



TOWARDS  
**ZERO**  
DEATHS

## Module 7

# MATERNAL AND INFANT TB



International Union  
Against Tuberculosis  
and Lung Disease



World Health  
Organization

# Maternal TB



TB in pregnancy is common...

- in peri-natal period
- especially in HIV-infected women

Neonatal Medicine 2009

Adhikari M. Seminars Fetal

...and is associated with:

- increased maternal mortality
- LBW babies
- increased risk of TB transmission to the infant
- increased risk of HIV transmission to the infant
- increased infant mortality

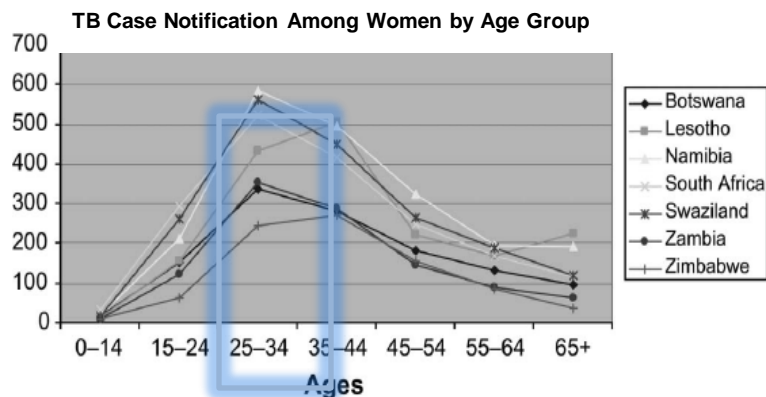
Dis 2011

Gupta A et al. Clin Infect Dis 2007; Gupta A, et al. J Infect

# Maternal TB and TB/HIV



## Women of childbearing age have the highest burden of TB



DeLuca JAIDS 2009

## TB is a leading cause of maternal mortality

	Maternal mortality (per 100,000)	
	All	TB
HIV+	323.3	12,170
HIV-	148.6	3,850

Khan AIDS 2001

# Infant TB and TB/HIV



Infants born to HIV-infected mothers have higher rates of TB

- HIV exposed: 10x increased risk TB
- HIV infected: 30x increased risk TB

Mukadi Y et al, AIDS 1997

	<b>Infant Tuberculosis (per 100,000)</b>	<b>RR</b>
HIV+	1595.5	24.2
HIV-	65.9	

Hesseling A et al, Clin Infect Dis 2009

# Three I's for TB control



## 1. Intensified Case Finding

Symptom screening for TB should be routine in pregnant women

Gupta A et al Clin Infect Dis 2011

## 2. INH Prevention Treatment (IPT)

Newborns of mother with TB that do not have TB disease should delay BCG and receive IPT for at least 6 months

## 3. Infection Control

# Infection control



- Infants at increased risk of exposure to TB and severe disease – especially HIV-exposed infants
- Infants often accompany mother to access health services including health-care facilities also attended by adults such as maternal health or HIV clinic
- NTP has infection control guidelines emphasising importance of simple and feasible measures to optimize patient flow and air flow to reduce the risk of transmission

# ...and a fourth I



- 1) Intensified Case Finding
  - 2) INH Prevention Treatment (IPT)
  - 3) Infection Control
- PLUS
- 4) Integrated Management

# The fourth I: scaling up implementation of collaborative TB-HIV activities to protect vulnerable mothers and infants

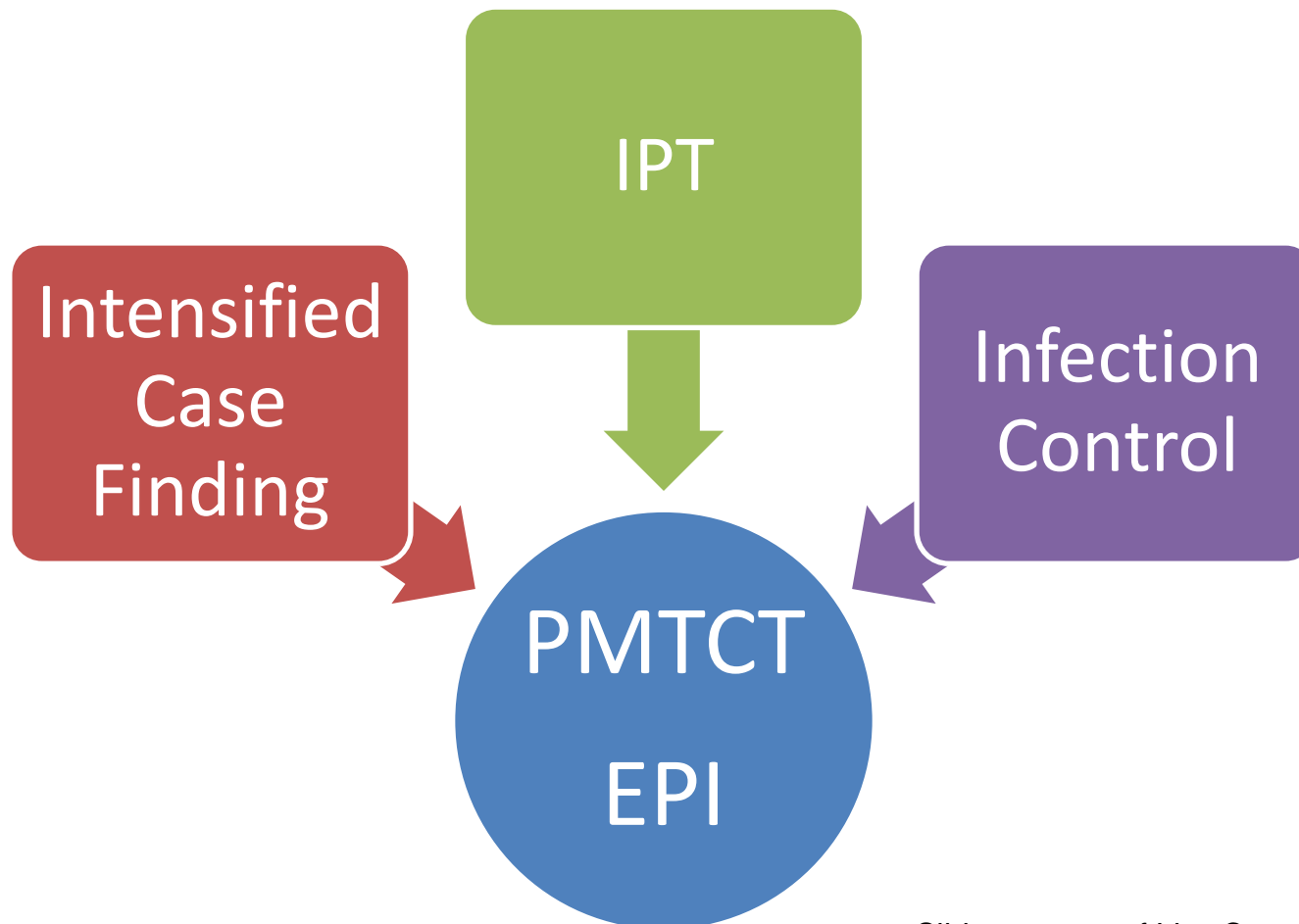
Gie RP, Beyers N. Int J Tuberc Lung Dis 2009



- 1) increased screening of TB during pregnancy and the postnatal period for mother and baby
- 2) PMTCT services to reduce transmission of HIV to infants
- 3) services to ensure that mother and infant receive HAART
- 4) interaction between the PMTCT and child health programmes



# The 4<sup>th</sup> I: Integrating Maternal and Infant TB/HIV Prevention and Control



Slide courtesy of Lisa Cranmer

# Approach to newborn of mother with TB



Assess newborn and

- if clinically unwell e.g. neonatal “sepsis” or pneumonia or evidence of congenital infection, then consider TB disease (and TB treatment)
- if well, provide IPT for 6 months and follow-up

Continue breast feeding

Delay BCG until IPT complete

Infection control measures to prevent transmission from mother in newborn care facility

# Integrated management of mother with TB/HIV and infant



**Important and challenging - many issues to consider –  
What are the issues?**

# Integrated management of mother with TB/HIV and infant



Important and challenging - many issues to consider:

Screening for TB in mother and baby – and treating

ART – mother, PMTCT, infant if HIV-infected

IPT – for mother or infant

CPT – for mother and infant

BCG – withhold if HIV-infected infant  
delay if infant HIV-uninfected and on IPT

EPI schedule

Infection control

# Integrated management of mother with TB/HIV and infant



Important and challenging - many issues to consider:

Screening for TB in mother and baby – and treating

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EPI schedule

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..and even more challenging if mother has MDR or XDR TB

? choice of TB therapy or preventive therapy

? should baby be separated

# Current Impact of PMTCT on TB/HIV



- **Maternal HAART**
  - Decreases maternal active TB and HIV progression
- **Prevention of infant HIV infection**
  - Reduces risk of TB in infant
- **Provision of early HAART for infected infants**
  - Reduces risk of TB in infant

# Combining PMTCT with active case finding for tuberculosis

Kali PB et al, JAIDS 2006



## Setting:

- 90% uptake of antenatal HIV testing – HIV prevalence 30%
- The posttest counseling session of PMTCT program screen HIV-infected pregnant women for TB.

## Results:

- 370 HIV-infected pregnant women screened for symptoms of active TB by lay counselors.
- If symptomatic, referred to nurses who investigated further.
- Eight women were found to have previously undiagnosed, smear-negative, culture-confirmed TB (2160/100,000).
- Mean CD4 count in those with active TB compared to those without TB was  $276 \times 10^6$  cells per liter vs  $447 \times 10^6$  cells per liter ( $P = 0.051$ ).
- Symptoms most associated with active TB were hemoptysis and fever.

# Implications for EPI



Altered vaccine schedule based on infant TB exposure and HIV status

- If infant TB exposed → BCG after IPT
- No BCG vaccination for HIV-infected infants



# Maternal TB/HIV and BCG



- HIV infected infants are at increased risk of disseminated BCG disease which is often fatal
- PMTCT and early ART of HIV-infected markedly reduces the risk of BCG disease
- BCG IRIS is common in infants (3-6 months) when early ART is commenced but is usually not fatal

# The 4<sup>th</sup> I: Integration Activities



	Antenatal	Delivery	Postpartum
Intensified Case Finding	<ul style="list-style-type: none"><li>TB symptom screen at VCT</li><li>Intensified TB screen for all HIV+ mothers</li></ul>	<ul style="list-style-type: none"><li>TB symptom screen for mothers</li></ul>	<ul style="list-style-type: none"><li>TB symptom screen for mothers + infants</li></ul>
INH Preventive Therapy	<ul style="list-style-type: none"><li>IPT for mothers at PMTCT enrollment</li></ul>		<ul style="list-style-type: none"><li>IPT for TB exposed infants</li></ul>
Infection Control	<ul style="list-style-type: none"><li>TB contact screen</li></ul>	<ul style="list-style-type: none"><li>TB contact screen</li></ul>	<ul style="list-style-type: none"><li>TB contact screen</li></ul>

# Exercise: discuss how and where an integrated approach might be provided



Screening for TB in mother and baby – and treating

ART – mother, PMTCT, infant if HIV-infected

IPT – for mother or infant

CPT – for mother and infant

BCG – withhold if HIV-infected; delay if infant HIV-uninfected and on IPT

EPI schedule

Infection control