Characteristics and Outcomes of Pregnant Women with HIV undergoing Tuberculosis Screening in Uganda

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Christina Yoon[1], Lelia H. Chaisson[1], Shafic Makumbi[2], David W. Dowdy[3], Patrick J. Phillips[1], Henry Ssenyondo[4], Suzanne Dufault[1], Sylvia LaCourse[5], Annettee Nakimuli[4], Fred C. Semitala[2,4]
[1]University of California San Francisco, San Francisco, CA, USA, [2]Infectious Diseases Research Collaboration, Kampala, Uganda,
[3]Johns Hopkins University, Baltimore, Maryland, USA, [4]Makerere University, Kampala, Uganda, [5]University of Washington, Seattle, WA, USA.

BACKGROUND

Pregnancy increases tuberculosis (**TB**) risk independent of HIV infection, making systematic TB screening and TB preventive therapy (**TPT**) particularly important for pregnant women with HIV (**PWWH**).

Study objectives:

- Compare baseline characteristics including TB screening, TB prevalence, and TPT uptake among pregnant and non-pregnant women enrolled in an ongoing TB screening trial.
- Determine maternal, pregnancy and infant outcomes of PWWH.

METHODS

Study design: TB SCRIPT (**TB SCR**eening **I**mproves **P**reventive **T**herapy Uptake) is a Phase 3 RCT comparing 2 WHO-approved TB screening strategies on clinical outcomes of ART-naïve outpatient adults with HIV (NCT04557176).

Participants: Analysis limited to female trial participants age <50 years enrolled between 11/2020-01/2023; we excluded participants with unknown pregnancy status.

Study setting: 4 HIV clinics in Kampala, Uganda

Study procedures:

- Pregnancy testing: All female participants <50 years underwent urine pregnancy testing at enrollment.
- Systematic TB screening: All participants underwent systematic TB screening at enrollment by their trial arm
  - *All screen-positives*: urine LAM ± Xpert Ultra testing
  - *All screen-negatives*: 3HP initiation (if 3HP eligible).
- Maternal, infant and pregnancy outcome ascertainment: Standardized questionnaire, chart review of all available medical records (*e.g.,* clinic charts, L&D registers)

Clinic procedures:

- TB treatment decisions and TPT patient selection: TB treatment or TPT (IPT or 3HP) could be initiated for any trial participant at the discretion of routine clinic doctors
- Antenatal and postpartum care: per routine clinic protocols

Analysis:

- We compared baseline characteristics (including TB screening status, TB prevalence) and % completing TPT, by pregnancy status at enrollment.
- We assessed occurrence of adverse maternal, pregnancy and infant outcomes and occurrence of a composite adverse outcome.

Compared to non-pregnant women, PWWH were less likely to screen positive for TB and be diagnosed with active TB.

PPWH were also less likely to receive TB preventive therapy.

RESULTS

Table 1. Characteristics of women (age <50 years) with HIV undergoing systematic TB screening.

Clinical characteristics (n, %)	Pregnant N=269	Not pregnant N=748	p-value
Baseline characteristics			
Age, years (IQR)	25 (21-28)	29 (24-35)	<0.01
CD4 count, cells/uL (IQR)	284 (216-405)	255 (127-435)	0.01
BMI, kg/m^2 (IQR)	25.1 (22.9-28.3)	22.7 (20.4-25.9)	<0.01
TB screening outcomes			
TB screen positive	91 (33.8%)	339 (45.3%)	<0.01
Prevalent TB detected	3 (3.3%)	39 (11.5%)	0.09
Urine LAM positive	1 (33.3%)[1]	15 (38.5%)[2]	0.86
Xpert Ultra positive	2 (66.7%)[3]	24 (61.5%)[4]	0.86
TB screen negative	178 (65.9%)	409 (54.7%)	<0.01
Initiated 3HP per study protocol	0 (0%)[5]	343/376 (91.9%)[6]	<0.01
Initiated 6H/3HP per routine clinician[7]	56/269 (20.8%)	157/405 (38.8%)	<0.01

Legend: [1]Grade 1 (1); [2]Grade 1 (10), Grade 2 (2), Grade 3 (3); [3]Low (2), [4]Trace x2 (2), Very Low (11), Low (9), Medium (1), High (1); [5]0 were eligible for study-initiated 3HP due to pregnancy; [6]33 of 409 non-pregnant women were ineligible for 3HP for the following reasons: planning to become pregnant within 3 months (6), breastfeeding (4), <3 months postpartum (1), drug contraindication (8), liver enzymes ≥3x upper limit of normal (6), heavy or binge alcohol consumption (4); liver disease (1); [7]Among 269 PWWH and 405 non-pregnant women who did not receive study-initiated 3HP.

Table 2. Maternal characteristics and outcomes.

Clinical characteristics (n, %)	N=253
Maternal baseline characteristics	
Gestational age at enrollment, weeks (IQR)	23.1 (16.9-28.7)
New to antenatal care (current pregnancy)	241 (95.3%)[1]
Number of previous deliveries	
0	78 (30.8%)
1	73 (28.9%)
2	47 (18.6%)
3 or more	49 (32.4%)
Unknown	6 (2.4%)
Maternal outcomes (≤6 months postpartum)	
Maternal incident TB	1 (0.4%)
Maternal death	2 (0.8%)[2]

Legend: [1]Trimester at first antenatal care visit: 1st trimester (27, 10.7%), 2nd trimester (122, 48.2%), 3rd trimester (94, 37.2%); [2]Cause of death: Eclampsia (1), Possible prevalent TB (1).

RESULTS

Table 3. Pregnancy outcomes.

	N=253
Abortion, spontaneous	8 (3.2%)
Abortion, induced for non-ectopic pregnancy	5 (2.0%)
Stillbirth[1]	3 (1.2%)[2]
Unknown	4 (1.6%)
Live birth	233 (92.1%)[3]
Full-term[4]	222 (95.3%)
Pre-term[5]	5 (2.1%)
Very pre-term[6]	1 (0.4%)
Unknown	6 (2.6%)
Urgent cesarean (among 236 live and stillbirths)	
Urgent cesarean	20 (8.5%)
Unknown	2 (0.9%)

Legend: [1]Infant born deceased at ≥28 weeks gestation; [2]Includes 0 sets of twins; [3]Includes 5 sets of twins; [4]Live birth at ≥37 weeks gestation; [5]Live birth at <37 weeks gestation; [6]Live birth at <34 weeks gestation.

Table 4. Infant outcomes.

	N=238[1]
Low birthweight (<2500 grams)	18 (7.6%)
Congenital anomaly	1 (0.4%)
Infant TB disease	1 (0.4%)[2]
Infant deaths	9 (3.8%)
Time-to-death (median days, range)	277 (3-985)

Legend: [1]Among 238 infants from 233 live births; [2]Diagnosed at 1.5 years.

Composite adverse outcome (spontaneous abortion, stillbirth, low birthweight, preterm birth, neonatal death) incidence: 12.7%

CONCLUSIONS

- **1 in 4 women with HIV in Uganda were pregnant at trial enrollment**
- **TB prevalence among PWWH was less than one-third that of non-pregnant women**
  - Reduced TB prevalence among PWWH may be due to differences in TB screening test sensitivity and care seeking behavior
- **PWWH were less likely to receive TPT, including IPT, and even after pregnancy**

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