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# Mothers and Mycobacteria: The intersection between tuberculosis and maternal and neonatal health

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# Background

- Significant declines in maternal mortality over the last two decades
- Non-obstetric causes, including infectious diseases, are now responsible for 28% of maternal mortality worldwide.
- Important gaps in our understanding of TB and pregnancy



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## Clinical implications: TB and pregnancy

- Mixed evidence on pregnancy as a risk factor for TB disease
- Untreated TB in pregnant women results in unfavorable outcomes including:
  - IUGR, prematurity, low birth weight, peri-natal death
  - TB disease in the mother
  - TB infection and disease in the infant
    - High risk of transmission from mother to infant
- Outcomes generally worse in women who are co-infected with HIV
- TB disease in HIV+ pregnant women associated with increased risk of HIV transmission to infant



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## What do we know about the burden of TB disease among pregnant women?

- Unlike other infectious diseases (ex, HIV/AIDS, malaria), the burden of TB disease among pregnant women is not well understood
- Currently, TB notifications are not disaggregated by pregnancy status
- We have little data to target efforts aimed at reducing TB burden in this important population
- But we do have good opportunities to reach pregnant women with TB diagnosis and treatment services



# Estimated TB Cases among pregnant women, 2013

	Estimate	95% UR	Rate per 1000 pregnant women	Percentage of global burden
Global estimate	216,500	192,100-247,000	2.1 (1.8-2.4)	-
AFRO	89,400	74,200-110,500	3.6 (3.0-4.5)	41%
SEARO	67,500	52,000- 87,100	2.4 (1.9-3.1)	31%
EMRO	28,500	19,700- 41,900	2.3 (1.6-3.4)	13%
WPRO	21,400	19,400- 23,700	1.1 (1.0-1.2)	10%
AMRO	4,800	3,900- 6,000	0.4 (0.3-0.5)	2%
EURO	4,900	3,800- 6,300	0.6 (0.5-0.8)	2%

*WHO designations used for regional categories*

From Sugarman et al. *Lancet Global Health* 2:12



## Countries with highest estimated burden of TB among pregnant women

Country	Mean	95% UR	Percentage of global burden
India	44,513	30532 -61967	24.6
DR Congo	16,157	8652-26915	6.1
China	9,464	8066 -11088	5.8
Pakistan	14,789	7210 -26330	5.3
Nigeria	10,861	2997 -27712	4.6
Bangladesh	8,129	4116 -14274	4
Indonesia	9,478	4684 -16358	4
Philippines	6,551	5715 -7494	3.8
South Africa	8,412	4363 -14346	3.2



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# TB screening, diagnosis and treatment for pregnant women

- WHO symptom screen is useful for excluding TB
- Isoniazid preventive therapy (IPT) for HIV+ pregnant women and those at risk of progressing to active TB disease
- Clinical diagnosis is challenging due to similarity between TB symptoms and physiological response to pregnancy
- Recommended diagnostic tests include smear microscopy, culture, molecular methods (e.g. Xpert®MTB/RIF), shielded chest X ray
- TB treatment in pregnant women is the same as for non-pregnant women
  - HIV co-infected pregnant women on ART
  - Second line therapy for drug resistant TB



- Ensure TB screening, diagnosis and treatment services for pregnant women and infants
- Build on PMTCT platforms to integrate TB services for HIV+ pregnant women
- Include TB services in IMCI, particularly for infants who present with acute pneumonia.
- Address needs of pregnant and breastfeeding women and infants in research
  - Point of care testing is particularly important for early TB diagnosis among pregnant women





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## TB Services in ANC and PMTCT platforms: What do we know?

### Integration of tuberculosis and prevention of mother-to-child transmission of HIV programmes in South Africa

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- Multi method study to describe level of integration and identify barriers
- 10 clinics in rural area of KwaZulu Natal with high TB and HIV prevalence, 150 ANC clients
- Just over half (56%) screened for TB; of these, 27% submitted sputum sample; ultimately, 2 were diagnosed with TB
- Key informants at every level noted lack of integration, TB screening and IPT are particularly absent in the PMTCT setting
- Health system weaknesses (ex, high staff turnover, limited information systems) and lack of leadership identified as main issues to be addressed.



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## Moving forward

- Clinical significance of TB and pregnancy is clear
- A better understanding of the burden of TB among pregnancy women at global and country level can help target efforts
- Efforts to integrate TB services with maternity care are mixed in terms of yield, feasibility
- Role for improved TB diagnosis and point of care test – may ease some difficulties of integrating services