A RISK SCORE TO FACILITATE TARGETED STI DIAGNOSTIC TESTING IN YOUNG KENYAN WOMEN

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[1]Victor Omollo, [2]Pamela Murnane, [3]Renee Heffron, [3]Lara Kidoguchi, [1]Zachary Kwena, [1]Elizabeth Bukusi, [3]Connie Celum, [2]Craig Cohen
[1]Kenya Medical Research Institute, Kisumu, Kenya [2]University of California San Francisco, San Francisco, California, [3]University of Washington, Seattle, Washington, USA

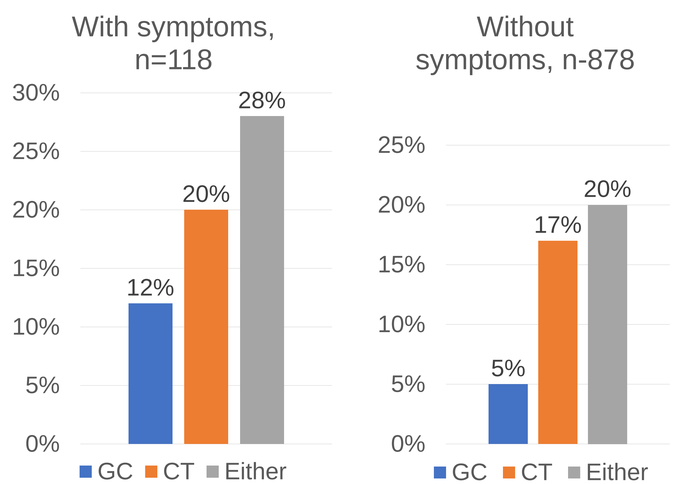
BACKGROUND

- Adolescent girls and young women (AGYW) in sub-Saharan Africa, a priority population for PrEP, also experience an excess risk of sexually transmitted infections (STIs).
- Although most treatable STIs are asymptomatic, syndromic management remains standard of care in low and middle income countries due to high costs and limited availability of diagnostic testing.
- We derived a risk scoring tool to identify AGYW at increased risk for *Chlamydia trachomatis* (CT) or *Neisseria gonorrhoeae* (GC) infection to inform targeted diagnostic testing and treatment.

METHODS

- Data are from the POWER cohort, a PrEP implementation science project for AGYW age 16-25 years at two family planning clinics in Kisumu, Kenya between 08/2017-03/2020.
- All women had nucleic acid amplification test (NAAT) for CT and GC at baseline and self-reported genital symptoms.
- We used the least absolute shrinkage and selection operator (LASSO) multivariable logistic regression models to derive a risk score.
- We evaluated the area under the receiver operating curve [AUC], and estimated sensitivity and specificity at various risk score thresholds.
- We compared the risk score to using symptoms alone, the current approach for syndromic STI management in Africa.

STI PREVALENCE BY PRESENCE OF SYMPTOMS



The **AUC was 0.71**. A risk score ≥4 (52% of AGYW scored ≥4), had 78% sensitivity and 57% specificity for detection of CT or GC infection. Using the **syndromic approach**, symptoms had **15% sensitivity** and 88% specificity, **thus missing 85%** of all infections.

Score	Sensitivity	Specificity	PPV	NPV	Proportion*
>=-3	100%	0.00%	24.00%	100%	100%
>=-2	100%	1.85%	24.34%	100%	98.58%
>=-1	99.02%	5.57%	24.87%	94.73%	95.52%
>=0	98.03%	13.00%	26.24%	95.45%	89.64%
>=1	97.05%	21.05%	27.96%	95.77%	83.29%
>=2	92.15%	33.43%	30.42%	93.10%	72.70%
>=3	85.29%	42.72%	31.98%	90.19%	64.00%
>=4	**78.43%**	**56.65%**	**36.36%**	**89.26%**	**51.76%**
>=5	51.96%	70.89%	36.05%	82.37%	34.58%
>=6	27.45%	86.37%	38.89%	79.03%	16.94%
>=7	14.71%	95.04%	48.38%	77.91%	7.29%
>=8	1.96%	99.07%	40.00%	76.19%	1.1%
>=9	0.9%	99.69%	50.00%	76.00%	0.4%
Symptoms	**14.71%**	**87.61%**	**27.27%**	**76.48%**	**12.94%**

*Proportion of the population that is at or above risk score threshold

RESULTS

Among 996 women with CT/GC test results, 12% presented with STI symptoms, while overall prevalence of CT was 17%, GC was 6%, and 21% had either. The best fit model included parameters for age, marital status, living situation, breastfeeding status, and use of family planning methods. The AUC was 0.71. A risk score >4 (52% of AGYW scored ≥4), had 78% sensitivity and 57% specificity for detection of CT or GC infection. Using the syndromic approach, symptoms had 15% sensitivity and 88% specificity, thus missing 85% of all infections.

CONCLUSIONS

Among Kenyan AGYW in a PrEP implementation project with 21% prevalence of CT or GC, a risk scoring tool was superior to syndromic management in infection detection.

The risk prediction tool detected 78% of infections and required NAAT testing for half of the population, while the majority of infections were asymptomatic and would be missed under syndromic management.

This score should be validated in other African AGYW as a promising tool to facilitate targeted STI testing to decrease CT/GC infection and its sequelae.

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Author Contact Information: Victor Omollo, vomollo@Kemri-ucsf.org, +254799580808