Infections and Pregnancy

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Outline

- Introduction
- Topics covered:
  - **Co-infection with HIV:**
    - Herpes simplex virus (HSV)
    - Hepatitis B (HBV)
    - Hepatitis C (HCV)
    - Syphilis
    - Tuberculosis (TB)
- Conclusion

Infections in pregnancy: Introduction

- **Major case of maternal morbidity and mortality**
  - Pregnancy state of immunosuppression
  - HIV- also associated with immunocompromise

- **Effect of infection on pregnancy**
  - Miscarriage, IUGR, PTB, pre-eclampsia, Need for operative delivery….

- **Effect of pregnancy on the course of infection:**
  - More severe disease (varicella)

- **Fetal /neonatal risks:**
  - abortion, miscarriage, congenital malformations, neonatal sepsis

- **Herpes Simplex (HSV)** and pregnancy

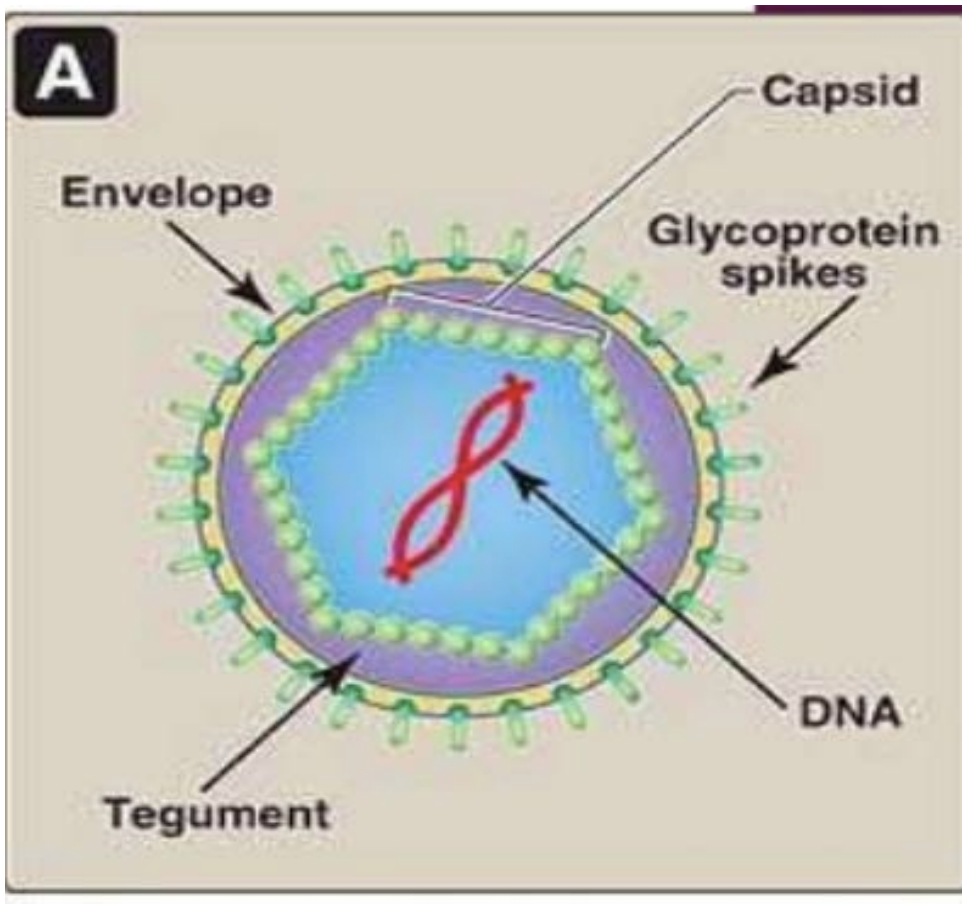
Case:

- **23 year old 30/40 pregnant attended antenatal clinic with**
  - **vulval discomfort ? Itching x 2 days**
  - **Increased dysuria over next 24hrs**
  - **Painful ulceration**

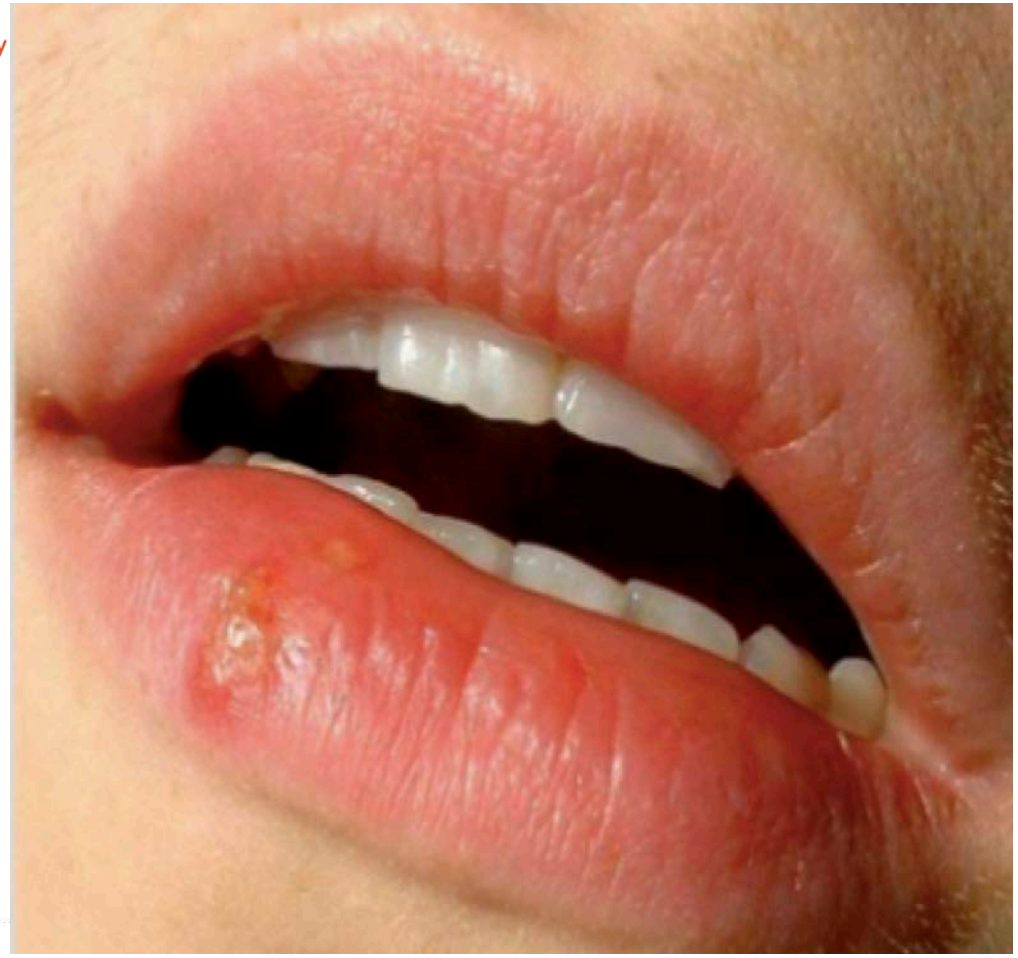
  - What is your diagnosis?
  - What is the management?

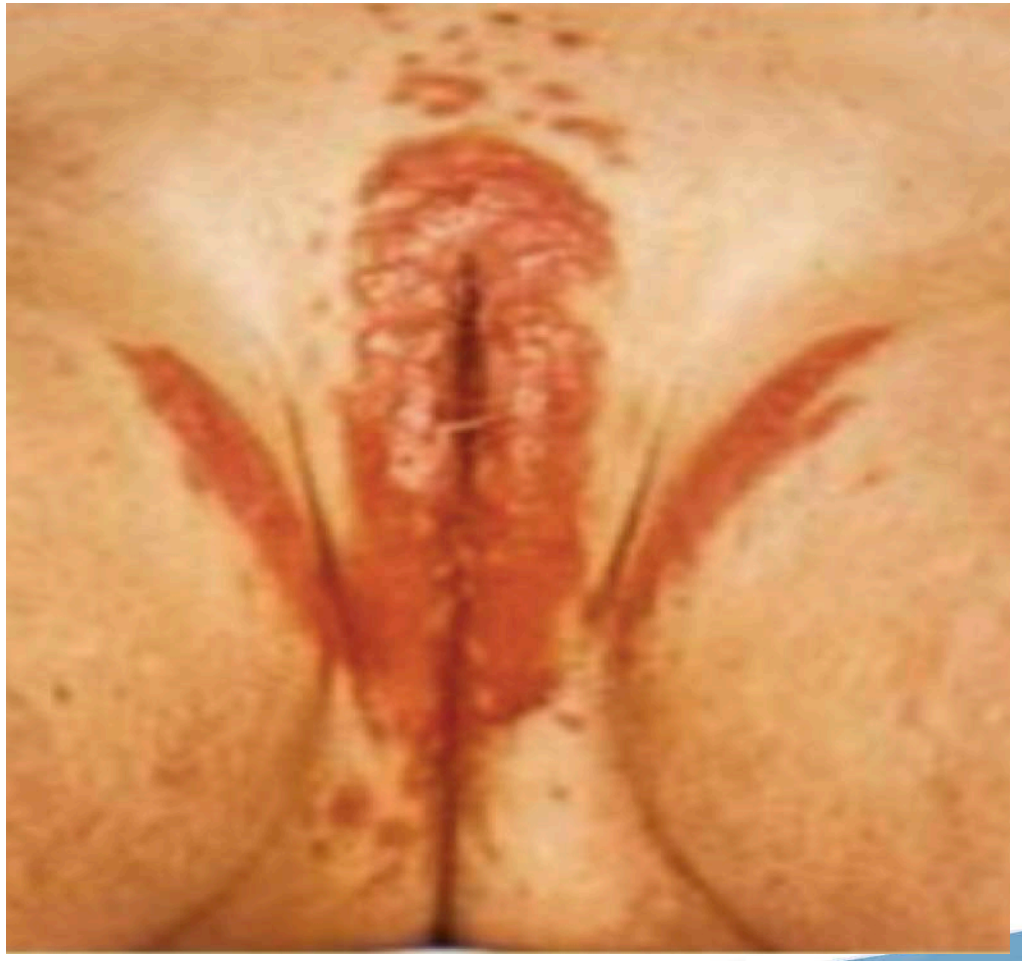
Herpes simplex (HSV)

- HSV Type 1 or Type 2 -DNA virus (both cause genital herpes)
- 2% - primary infection in pregnancy
- Not teratogenic



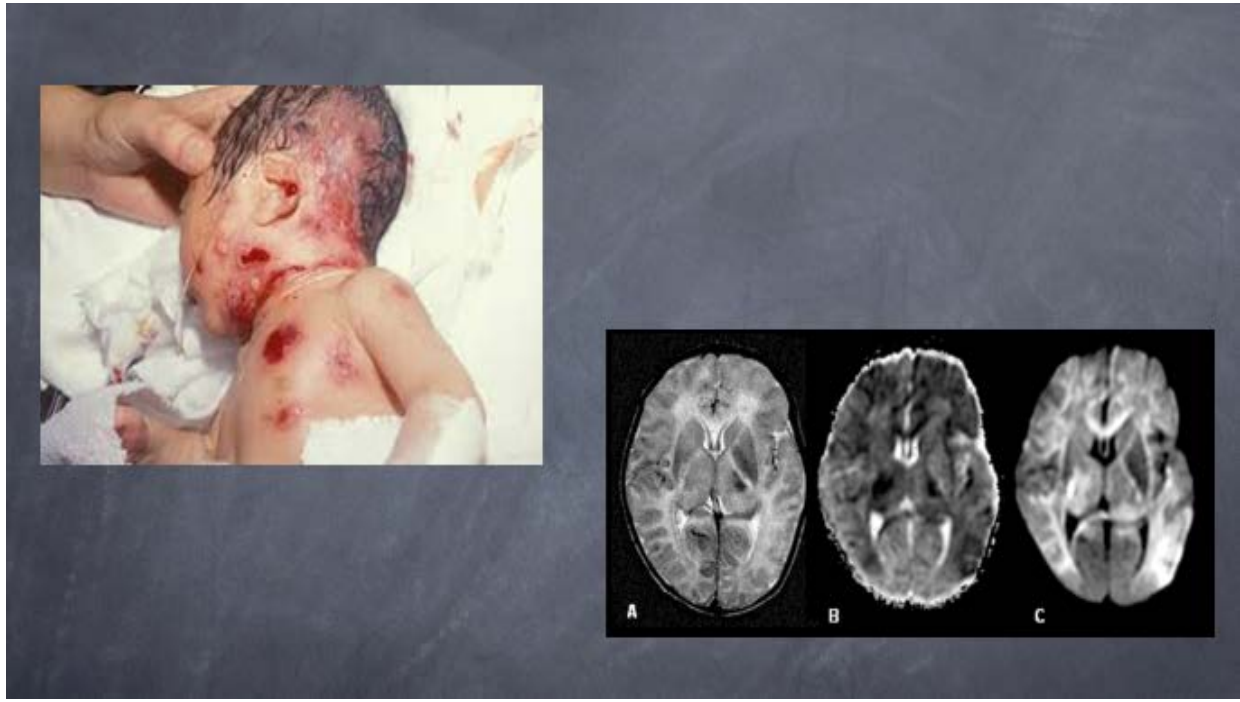
Herpes simplex (HSV)





Herpes simplex (HSV) in pregnancy: Implications

- Primary HSV infection in 3rd trimester poses greatest risk for Neonatal Disease



- Transmission during delivery
- If <6/52:
  - no maternal antibodies to protect the neonate

Incidence of Neonatal HSV Disease

- **Mucocutaneous disease**: Skin-eye-mouth disease (SEM) -83%
- **CNS disease** (Meningitis/Encephalitis) -63% (15% mortality)
- **Disseminated disease -** 58% **(70% mortality)**
- 10% neonatal HSV cases attributed to **postnatal horizontal transmission**

HSV : What do we need to know - Hx?

- First episode
- Severity of symptoms
- Previous hx – including cold sores
- Partner hx
- Gestation
- Confirmation by viral swab for PCR
- Serology : Type specific antibodies
- Refer to GUM clinic

Herpes simplex: Management in pregnancy

- **Primary HSV at <34 weeks gestation:**
  - **Ulcer/Rash suspicious for genital HSV**
  - **No prior history**

  - Take VIRAL swab for PCR
  - Take type specific serology

  - Swab confirms HSV 2
  - Serology for both HSV1 IgG and HSV2 IgG negative

HSV Management : <34/40 gestation

- **First episode PRIMARY HSV**

- Treat with antivirals. (Valacyclovir/acyclovir)
- Commence prophylaxis at 36 weeks gestation

- **Can have vaginal delivery**

- Neonates will be observed +/-acyclovir

Primary HSV at >34 weeks gestation:

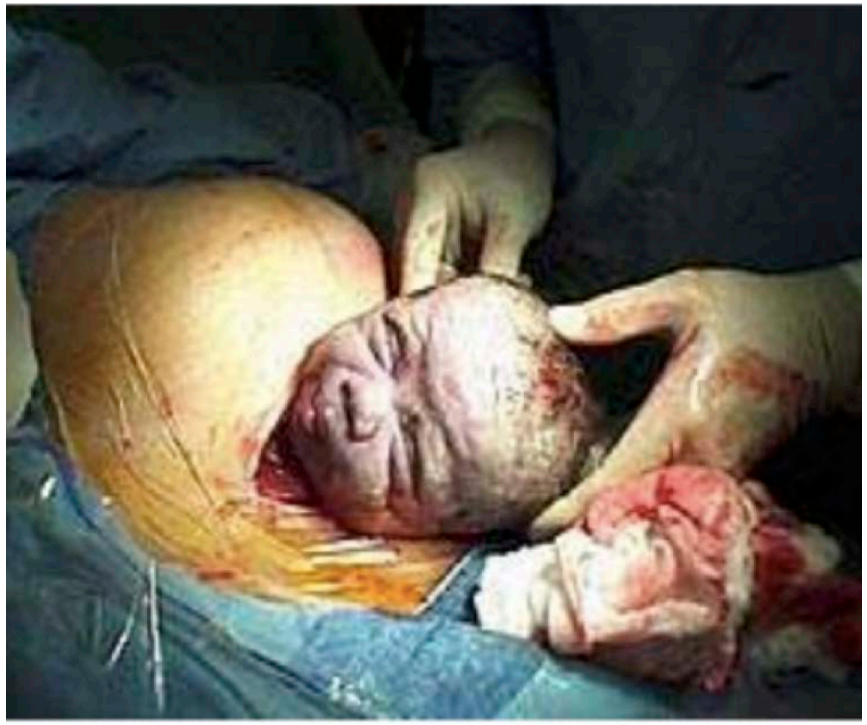
- **Same scenario.**
- VIRAL SWAB and SEROLOGY taken.
- Same results
- Management?

Primary HSV at >34 weeks gestation: Management

FIRST EPISODE PRIMARY within 6 weeks of delivery

- Following treatment,

  continue prophylaxis until delivery
- **PLAN TO DELIVER ELECTIVELY BY LSCS**
- Manage Infant as **high risk**.
  - Obtain infant mucosal swabs for HSV PCR and blood for PCR.
  - Start IV Acyclovir.



14/40 ?HSV

Pregnant woman with suspicious rash/ulcer.

Positive prior history of HSV1 genitalia.

- Swab confirms HSV2.
- Serology for HSV1 IgG positive and HSV2 IgG negative

- FIRST EPISODE NON PRIMARY
- Management – treat with antivirals.
- Commence prophylaxis at 36 weeks gestation

Recurrent HSV 36/40

Same scenario. Previous Hx of HSV1.

VIRAL SWAB and SEROLOGY again confirm results.

Swab HSV2. IgG HSV 1 +, HSV2 –

- Different management

- **FIRST EPISODE NON PRIMARY within 6 weeks of delivery**
- PLAN TO Deliver by Elective LSCS
- Manage Infant as **high risk**. Obtain infant mucosal swabs for HSV PCR and blood for PCR. Start IV Acyclovir.

Same patient, 39/40 SOL

- **Hx of RECURRENT HSV2 during pregnancy.**
- **Last outbreak at 26/40. Treated and on prophylaxis from 36/40.**
- **NO APPARENT LESIONS**
- **Management??**

- Allow vaginal delivery.
- Treat infant as **low risk** – Monitor closely until 6 weeks of age and investigate promptly if signs or symptoms. Educate parents re signs and symptoms

39/40, Recurrent HSV

- **Hx of recurrent HSV1 (Not previously disclosed)**
- **No prophylaxis taken**
- **Lesions apparent on vulva. NB SWAB AND SEROLOGY**
- **Management??**

- **Ordinarily advise LSCS** if lesions present at time of delivery. Clinician should individualise care while balancing competing risks.
- Infant should be managed as ***intermediate*** **risk.** Viral cultures and bloods for PCR at 24-48 hrs. Commence treatment only if infant PCR positive.

- **Hepatitis B (HBV)** and pregnancy

Hepatitis B (HBV)

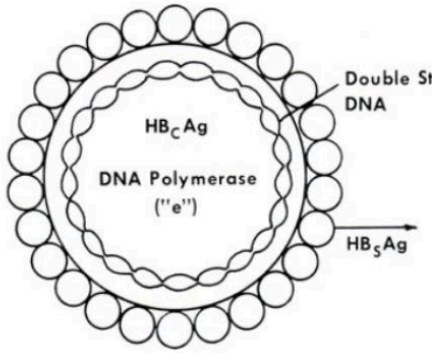


FIGURE 76.—The Dane particle. (Sherlock, S. 1976. Introduction: A bird's eye view. Paper, postgraduate course on viral hepatitis, American Association for the Study of Liver Disease, Nov. 76, pp. 1-1-1-10.)

- DNA virus
- Transmission – blood products, sexual intercourse
- Incubation up to 180 days
- 1% of pregnant women HBV positive

How does maternal HBV affect pregnancy?

- No association with adverse pregnancy outcomes
- No worsening of liver disease in majority of pregnant women *(Terrault NA. et al. 2007)*
- Vertical transmission
- 90% of infected neonates become chronic carriers

HBV- Vertical transmission

- Vertical transmission – at delivery
- 90% infected neonates become chronic carriers

- **Risk is higher with active disease** (HBe Ag+, HBc Ag+, HBsAg +)
  - high level of viremia and HBVeAg positive (70-90%)
  - High VL and HbeAg neg, HBsAgpositive (10%)

- **Early immunization** (active & passive) for infants of mothers with Detectable viremia regardless of HbeAg status
  - can prevent vertical transmission in 90-95% of cases

HBV in pregnancy : Antenatal management

- Universal screening
- Check HBV DNA (viral load) on all HBsAg+ women
- Refer all newly diagnosed women to adult services
- Antenatal antivirals – in selected cases

HBV in Pregnancy: Intrapartum management

- **Mode of delivery has no effect on vertical transmission**
- Avoid percutaneous exposure of the infant to maternal blood:
  - avoid FSE, FBS

HBV in pregnancy: Postpartum management

Neonate:

- Bath, Immunoglobulin & HBV vaccination at birth
- BCG vaccine as usual
- Infant of HBcAg+ and HBsAg-mothers where there is a family member with HBV infection :
  - give first dose of HepB vaccine before discharge

HBV in pregnancy: Can she breastfeed?

- Although virus is present in breast milk, the incidence of transmission is not lowered by formula feeding
- All neonates who are correctly immunized can breastfeed
- Avoid cracked nipples

HBV + HIV

For HIV infected women with HBV co-infection:

- Antiretrovirals with activity against HBV should be selected as part of ARV regimen
  - Lamivudine (3TC)
  - Tenofovir (TDF)
- Adult HIV physician will make this decision

- **Hepatitis C (HCV)** and pregnancy

Hepatitis C (HCV)

- HCV- a small, enveloped, single-strained, RNA virus
- Transmission- blood, drugs, sex
- 70-85% chronic infection

HCV : Vertical transmission

- Overall 3-7%
- **Exact mechanism and timing is unknown**
  - Risk is present only with active disease (PCR+)
- HCV is **not teratogenic**
- Virus has been found in breast milk, but generally breastfeeding is not associated with transmission

- **Reported risk factors:**
  - High Viral load
  - elevated transaminases
  - Co-infection with HIV (20% in pre-HAART era)
- Preconception counselling

HCV in pregnancy: Management

- Women with risk factors should be offered HCV antibody testing in pregnancy
- HCV PCR status (Viral load) on all HCV+
- Newly diagnosed – refer to adult hepatitis services
- Screen for co-infection with HBV/HIV
- There are currently no prevention strategies proven to reduce the risk of vertical transmission of HCV
- Testing of infants born to HCV+ women permits early diagnosis and referral to medical services or reassurance to patients in the event that infection is excluded

HCV in pregnancy: Delivery

- Presence of HCV does not impact mode of delivery
- Avoid percutaneous exposure of the infant to maternal blood:
  - avoid FSE, FBS

HCV in pregnancy: postpartum management

- Infant – Bath ASAP
- In HCV mono infection – can breastfeed
- Avoid cracked nipples
- Testing of neonate HCV ab/ PCR at 6 weeks, 6 months, 18 months

HCV in HIV positive women

- **Higher rate of vertical transmission of both viruses**
- **ARVs** in HIV/HCV+ women may reduce the risk of HCV transmission
- **C/Section** for HCV positive women, as well as for women with HCV+ HIV co-infection is **no longer recommended**
- **Breastfeeding is contraindicated in presence of HIV infection**

- **Syphilis** and pregnancy

Syphilis in pregnancy: Key points

- Active early disease in pregnancy can cause:
  - severe congenital malformations in 80-90% and
  - Preterm delivery, IUGR, hydrops, stillbirth in 30%

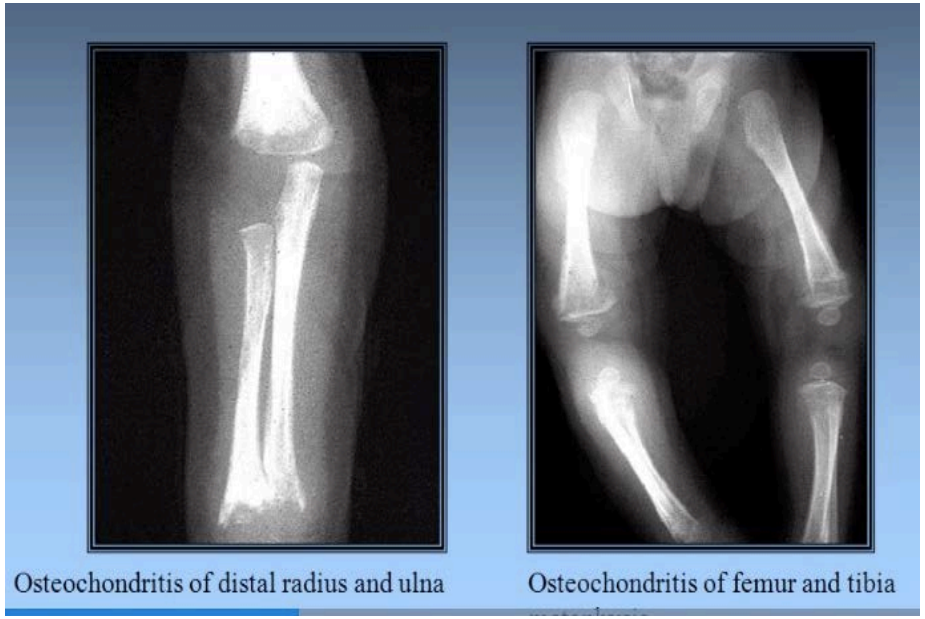
- Syphilis remains an important cause of infant mortality

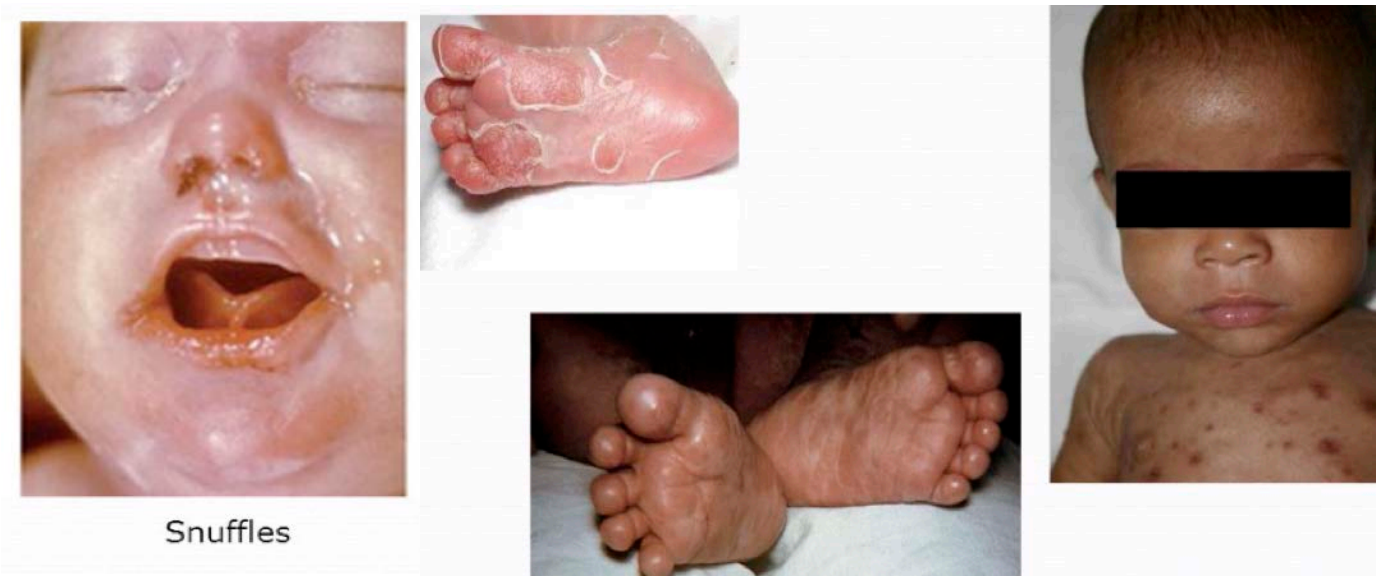
Congenital syphilis

- **100% preventable**
- **Transmission can occur** at **anytime during pregnancy or delivery**
- During the 1st year of infection in an untreated woman- risk 80-90%
- **Early untreated syphilis**:
  - 25-30% die in utero
  - 25-30% die postnatally
  - 40% of surviving neonates develop congenital syphilis, symptoms typically appear after 3rd week of life
- **2^0 Syphilis:** Risk of congenital infection-50%
- **Latent syphilis:** risk of congenital infection -40%
- **3^0 syphilis**: risk of congenital infection -10%

Congenital syphilis

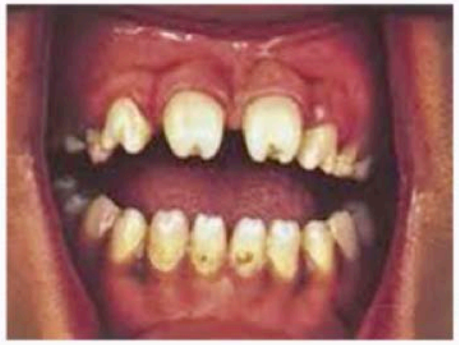
- Early congenital syphilis manifests in the first 2 years of life
- Normal physical examination does not exclude the possibility of congenital infection



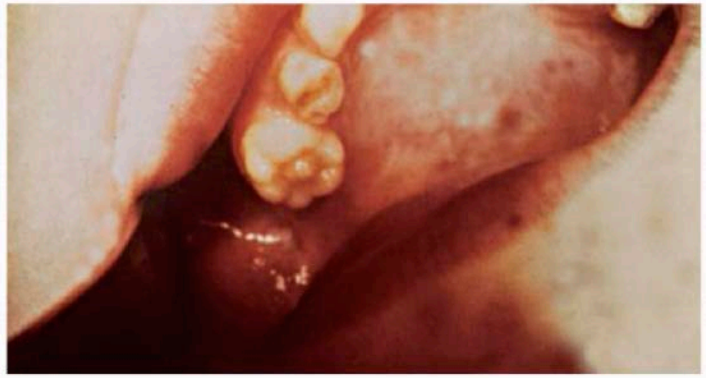


Late Congenital syphilis

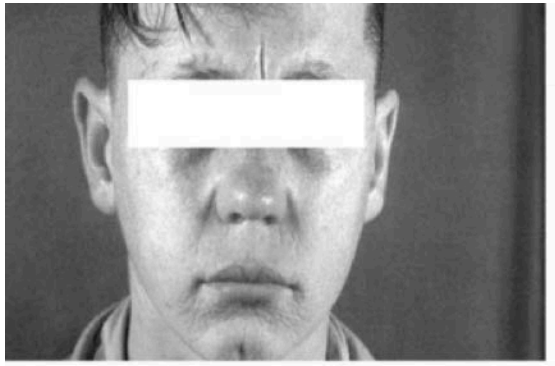
- Manifest >2 yoa, usually around puberty



Hutchinson Teeth

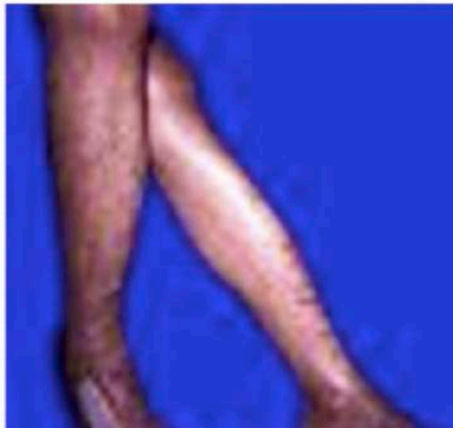


Mulberry Molar



Rhagades

Saber Shin



Syphilis in pregnancy : Management

- **Routine antenatal screening**
- Refer to adult services if positive result
- STI screen , treat the partner
- If treated In the past: Was it adequate ?
  - obtain clear history
  - documentation of treatment
  - response to treatment

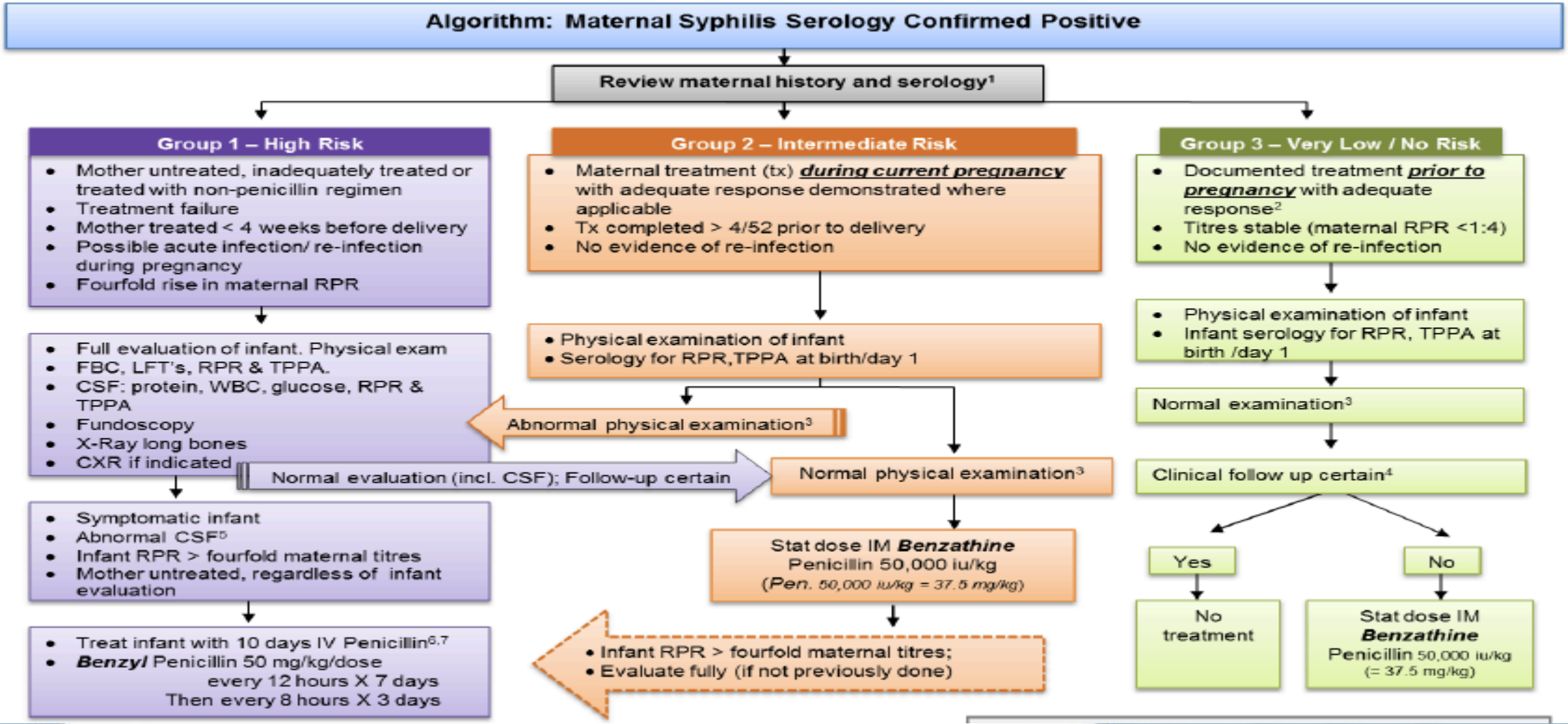
Syphilis in pregnancy: Treatment

- **Benzathine penicillin**
  - depending by stage and clinical manifestation gestation
  - decided by adult physician
- Oral doxycycline is NOT used in pregnancy
- **Erythromycin** if allergy to penicillin,
  - But it does not cross the placenta
  - infant cannot be considered as treated

Syphilis in pregnancy: Delivery

- **Can have vaginal delivery**
- Placenta should be sent for pathological examination in ALL cases

Syphilis in pregnancy: Neonatal management



High Risk neonate: management

- Full physical exam
- Serology
- LP
- Fundoscopy
- Xray long bones, CXR if indicated
- Treat infant with IV Benzyl Penicillin 10 days

Intermediate risk neonate: management

- Full clinical exam
- Serology
- If abnormal- treat as high risk
- If normal physical exam
- Stat IM Benzyl Penicillin
- if titres > fourfold, evaluate further

Low risk neonate: management

- Physical exam
- Serology
- If normal- no treatment
- If normal, but mother cannot attend for follow-up:
  - Stat dose IM Benzathine Penicillin

- Tuberculosis (TB) and pregnancy

Tuberculosis in pregnancy

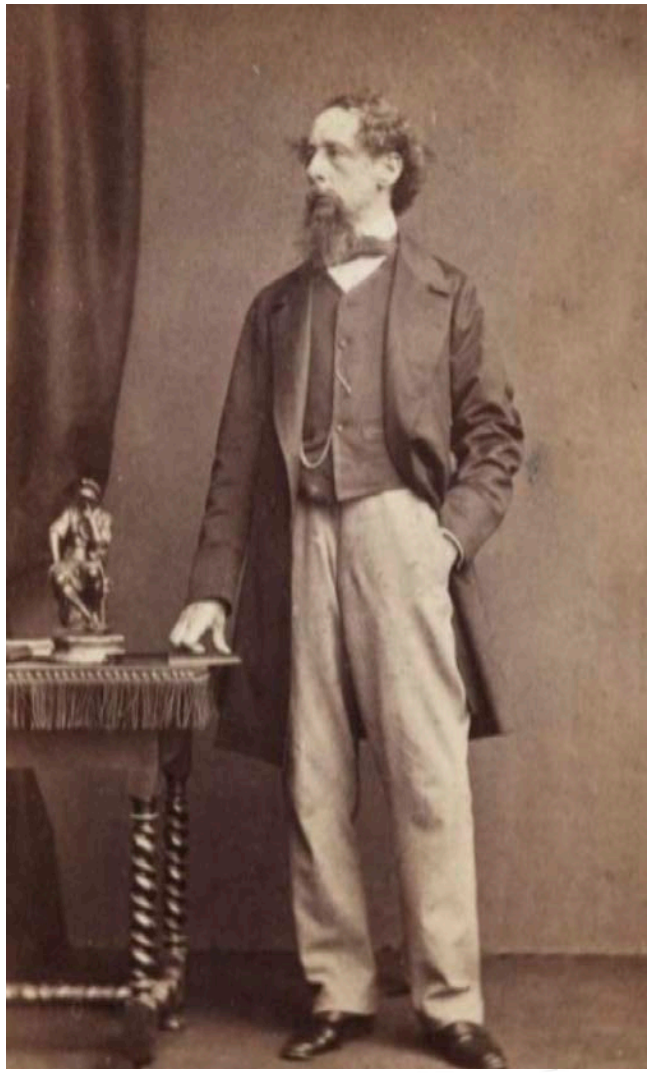
- TB is an ancient disease and pathological evidence was found in Egyptian mummies
- **It is the 2nd leading cause of death from an infectious disease**

Charles Dickens

(1812 – 1870)

Labelled TB as

“ the disease which medicine never cured ”



TB in pregnancy

- **It is one of the leading non-obstetric causes of maternal mortality**

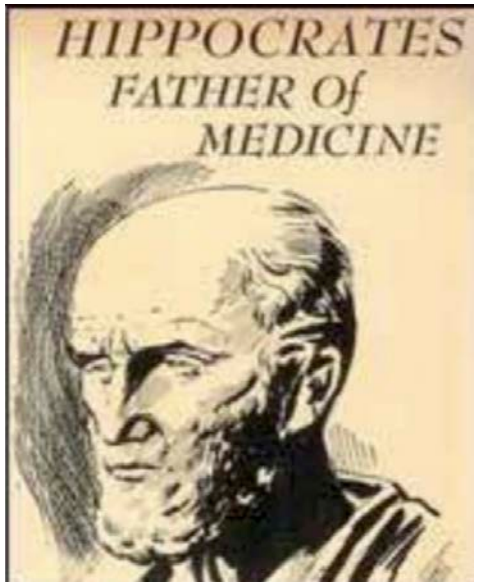
- The number of pregnant women with TB is increasing along with resurgence of TB

- HIV+TB

Hippocratic view :

"Pregnancy had a beneficial effect on TB"

- This view persisted up to the early part of the 19th century.



TB in pregnancy: more history

- As late as the 1835 :

  Ramadge, a German physician, believed

  –*"the enlarging uterus helps to collapse the open cavities and improve the clinical condition"*

- He recommended marriage and pregnancy in unmarried women with TB.

In 1953:

The view changed showing **no apparent relationship** except **higher risk of activation during puerperium** and 1st postpartum year.

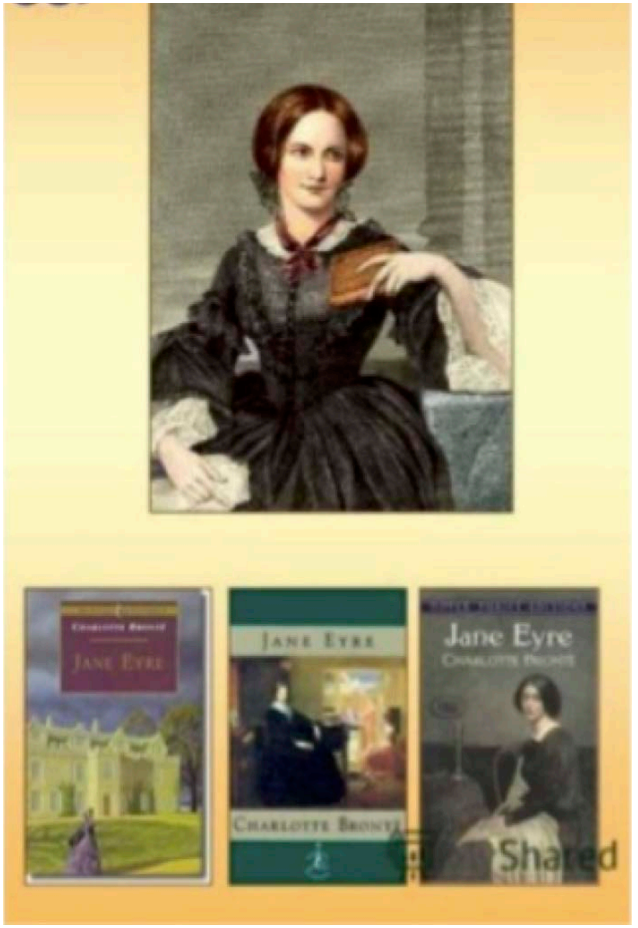
Charlotte Brontë

(1816-1855)

Novelist

died at 38 due to

TB in PREGNNACY



WHO Report 2014 – Global Picture

- In 2014, an estimated 3.2 million women fell ill with TB
- TB is one *of the top five killers of women* among adult women aged 20–59 years.
- 480 000 women died from TB in 2014,
- including 140 000 deaths among women who were HIV-positive.
- Of the 330,000 HIV-related TB deaths among adults (age ≥15) globally in 2014, just over 40% were among women, accounting for about a third of all AIDS-related deaths among female adults.
- Almost 90% of these HIV-associated TB deaths among women were in Africa.

The impact of pregnancy on TB

- Pregnancy **does not** lead to progression of TB

The impact of TB on pregnancy

- **Untreated TB is associated with higher risk of:**
  - Miscarriage
  - IUGR/ LBW babies
  - Prematurity
  - Pre-eclampsia
  - Postpartum Haemorrhage
  - Congenital TB (very rare)
  - Neonatal TB

Case

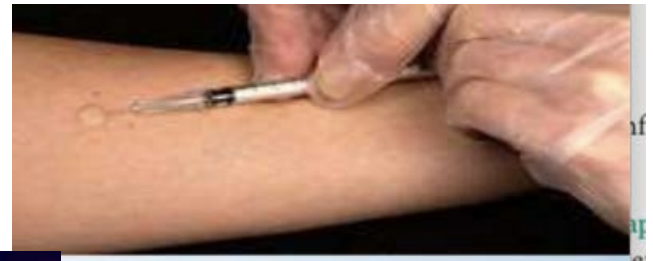
- **27 yo, P-1, 20/40 , presented to GP with cough for 2 months. She smokes 15 cig a day. BMI 19. GP prescribed oral amoxicillin for LRTI. With no effect.**

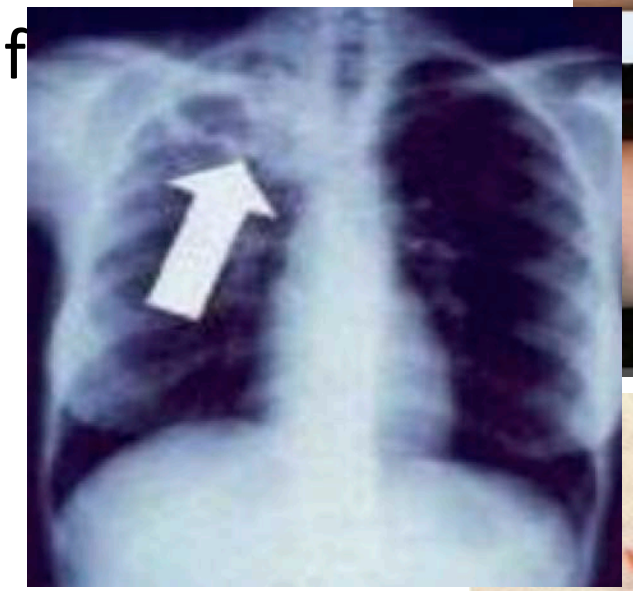
TB in pregnancy: Screening

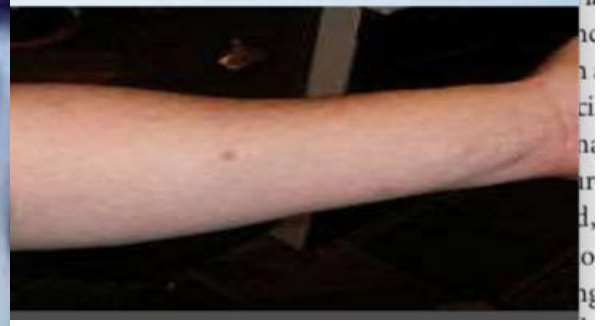
Screening is indicated in women who are:

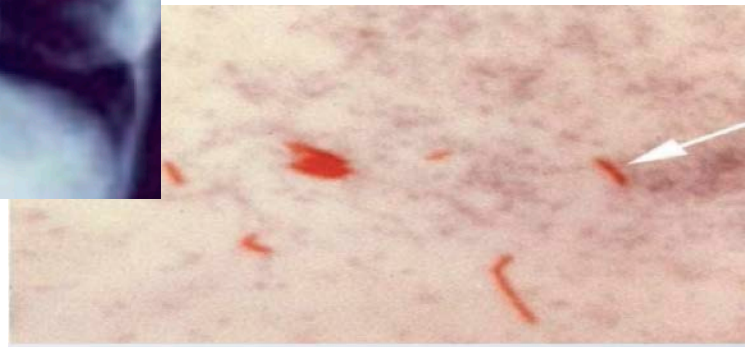
- HIV positive
- immuno-compromised
- having symptoms of TB
- recently exposed to active TB
- immigrants from high prevalent countries

TB in pregnancy: Investigations









Sputum Microscopy (AFB)

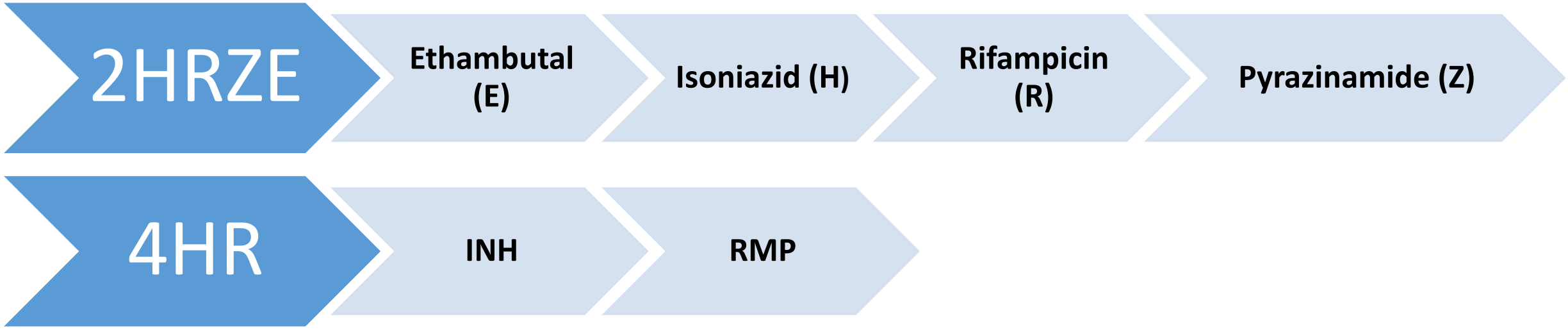
- **Sputum microscopy**- gold standard f diagnosis
- **Mantoux test/Tuberculin test-** representative of latent infection
- **CXR** if MT positive
- **Other imaging** : maybe useful for extrapulmonary disease
- **Interferon gamma release assays** (IGRAs)- lac of evidence for use in pregnancy and long-term safety

Treatment of TB in pregnancy

- As non-pregnant
- Avoid fetotoxic drugs if possible
- The safety of the first line drugs has been established except streptomycin (irrespective of gestation - ototoxicity)
- INH increased risk of hepatotoxicity in pregnancy
  - periodic evaluation of LFT is recommended.
  - Pyridoxine supplementation is recommended for all pregnant women taking INH.
- Evidence with 2nd line drugs in pregnancy is limited.

TB in pregnancy: Treatment

- WHO recommends:
  - Active TB (new cases)
  - 2HRZE/4HR



Pregnancy and MDR-TB

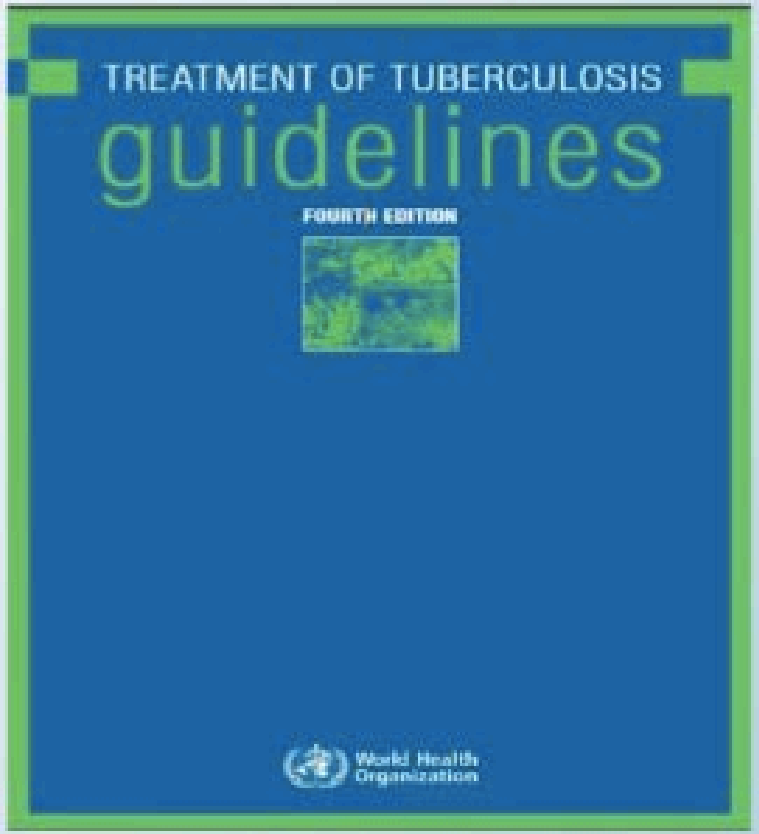
- **Defined as resistance to isoniazid and rifampicin with or without resistance to other anti-tuberculosis drugs.**
- Treatment is controversial
- Routine termination of pregnancy is not recommended by many
- Aggressive treatment should be initiated without delay to prevent
  - congenital / neonatal TB
  - adverse pregnancy outcome
  - maternal progression of disease
- Severity of the disease & maturity of the foetus - Important determining factors in managing a pregnant women with MDR-TB

Management of TB in HIV+ pregnant women

WHO recommends

TB treatment should be initiated first, followed by ART as soon as possible in the first 8 weeks of starting treatment

(irrespective of CD4 count)



Congenital TB

- Very rare
- Via placenta or by aspiration / ingestion of infected amniotic fluid
- Symptoms and signs begin within 2nd and 3rd week
- Symptoms are often non specific
  - Hepato-splenomegaly, respiratory distress, fever & lymphadenopathy
  - Abdominal distension, irritability & lethargy

Congenital TB: Diagnosis

- Clinical suspicion
- Demonstration of AFB in tissue / fluids
- Chest radiograph
- Histopathology of placenta

Postnatal management

- **Mother with open TB can breastfeed**
  - But INH prophylaxis (5mg/kg) with Pyridoxine should be given to the baby
- **Breastfeeding is Contraindicated** if :
  - TB-mastitis
  - Non-compliant with treatment/ MDR-TB
  - HIV co-infection

Postnatal management: Contraception

- **A non-hormonal method** if on Rifampicin containing regimen

- Depo-Provera

Conclusion

- Infections represent a **high risk to pregnant women**
- Diagnosis and management of infections in pregnancy can be a real **challenge**
- **Polypharmacy** (especially in HIV+ women)
  - Side effects/ non-compliance/ drug interaction/ fetal toxicity/ DR
- **Prevention is the key** to successful outcome
- Treat before pregnancy
- **Appropriate counselling** of patients improves adherence to treatment and outcome to mother and baby

WAVE

EACS European AIDS Clinical Society

THANK YOU