Tuberculosis Incidence among Adolescents and Young Adults with HIV in Kenya

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BACKGROUND

- Adolescents and young adults (AYA), between ages of 10 to 24, and YWHIV are at high risk of TB.
- TB incidence data is underreported amongst AYA.

What are the risk factors and incidence rates of tuberculosis (TB) disease among adolescents and young adults living with HIV (YWHIV) in Kenya?

METHODS

- YWHIV aged 10-24 enrolled in The Adolescent Transition to Adult Care for HIV-infected Adolescents in Kenya (ATTACH) study
- Data abstracted from medical records January 1, 2016 to January 18, 2018
- Use of anti-TB medications and TB diagnosis identified YWHIV with TB
- Analyses stratified by newly initiated ART users (during data abstraction period) and previously on ART users (before data abstraction period)
- Descriptive and univariate hazard analysis compared YWHIV with and without TB

We estimated TB incidence and evaluated risk of TB by characteristics of YWHIV

YWHIV had a **high incidence of TB**, particularly among those *newly initiating ART*. TB prevention therapy was protective for both groups of ART users. Treatment support and partner testing for HIV were also protective against TB.

RESULTS

- The overall incidence rate was 421 per 100,000
  - 23 TB cases among YWHIV newly initated ART & 30 TB cases among YWHIV previously on ART (Table 1)
- Most of YWHIV were females and almost half utilized TB preventative therapy (TPT; Table 2)
- Newly initated ART:
  - TPT use was significantly lower among TB cases
  - Presence of treatment supporter decreased risk of TB
- Previously on ART:
  - Partner tested for HIV was protective of TB

TABLE 1. TB INCIDENCE RATE AND RATE RATIO AMONG YWHIV ON ART

	Newly initiated ART	Previously on ART	Incidence rate ratio
Rate (per 100,000 person years)	776 (516.0-1,168.5)	312 (218.0-445.9)	2.5 (1.4-4.4)

TABLE 2. CHARARCTERISTICS OF YWHIV AT CLINIC ENROLLMENT

	Overall	Newly initated ART (n=3,366)		Previously on ART (n=5,043)	
Median(IQR) / n(%)	N=8,409	No TB (n=3,343)	TB (n=23)	No TB (n=5,013)	TB (n=30)
Age at clinic enrollment	18 (11-22)	22 (19-23)	22 (18-24)	14 (8-20)	13 (9-18)
Female sex	6,058 (72.6)	2,702 (81.4)	15 (65.2)	3,322 (66.8)	19 (65.5)
TB prevention therapy	3,827 (45.5)	1,358 (40.6)	1 (4.3)	2,459 (49.1)	9 (30.0)
Family member with HIV	2,093 (57.5)	811 (50.0)	1 (50.0)	1,274 (63.7)	7 (53.8)
Partner tested for HIV	1,786 (58.2)	920 (44.0)	8 (50.0)	964 (65.6)	3 (23.1)
Any treatment support	4,508 (90.0)	2,240 (89.8)	10 (62.5)	2,245 (90.5)	13 (81.3)

TABLE 3. MULTIVARIATE COX REGRESSION MODEL ESTIMATING RISK OF TB AMONG 18+ YEAR OLDS

	Newly initiated ART n=1,412	Previously on ART n=1,077
Female sex	**0.36 (0.15-0.89) p=0.026**	1.31 (0.27-6.40) p=0.736
Partner tested for HIV	1.76 (0.54-5.69) p=0.346	**0.17 (0.04-0.72) p=0.016**
Any treatment supporter	**0.26 (0.07-0.93) p=0.038**	0.34 (0.07-1.73) p=0.195
TB prevention therapy	N/A	**0.10 (0.01-0.87) p=0.037**

Multivariate Cox regression model:

- 74% lower risk of TB for YWHIV with treatment supporter among newly initated ART users (adjusted for female sex and partner tested for HIV; Table 3)
- 83% decreased risk of TB for YWHIV with partner tested for HIV among individuals previously on ART, adjusted for female sex and treatment supporter (Table 3)

CONCLUSIONS

- These programmatic data demonstrate high TB incidence among YWHIV, especially among newly initated ART.
  - TPT offered protection against TB disease, in both univariate and multivariate analyses for both cohorts.
  - Support from interpersonal relationships also protected against TB.
- Age disaggregated data would be further helpful to identify differences across YWHIV.

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FIGURE 1. KAPLAN-MEIER SURVIVAL CURVE OF TB DISEASE AMONG YWHIV ON ART

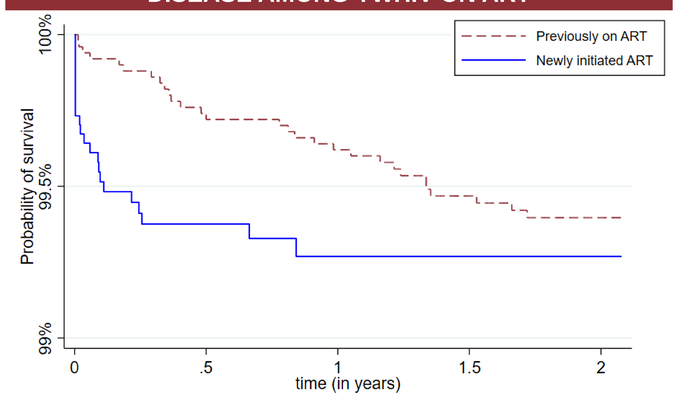
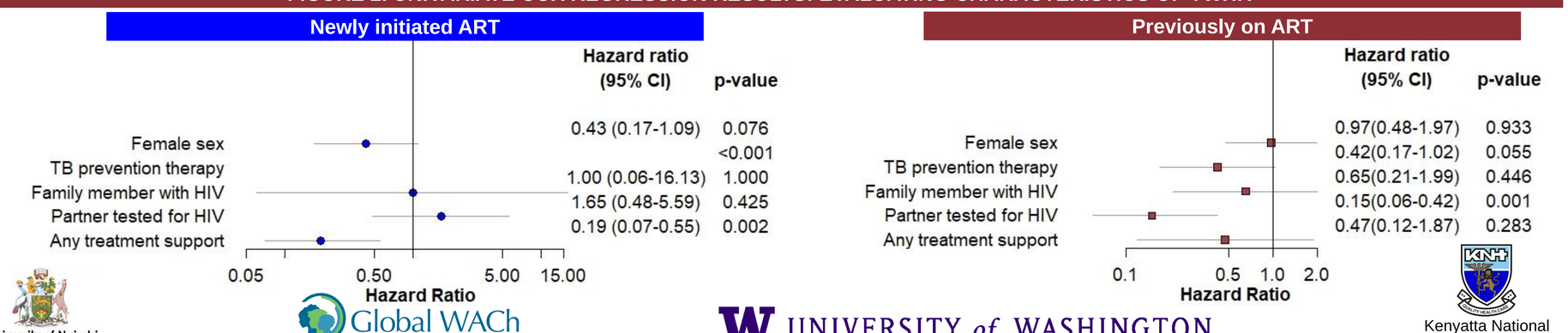


FIGURE 2. UNIVARIATE COX REGRESSION RESULTS: EVALUATING CHARACTERISTICS OF YWHIV



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