HIV incidence by self-reported frequency of condom use among persons in non-marital partnerships: a population-based study

Victor O. Popoola[1], Fred Nalugoda[2], Caitlin Kennedy[1], Godfrey Kigozi[2], Gertrude Nakigozi[2], Steven J Reynolds[3], Aaron A.R. Tobian[4], Victor Ssempijja[5], Justin Lessler[6], Arthur G. Fitzmaurice[7], Maria Wawer[1], Larry W. Chang[4], Ronald M Galiwango[2], Joseph Kagaayi[2], **M. Kate Grabowski[4]**

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BACKGROUND

- Self-report of no or inconsistent condom use with non-marital partners is often used as an eligibility criterion for pre-exposure prophylaxis (PrEP).
- In this study, we aimed to assess the relationship between HIV incidence and self-reported frequency of condom use.

METHODS

- We used longitudinal population-based surveillance data from the **Rakai Community Cohort Study (RCCS)** collected between **2011-2018** (survey rounds 15-18) to evaluate HIV incidence by self-reported frequency of condom use with non-marital partners in 38 communities, including four hyperendemic Lake Victoria fishing communities (adult HIV prevalence ~40%), in southern Uganda (Figure 1).
- Condom use frequency was assessed through self-reported questionnaire on consistency of condom use with participants' four most recent sexual partners (egocentric network data).
- Participants were categorized as never using condoms, inconsistently using condoms (within or between partnerships), or always using condoms.
- We characterized demographics, risk behaviors, partnership characteristics by condom use frequency among persons reporting non-marital partners.
- Our primary outcome was incident HIV infection, defined as the first HIV seropositive test result among persons seronegative at their prior visit.
- HIV incidence rates [IR] per 100 person years (pys) among condom never-users, inconsistent users, and always-users were estimated using Poisson regression.

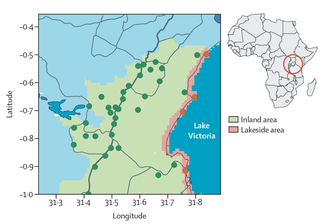


Figure 1. Rakai Community Cohort Study (RCCS) surveillance area in southern Uganda

In this population-based study in Uganda, persons who never used condoms with non-marital partners were usually in longer-term relationships and had similar or lower levels of HIV incidence compared to condom users.

In current guidelines, condom non-use is considered a PrEP eligibility criterion, but this may need to be reconsidered.

RESULTS

- Overall, 19,384 individuals self-reported non-marital partners, including 5,123 HIV-seronegative female and 9,619 HIV-seronegative male participants.
- **2,444 female and 5,334 male participants** had at least one follow-up visit and were included in the HIV incidence cohort.
- Approximately one-third of female (n=835; 34.2%) and half of male (n=2806; 52.3%) participants in the incidence cohort reported always using condoms with **10,766 non-marital sexual par**tners.
- Persons who reported never using condoms in the incidence cohort were more likely to be older and in non-marital monogamous relationships of significantly longer duration (**Table 1**).

Table 1. Individual and partnership baseline characteristics by self-reported frequency of condom use with non-marital partners among 5,026 females reporting 9,054 non-marital sexual partnerships and 9,527 males reporting 17,567 non-marital sexual partners in the RCCS

	Female participants (N=2,444)				Male participants (N=5,334)			
Individual characteristics	**Never**	**Inconsistent**	**Always**	**p-value***	**Never**	**Inconsistent**	**Always**	**p-value***
N	462 (18.9%)	1147 (46.9%)	835 (34.2%)		408 (7.6%)	2120 (39.7%)	2806 (52.3%)	
Age (median, IQR)	34 (27-39)	28 (22-35)	27 (20-35)	<0.001	31 (25-38)	27 (22-34)	28 (22-35)	<0.001
Marital status								
Never married	153 (33.1%)	434 (37.8%)	333 (39.9%)	<0.001	111 (27.2)	875 (41.3)	1092 (38.9)	<0.001
Currently married	45 (9.7%)	164 (14.3%)	213 (25.5%)		229 (56.1)	840 (39.6)	1194 (42.6)	
Previously married	264 (57.1%)	549 (47.9%)	289 (34.6%)		68 (16.7)	405 (19.1)	520 (18.5)	
Circumcised					254 (62.3%)	1333 (62.9%)	1762 (62.8%)	
Total # of past year sexual partners								
1	390 (84.4%)	741 (64.6%)	513 (61.4%)		120 (29.4%)	429 (20.2%)	811 (28.9%)	<0.001
2	61 (13.2%)	313 (27.3%)	266 (31.9%)		204 (50.0%)	785 (37.0%)	1067 (38.0%)	
3	2 (0.4%)	47 (4.1%)	24 (2.9%)		54 (13.2%)	461 (21.7%)	481 (17.1%)	
4+	1 (0.2%)	22 (1.9%)	19 (2.3%)		18 (4.4%)	408 (19.2%)	409 (14.6%)	
Partnership characteristics								
Total non-marital partners reported, N	470 (17.0%)	1367 (49.4%)	930 (33.6%)		430 (5.4%)	3519 (44.0)	4050 (50.6%)	
Type of relationship								
Boyfriend/Girlfriend	467 (99.4%)	1326 (97.0%)	853 (91.7%)	<0.001	425 (98.8%)	3025 (86.0%)	2412 (59.6%)	<0.001
Occasional/casual friend	2 (0.4%)	26 (1.9%)	41 (4.4%)		4 (0.9%)	265 (7.5%)	953 (23.5%)	
Other**	1 (0.2%)	15 (1.1%)	36 (3.9%)		1 (0.2%)	229 (6.5%)	685 (16.9%)	
Ongoing relationship	416 (88.5%)	1001 (73.2%)	620 (66.7%)	<0.001	330 (76.7%)	1876 (53.3%)	1395 (34.4%)	<0.001
Relationship duration in years (median, IQR)	4 (2-7)	1 (0.6, 3)	0.9 (0.2-2)	<0.001	2.0 (1-4)	0.6 (0.2-1)	0.4 (0.1-0.8)	<0.001

*Chi-squared p-value for categorical and Wilcoxon rank sum p-value for continuous variables; **Other partner types included the following: visitor, stranger, workmate, boss/supervisor, employee, fellow student, sugar daddy, relative other than spouse, other non-relative, rapist (by stranger), don't know, and client/sex worker

- A total of **189 HIV incident events** were identified.
- HIV incidence rates were similar among men who reported never using condoms (0.9/100 pys; 95%CI 0.39-1.93) and men always using condoms (0.9/100 pys, 95%CI: 0.64-1.16) but were higher among those reporting inconsistent use (1.2/100 pys, 95%CI: 0.88-1.60).
- Among women, incidence was lowest among those reporting never using condoms (1.4/100 pys; 95%CI: 0.78-2.56) and highest among inconsistent users (2.8/100 pys, 95%CI: 2.17-3.65).

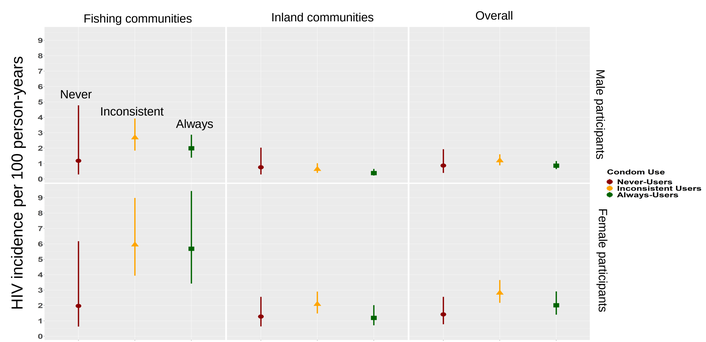


Figure 1. HIV incidence rates among RCCS male and female participants with non-marital partners by self-reported frequency of condom use with non-marital partners

CONCLUSIONS

- Condom use with non-marital partners in Uganda is more common in younger individuals with multiple sexual partners in short-term relationships, and not predictive of HIV incidence.
- Self-reported condom use frequency should be reconsidered in HIV risk screening tools, including as PrEP eligibility criterion.

ADDITIONAL KEY INFORMATION

Affiliations

[1] Johns Hopkins Bloomberg, School of Public Health, Baltimore, Maryland, USA; [2] Rakai Health Sciences Program, Entebbe, Uganda; Johns Hopkins University, School of Medicine, Baltimore, Maryland, USA; [3] National Institute of Allergy and Infectious Diseases, Bethesda, Maryland, USA; [4] Johns Hopkins School of Medicine, Baltimore, Maryland, USA; [5]CMRPD, Frederick National Laboratory for Cancer Research, Frederick, MD, USA; [6] University of North Carolina School of Public Health, Durham, NC ; [7]US Centers for Disease Control and Prevention, Kampala, Uganda

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Author Contact Information

Mary K Grabowski, mgrabow2@jhu.edu