment is in 2 phases. The following drug regimens are used in Kenya
- For new TB case (previously untreated)
- Intensive phase (2 months):
- Ethambutol (E), Rifampicin (R), Isoniazid (H), pyrazinamide (Z)
- Continuation phase (4 months)
- Rifampicin (R) and Isoniazid (H)

- For retreatment TB cases
- Intensive phase (3 months):
- Ethambutol (E), Rifampicin (R), Isoniazid (H), pyrazinamide (Z)
- Continuation phase (5 months)
- Rifampicin (R) and Isoniazid (H)- Ethambutol (E),

WHO – Approved Fixed – Dose combinations of Anti tuberculosis drugs

Isoniazid	150 mg	+	Ethambutol 400 mg	
Rifampin	60 mg	+	Isoniazid 30 mg	
	150 mg	+	75 mg	
	300 mg	+	150 mg	
	60 mg	+	60 mg	} For Intermittent use
	150 mg	+	150 mg	

Rifampin	+	Isoniazid	+	Pyrazinamide	
60 mg		30 mg	+	150 mg	
150 mg	+	75 mg	+	400 mg	
150 mg	+	150 mg	+	500 mg	For Intermittent use

Rifampicin	+	Isoniazid	+	Pyrazinamide	+	Ethambutol
150 mg	+	75 mg	+	400 mg	+	275 mg

Notes on the Drugs

- Isoniazid and ethambutol are both category A drugs, and are safe in pregnancy.
- The current consensus is that rifampicin is not teratogenic and that any risk to the foetus must be small compared with the risks from other sources.
- Pregnancy is not a contraindication of rifampicin. The use of pyrazinamide (category B2) is little studied in pregnancy.
- Pyrazinamide is especially indicated: • When multidrug resistance is suspected • When the pregnant woman is HIV infected • For tuberculous meningitis, especially when isoniazid resistance is a possibility.
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- Streptomycin (category D) occasionally causes ototoxicity and is contraindicated in pregnancy.
- A pyridoxine supplement in pregnancy should be at a dose of 50 mg/day (instead of 25 mg/day). Help reduce risk of isoniazid induced neuropathy

DOT: Directly Observed Treatment

- Initial phase: The first 2 months of TB treatment should be administered under direct observation of either a health worker in the facility or a member of the household or community.
- If client is too sick or observed treatment is not possible, the client should be admitted to hospital.
- Continuation phase: The client collects supplies two weekly for daily DOT at home.
- For pregnant women who are HIV positive and also have TB, the treatment should be continued and the client referred to comprehensive care clinic. All co-infected patients (HIV and TB) should be started on co-trimoxazole prophylaxis as it reduces mortality.

TB AND THE NEW BORN

- In HIV negative mothers
- •If the woman is diagnosed with PTB all children under 5 should be screened for evidence of active TB. Those found with TB should be put on treatment.
- •Children <5 years without TB disease should be put on Isoniazid 5mg/kg daily for 6 months
- If TB disease develops during the six months period STOP isoniazid and switch to anti-TB treatment

- If a mother has TB and has started treatment 2 months or more before the due date, she should have 2 sputum smear tests done before giving birth.
- If she is sputum smear negative just before delivery, then she is non infectious and the infant does not need prophylaxis then BCG is given at birth.
- If the mother has active lung tuberculosis and was treated for less than two months before birth or was diagnosed with tuberculosis after birth: do not give the tuberculosis vaccine (BCG) at birth.

- In the asymptomatic newborn of a mother with tuberculosis (smear positive):
- Give prophylactic isoniazid 5 mg/kg body weight by mouth once daily
- At the age of six weeks, re-evaluate the baby, noting weight gain and taking an X-ray of the chest, if possible
- If there are any findings suggestive of active disease, start full anti-tuberculosis treatment
- If the baby is doing well and tests are negative, continue prophylactic isoniazid to complete six months of treatment.

- Delay BCG vaccine until two weeks after treatment is completed.
- If BCG was already given, repeat BCG two weeks after the end of the isoniazid treatment
- Reassure the mother that it is safe for her to breastfeed her baby
- Follow up in two weeks to assess weight gain.

- Co-infection with HIV and TB is common in children. TB in HIV-infected children is more difficult to diagnose.
- HIV-infected children are more likely to experience progressive primary TB disease and severe forms of extra-pulmonary disease, such as TB meningitis

Management of TB in children:

1. Recommended TB treatment for child weighing less than 10kg:
a. Rifampicin 60 mg + Isoniazid 30mg + Pyrazinamide 150 mgs (RHZ) OR
b. Rifampicin 60 mg + Isoniazid 30mg (RH)
2. If HIV+ and below 3 years or weighs < than 10kg give AZT+3TC+ABC
3. Provide counseling and support to the mother
4. Admit all children with severe cases of TB

TB and breastfeeding

- Encourage the mother to continue breast feeding.
- Breast feeding women on INH should also take a diet rich in Vitamin B6
- If mother is HIV+ explore other feeding options and discuss with the mother according to the infant and young child feeding (IYCF) guidelines
- Monitor the babies' growth. Failure to thrive is the most common suggestive sign associated with TB in children.
- TB drugs get into breast milk. However Potential toxic effects of drugs delivered in breast milk have not been reported.

Follow up management

- All pregnant TB positive women should be followed up at weekly intervals for two months; then two weekly in the chest clinic until completion of treatment.
- The woman should continue with ANC services as appropriate. Contacts should be traced and investigated.

At the post partum visit, information should be sought on:

- Assessment and treatment of newborn and other close contacts,
- Adherence to treatment,
- Infant feeding and family planning.
- HIV positive women should be linked to comprehensive care services

Family Planning and Tuberculosis

- According to the WHO MEC, all contraceptive methods are category 1 for women with non pelvic tuberculosis and female sterilisation is acceptable. This implies that they can be used in any circumstance.
- In case of known pelvic Tuberculosis, use of IUCD is category 3/ 4 - meaning that generally the IUCD should not be used; while the rest are category 1.

- However Rifampicin use is category 2-3 for hormonal contraceptives. Dual contraception is therefore recommended for TB patients on rifampicin.

- In a TB mother co-infected with HIV, one would have to take into account the drug interactions of various contraceptive methods with ARVs. The gestation of the infant, whether the mother is breastfeeding or not, and the coexistence of other medical conditions will also impact on contraceptive choices for TB patients.

TB Infection Control Measures:

- 1st Priority: Administrative Control Measures
- Patient Management
- Early recognition of patients with suspected or confirmed TB disease, through screening – may be done by registering officer/clerk
- Education of the above mentioned persons identified through screening in cough etiquette and respiratory hygiene

- Triaging symptomatic patients to the front of the line for the services they are seeking
- TB suspects or TB cases identified by the screening questions, are separated from other patients and requested to wait in a separate well-ventilated waiting area or patient ward
- Provide identified TB suspects with a surgical mask or tissues to cover their mouths and noses to ensure compliance with cough etiquette.

Environmental control

- This is used to reduce the concentration of infectious droplet
- It includes:
- Maximizing natural ventilation through open windows and doors
- Use of mechanical ventilation
- Window fans
- Exhaust ventilation systems
- Supply and exhaust ventilation systems

- Additional complex and costly methods include:
- Room air cleaners with air filtration
- Air filtration with ultraviolet germicidal irradiation (UVGI) to inactivate M. tuberculosis organisms

Infection Prevention of Air Borne diseases

- Each facility should have a written airborne disease(TB/MDR-TB) infection prevention control plan that outlines protocol for the immediate Recognition, Separation, Investigation for TB; Provision of services and/or Referral for services of patients with suspected or confirmed TB disease
- Administrative support for implementation of the plan, including quality assurance should be available

Questions?????

END

THANK YOU

QUIZ

- Mrs. Hello aged 35 years has come in 1st stage of labour. She looks very emaciated, reports she has been coughing for the last 3 weeks and has been having night sweats. The nurse makes a diagnosis of pulmonary tuberculosis.
- What is the causative organism of PTB.
- Explain the management of Mrs. Hello and her infant.