



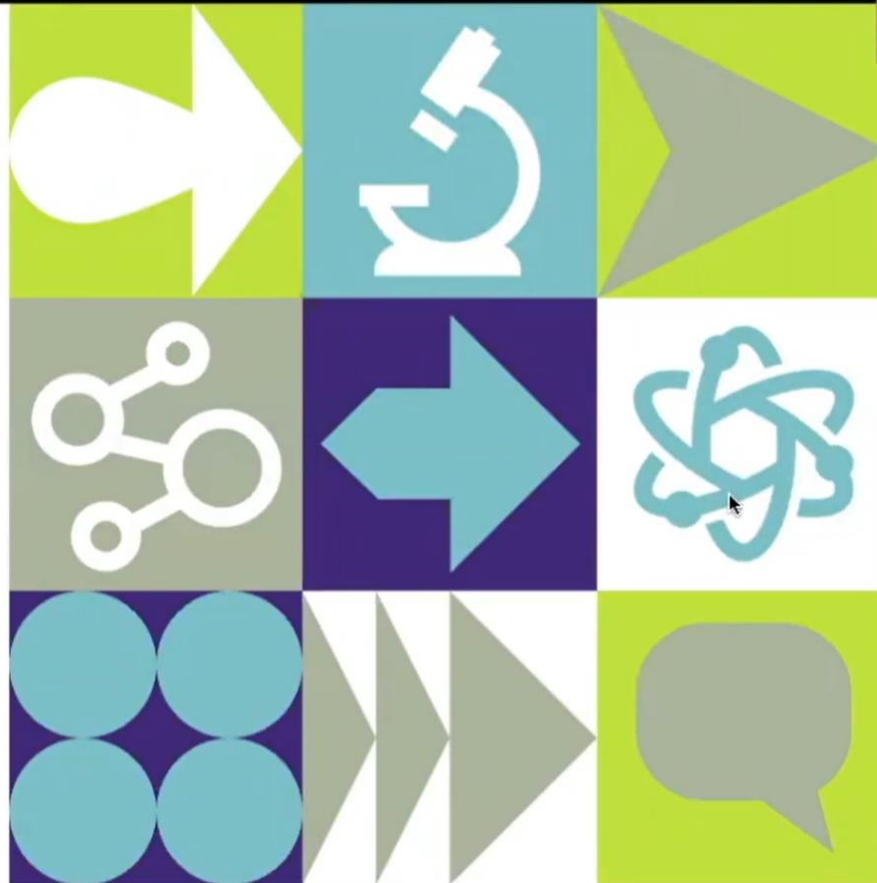
IAS 2021

**Prevalent HPV infection
increases the risk of HIV
acquisition in African
women: advancing the
argument for HPV
immunization**

Gui Liu

University of Washington

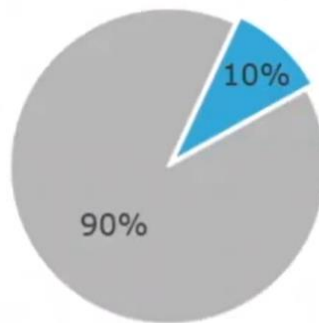
guiliu@uw.edu



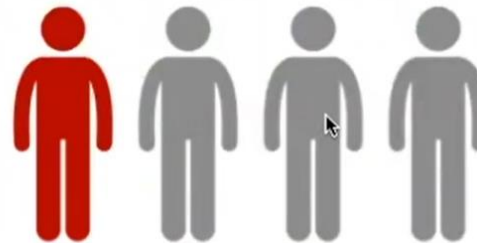


Adolescent girls and young women in sub-Saharan Africa at high risk for HIV

People ages 15+



New HIV infections in people 15+



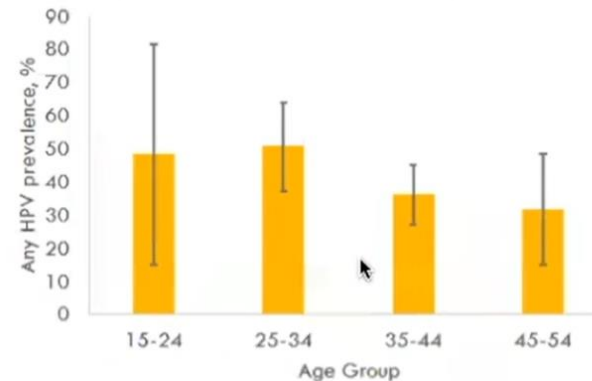
Source: UNAIDS Global AIDS Update, 2020



High HPV burden among AGYW in sub-Saharan Africa

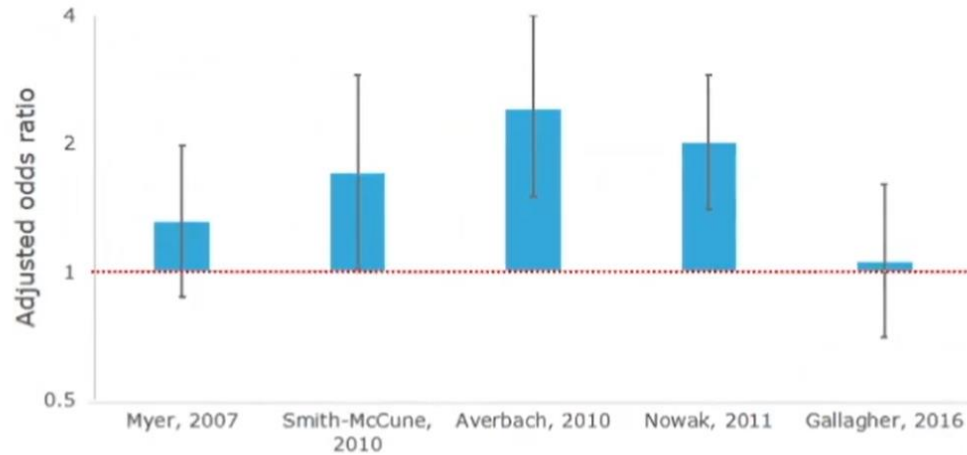
HPV overview:

- ~40 HPV types infect the genital tract and oropharynx
 - 12 HPV types are high risk (i.e., oncogenic)
- Common sexually transmitted infection



Data source: Ogembo, 2015, PLoS One, Apr 14, 10(4):e0122488

Evidence on the link between HPV and HIV



Additional sources:
Looker, 2018, J Int AIDS Soc.
Jun;21(6):e25110
Houlihan, 2012, AIDS, Nov
13;26(17):2211-22



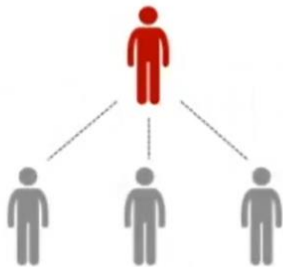
VOICE (MTN-003) trial overview

- RCT of vaginal and oral PrEP
- HIV-negative women aged 18-45
- Study completed (2009-2013)
- Main finding: PrEP did not prevent HIV due to low adherence





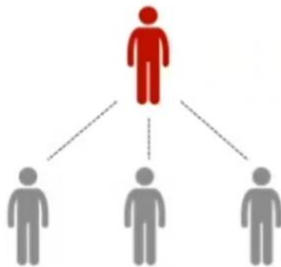
Nested case-control study



- Matched on age, site, and visit
- Inclusion criteria: Cervical swab collected 1 to 6 months before HIV seroconversion



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- Statistical analysis:
 - Exposure groupings:
 - Any HPV
 - High-risk HPV
 - Low-risk HPV
 - HPV types targeted by nonavalent vaccine
 - HPV types targeted by quadrivalent vaccine
 - Multiple HPV types
 - Conditional logistic regression



Participant characteristics

	Case (N=138)	Control (N=412)	p-value
Average age	23 (4.1)	23 (3.9)	0.353
Education			0.022
No schooling	3 (2.2%)	1 (0.2%)	
Primary	13 (9.4%)	20 (4.9%)	
Secondary	113 (81.9%)	356 (86.4%)	
College/University	9 (6.5%)	35 (8.5%)	
Study product			0.067
Oral FTC/TDF	27 (19.6%)	89 (21.6%)	
Oral placebo	22 (15.9%)	98 (23.8%)	
Oral TDF	21 (15.2%)	75 (18.2%)	
Vaginal placebo	40 (29.0%)	79 (19.2%)	
Vaginal TFV gel	28 (20.3%)	71 (17.2%)	

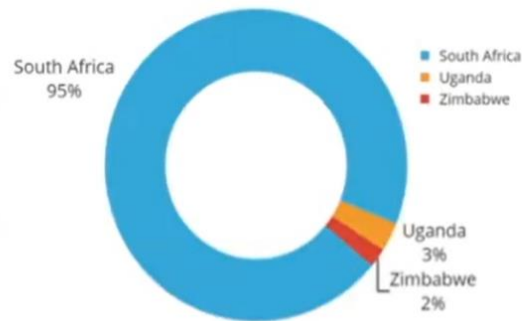


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Participant sexual behaviors

Time-varying sexual behaviors	Case (N=138)	Control (N=412)	p-value
Had transactional sex in the past year	6 (4.4%)	18 (4.4%)	0.422
Condom used at last sex	84 (66.1%)	249 (66.2%)	0.987
Had a primary partner in the past 3 months	130 (94.2%)	403 (98.1%)	0.020
Had other partners besides primary partner in the past 3 months	35 (26.3%)	84 (20.7%)	0.033
Number of sex partners in the past 3 months	1.4 (0.7)	1.4 (2.4)	0.980
Primary partner has other partners			0.006
Yes	99 (71.7%)	282 (68.4%)	
No	20 (14.5%)	101 (24.5%)	
Don't know	19 (13.8%)	29 (7.0%)	

Press **Esc** to exit full screen

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HPV infection and HIV acquisition

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Recent infection with other STIs

Time-varying STIs	Case (N=138)	Control (N=412)	p-value
Positive for syphilis, gonorrhea, chlamydia, or trichomoniasis			0.051
Yes	42 (31.3%)	93 (22.9%)	
No	92 (68.7%)	313 (77.1%)	
Positive for herpes simplex virus 2			0.014
Yes	80 (58.0%)	189 (45.9%)	
No	58 (42.0%)	223 (54.1%)	
Positive for bacterial vaginosis or candidiasis			0.448
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HPV infection and HIV acquisition

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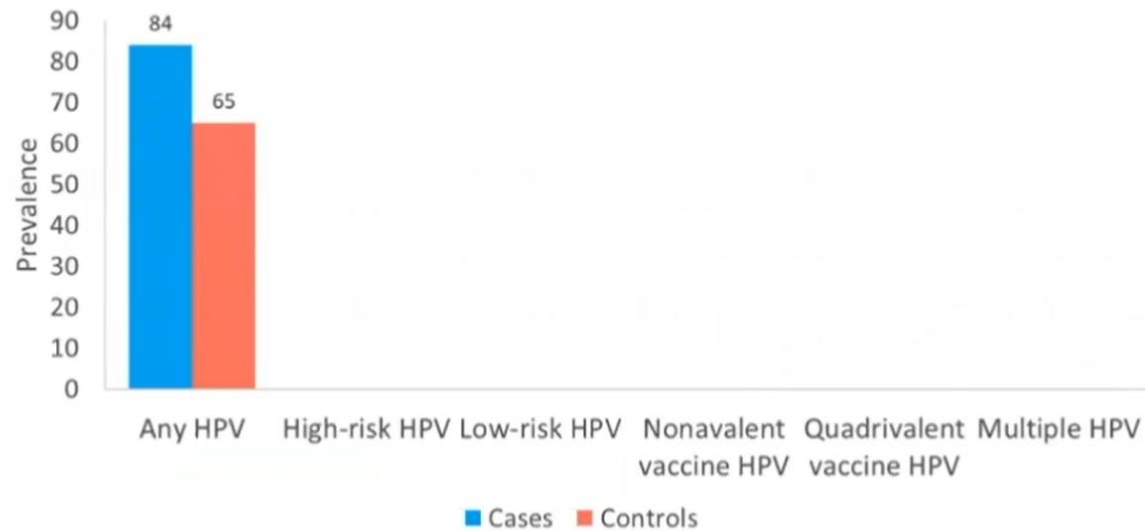
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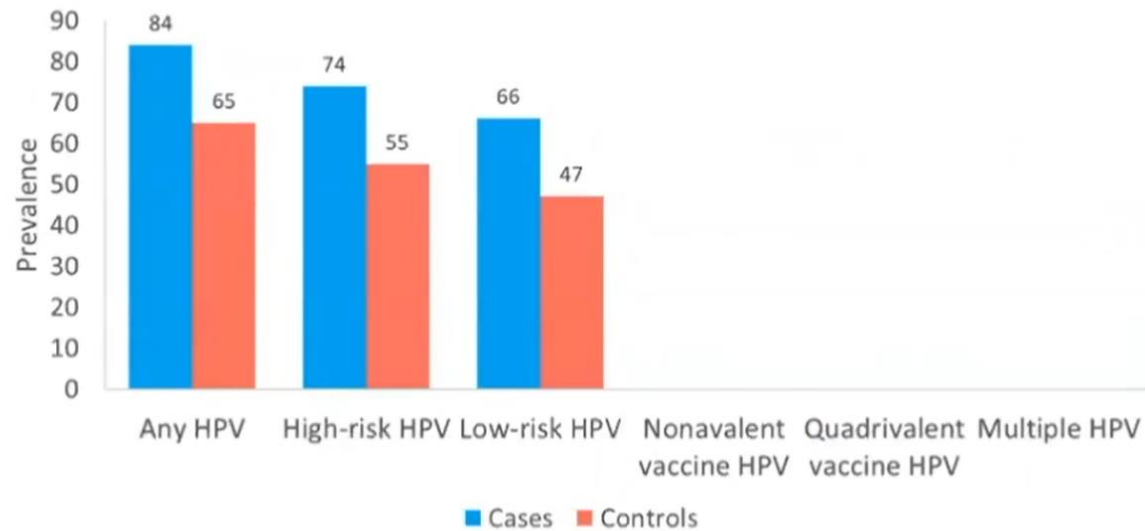


HPV prevalence by case status





HPV prevalence by case status



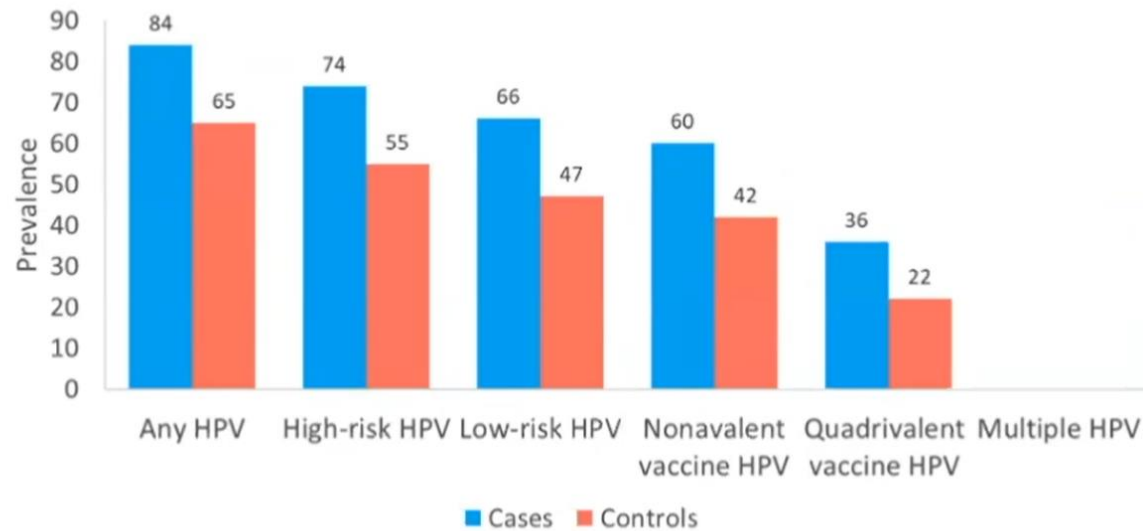
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HPV infection and HIV acquisition

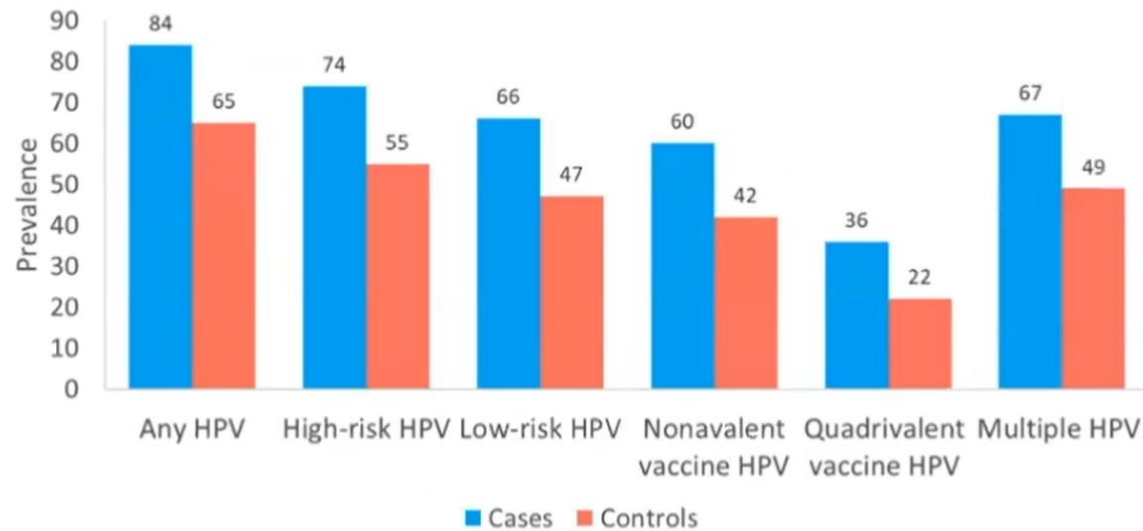


HPV prevalence by case status



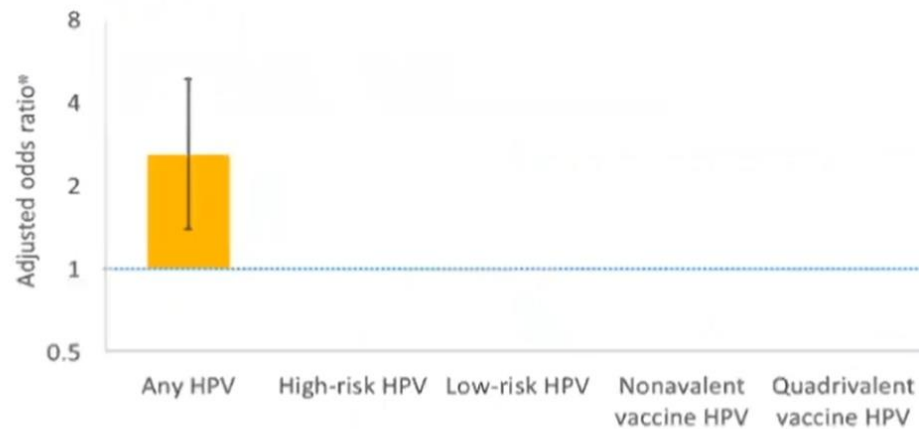


HPV prevalence by case status





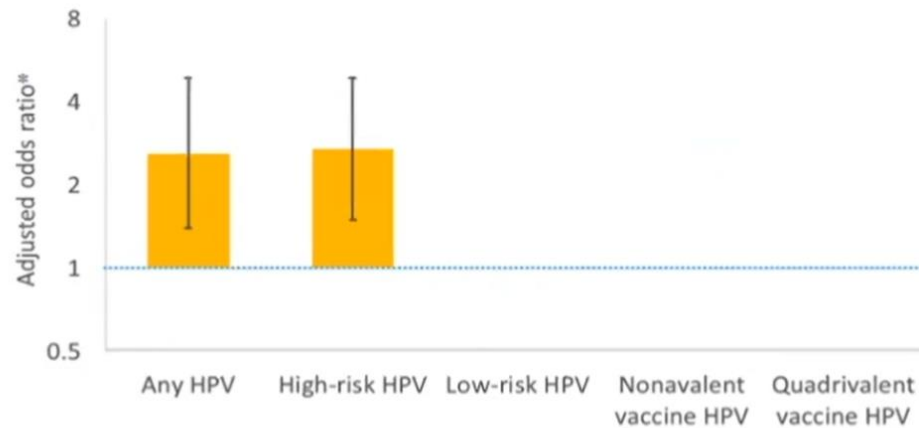
Association between HPV infection and HIV acquisition



*Adjusted for age, education, study product randomization, sexual behaviors, and other STIs



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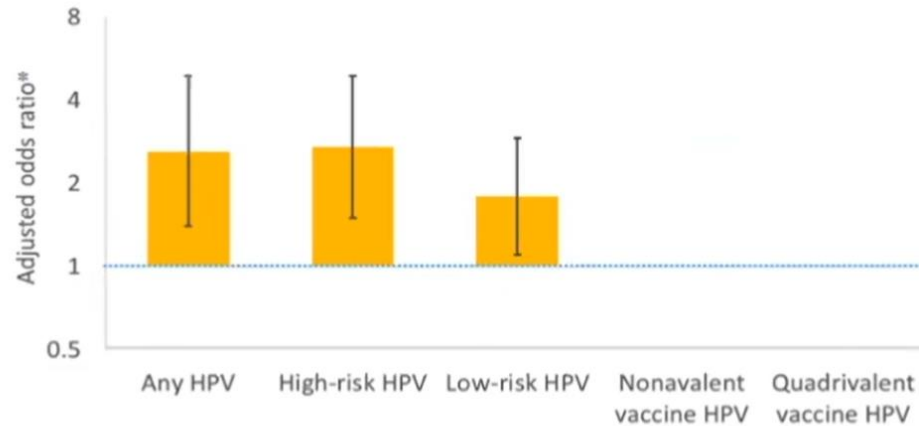
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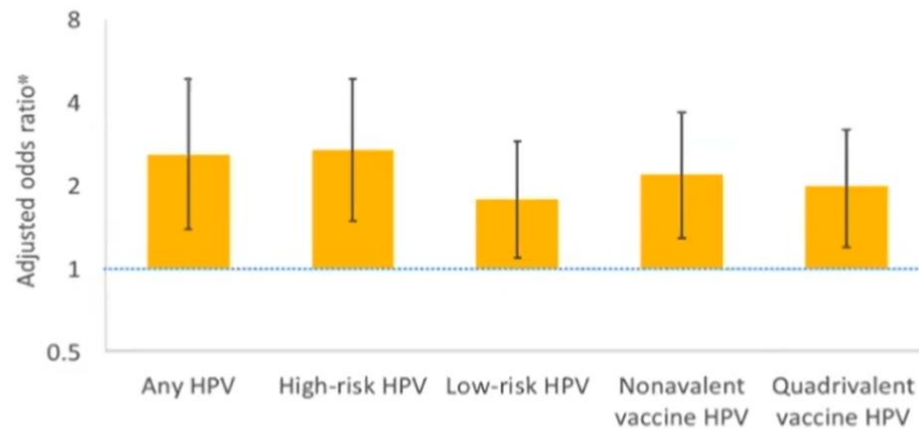
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INTERNATIONAL CLINICAL RESEARCH CENTER
UNIVERSITY of WASHINGTON

MTN
microbicide trials network



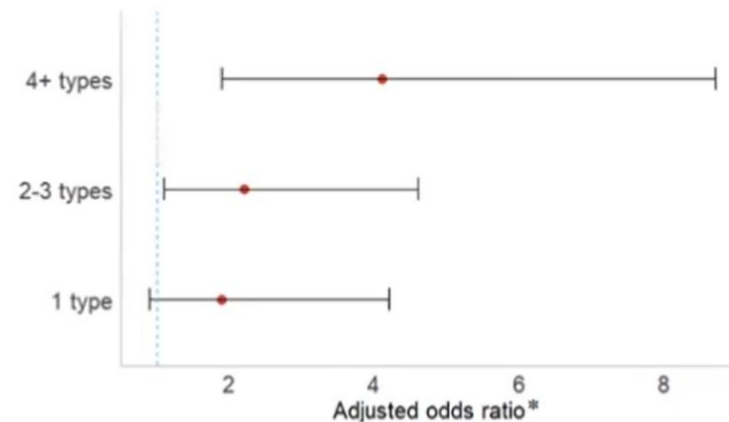
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HIV risk increased with number of HPV types detected



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Conclusions

- HPV infection was associated with 2.6-fold increase in HIV acquisition
- Risk of HIV increased with the number of HPV types detected
- Infection with vaccine-preventable HPV types increased HIV by 2x
 - HPV vaccination can potentially reduce HIV risk



Acknowledgement

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VOICE

Study participants
Study team

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- The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

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Thank you!

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