Sexually Transmitted Infection Prevalence Among Adolescents and Adults in Western Kenya

Julius L. Tonzel[1,2], Britt Gayle[1,2], Natalie Burns[1,2], Glenna Schluck[1,2], Paul Adjei[1], Josphat Kosgei[3,4], Deborah Langat[3,4], Rael Bor[3,4], Christine Akoth[3,4], Fred Sawe[3,4], Margaret Yacovone[5], Trevor A. Crowell[1,2] for the Multinational Observational Cohort of HIV and other Infections (MOCHI) Study Group

[1]U.S. Military HIV Research Program, CIDR, Walter Reed Army Institute of Research, Silver Spring, Maryland, United States of America ; [2]Henry M. Jackson Foundation for the Advancement of Military Medicine, Bethesda, Maryland, United States of America; [3]HJF Medical Research International, Kericho, Kenya; [4] U.S. Military HIV Research Program, Walter Reed Army Institute of Research – Africa, Kericho, Kenya; [5]National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, Maryland, United States of America

Background

- Kenyan guidelines recommend syndromic management for sexually transmitted infections (STIs) among people living with HIV (PLWH), with diagnosis dependent on the presence of urogenital symptoms
- STIs like *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) can cause morbidity and be transmitted without symptoms
- **Objective: To assess the prevalence of CT and NG using universal nucleic acid amplification test (NAAT)-based testing among adults in Western Kenya**

Methods

- Participants without HIV were enrolled into the Multinational Observational Cohort of HIV and other Infections (MOCHI) study in Kericho and Homa Bay, Kenya from December 2021 to May 2023
  - Male and female participants aged 14-55 years
  - Vulnerable to HIV and other STIs, defined by any of the following within the last 24 weeks
    - Diagnosis of an STI
    - Transactional sex
    - Condomless sex with PLWH or unknown status
    - Injection drug use
    - Anal or neovaginal sexual intercourse with multiple partners
- At enrollment, participants provided urine, oropharyngeal swabs, and anorectal swabs for NAAT for NG and CT (GeneXpert®, Cepheid)
- Demographic and sociobehavioral data were collected using computer-assisted self-interview
  - Transactional sex was defined by self-identifying as a "sex worker" or reporting sex work as an occupation
  - Inconsistent condom use was defined as reported condom use in less than 100% of their sexual acts
- Multivariable robust Poisson regression was used to estimate adjusted prevalence ratios (aPRs) and 95% confidence intervals (CIs) for factors potentially associated with the prevalence of STIs

STIs were highly prevalent in Western Kenya, particularly among females, and anatomical sites of infection were poorly correlated with self-reported sexual activities

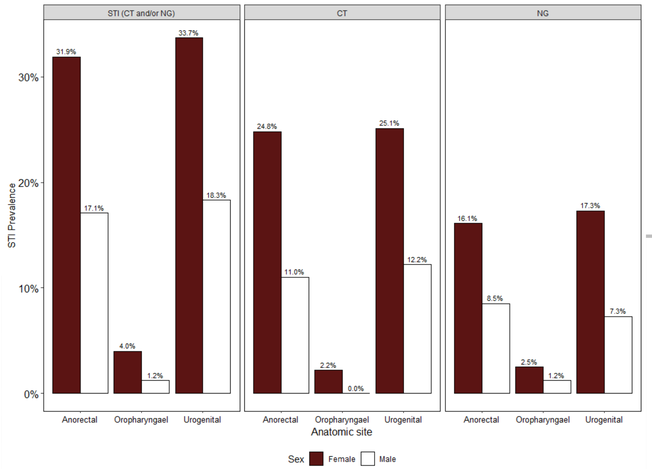
Results

- Of 405 participants, 143 (35.3%) were diagnosed with NG and/or CT at enrollment
  - NAAT identified 111 (27.4%) cases of CT and 76 (18.8%) cases of NG
- More participants who were aged ≤24 years, female, and engaged in transactional sex tested positive for NG and/or CT

Table 1. Characteristics of people vulnerable to HIV & other STIs in Kenya, December 2021 to May 2023.

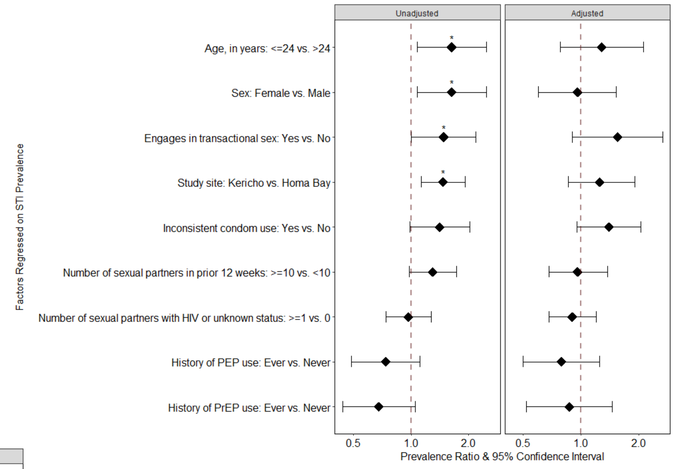
	STI Positive	STI Negative	
Characteristics	n = 143	n = 262	p-value
Age ≤ 24 Years	124 (86.7)	200 (76.3)	**0.013**
Female	124 (86.7)	200 (76.3)	**0.013**
Kericho Study Site	78 (54.5)	104 (39.7)	**0.004**
Ever Taken PrEP	17 (12.5)	51 (19.9)	0.065
Ever Taken PEP	19 (14.1)	52 (20.4)	0.124
Engages in transactional sex	120 (84.5)	197 (75.5)	**0.035**
≥10 sexual partners in prior 12 weeks	79 (59.4)	122 (49.4)	0.062
≥10 sexual partners with HIV/unknown status in prior 12 weeks	67 (50.4)	128 (51.4)	0.848
Inconsistent condom use	108 (80.0)	178 (70.6)	0.113

Figure 1. Prevalence of STIs by anatomical site and sex.



- Female participants had higher prevalences of urogenital (33.7% vs. 18.3%, p=0.01) and anorectal STIs (31.9% vs 17.1%, 0.01) than males
- Among 117 participants with an anorectal STI, 16 (13.7%) reported receptive anal sex

Figure 2. Prevalence ratios and 95% confidence intervals for factors associated with *Neisseria gonorrhoeae* and/or *Chlamydia trachomatis*.



- In the unadjusted models, age, sex, study site, and engagement in transactional sex were associated with STIs
  - In the adjusted model, there were no factors associated with STIs

Conclusions

- Urogenital and anorectal STIs were highly prevalent in a Western Kenyan community, particularly among females
- Implementing universal NAAT-based anorectal STI screening of sexually active adolescents and young adults could reduce STI burden in this population
- Reported sexual history alone is not reliable enough in determining the anatomical sites for STI testing

Corresponding Author:
Julius L. Tonzel, MPH
Walter Reed Army Institute of Research
Email: jtonzel@hivresearch.org

Acknowledgements: We thank the participants enrolled in RV583/MOCHI and the members of the study groups. We thank the staff at the Kericho CRC and Homa Bay, Kenya sites.

Funding: This work was supported by agreements between the Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc., and the U.S. Department of Defense (W81XWH-18-2-0040; HT9425-24-3-0004). This research was funded, in part, by the U.S. National Institute of Allergy and Infectious Diseases (AAI20052001).

Material has been reviewed by the Walter Reed Army Institute of Research. There is no objection to its presentation and/or publication. The opinions or assertions contained herein are the private views of the author, and are not to be construed as official, or as reflecting true views of the Department of the Army or the Department of Defense. Research was conducted under an IACUC-approved animal use protocol in an AAALAC International - accredited facility with a Public Health Services Animal Welfare Assurance and in compliance with the Animal Welfare Act and other federal statutes and regulations relating to laboratory animals. The investigators have adhered to the policies for protection of human participants as prescribed in AR 70–25.