

# Comparison of Sexual Risk Behaviors Among HIV Positive Men Who Have Sex with Men and Transgender women before and after their diagnosis.

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## BACKGROUND

- The HIV epidemic in Latin America is concentrated in sub-populations, especially men who have sex with men (MSM) and transgender women (TW)<sup>(1)</sup>.
- In Peru, as of May 2015, Ministry of Health reported 57,951 HIV cases since the start of the epidemic. In the most recent report from 2015, 335 new cases have been reported <sup>(2)</sup>.
- HIV incidence among MSM and TW has remained high and these groups are the key populations in Peru. Reasons attributed to the sustained HIV incidence among MSM/TW include multiple sex partners, frequent unprotected anal sex, and substance use<sup>(3, 4, 6, 7)</sup>.
- An increase in reported cases of syphilis and other STIs also contribute to the incidence of HIV<sup>(6)</sup>. Unknown HIV infection status and delayed treatment initiation among people living with HIV (PLHIV) contribute to ongoing HIV transmission<sup>(5)</sup>.
- About 70% of HIV positive MSM/TW in Peru are unaware of their HIV status <sup>(9)</sup>. A better understanding of sexual risk among people with HIV can help guide HIV prevention strategies.

## METHODS

- A cohort of 401 high-risk MSM and TW were recruited at 2 STI clinics and enrolled if they were eligible based on previous HIV/STI infection and sexual risk behavior. Once enrolled they were assessed every three months for condomless sex and sexually transmitted infections:
  - Syphilis: 3<sup>rd</sup> gen rapid test (Determine™ syphilis Alere), RPR test (BD Macro-Vue™ RPR Card Test Kit), TPPA test (Fujirebio Diagnostics Inc).
  - HIV: 3<sup>rd</sup> gen rapid test (Determine™ HIV 1/2 Alere), 4<sup>th</sup> gen EIA (Genscreen™ ULTRA HIV Ag-Ab, Bio-Rad), WB test (NEW LAV BLOT I, Bio-Rad).
  - Anal chlamydia: Transcription Mediated Amplification (TMA) assay (Aptima Combo2 Assay).
  - Anal gonorrhea: Transcription Mediated Amplification (TMA) assay (Aptima Combo2 Assay).
- We compared risk behaviors and anal chlamydia and/or gonorrhea based on:
  - prior knowledge of HIV serostatus at baseline.
  - before vs. after HIV diagnosis among those who seroconverted during follow-up, using McNemar's Chi-square test.

**TABLE 1: Reported behavior among participants by HIV infection knowledge and status**

	HIV Negative (n=274)	Unknown HIV Positive (n=42)	Known HIV Positive (n=82)	P-value*
<b>Last sex</b>				
Condomless receptive anal intercourse	30%	48%	38%	0.05
Condomless insertive anal intercourse	28%	26%	26%	0.94
Drank to intoxication	21%	12%	9%	<b>0.04</b>
Drug use	6%	2%	9%	0.69
<b>Last 3 months</b>				
Had condomless receptive anal intercourse	50%	71%	55%	<b>0.04</b>
Condomless insertive anal intercourse	50%	44%	45%	0.67
Alcohol use disorder (Audit >8)	49%	48%	33%	<b>0.04</b>
Marijuana use	12%	7%	6%	0.24
Cocaine Use	15%	10%	10%	0.37
No. Sex partners, median (IQR)	5 (2-10)	5 (1-12)	4 (2-12)	0.46
<b>STIs</b>				
Anal GC/CT	20%	31%	21%	0.24
Syphilis infection	11%	17%	24%	<b>0.01</b>

\*p-values were calculated for the overall 3 group comparison

**TABLE 2: Reported behavior among the participants with incident HIV infection before and after diagnosis**

	Pre-HIV Diagnosis	Post-HIV diagnosis	p-value
<b>Last sex</b>			
Condomless receptive anal intercourse	59%	18%	<b>&lt;0.01</b>
Condomless insertive anal intercourse	19%	14%	0.38
Drug use	19%	0%	0.13
<b>Last 3 months</b>			
Condomless receptive anal intercourse	78%	32%	<b>&lt;0.01</b>
Condomless insertive anal intercourse	31%	9%	<b>0.04</b>
Marijuana use	38%	22%	0.07
Cocaine Use	25%	3%	<b>0.04</b>
No. Sex partners, median (IQR)	0.5 (0-5)	0 (0-0)	-
1+ male sex partner, 3 months	50%	14%	<b>0.01</b>
<b>STIs</b>			
Anal GC/CT	47%	68%	0.18

## RESULTS

- At baseline, 124/401(31%) were HIV positive based on laboratory diagnosis testing.
- Among these, 82 (20.5%) participants self-identified as HIV positive and an additional 42 (10.5%) were diagnosed with HIV at baseline.
  - Among those with known infection, only 45% reported receiving ART.
- HIV incidence during the follow-up was 9.8 cases per 100 person years
  - Sero-conversion was associated with reporting unprotected receptive anal sex (Fig. 1)

### Comparing those with known and unknown infection at baseline:

- Among the 42 unknown HIV positives, 71% reported recent condomless receptive anal sex compared to 55% of known HIV positives in the last three months (p-value=0.08).
- No difference was observed in condomless insertive anal sex; 48% in each group.
- No difference was observed between the number of sexual partners in the last 3 months, has a median of 5 in each group.
- Among the unknown HIV positives:
  - 12% reported drinking to intoxication compared to 9% of known HIV positives at last sex (**p-value=0.04**).
  - 17 % reported Syphilis infection compared to 24% of known HIV (**p-value=0.01**).

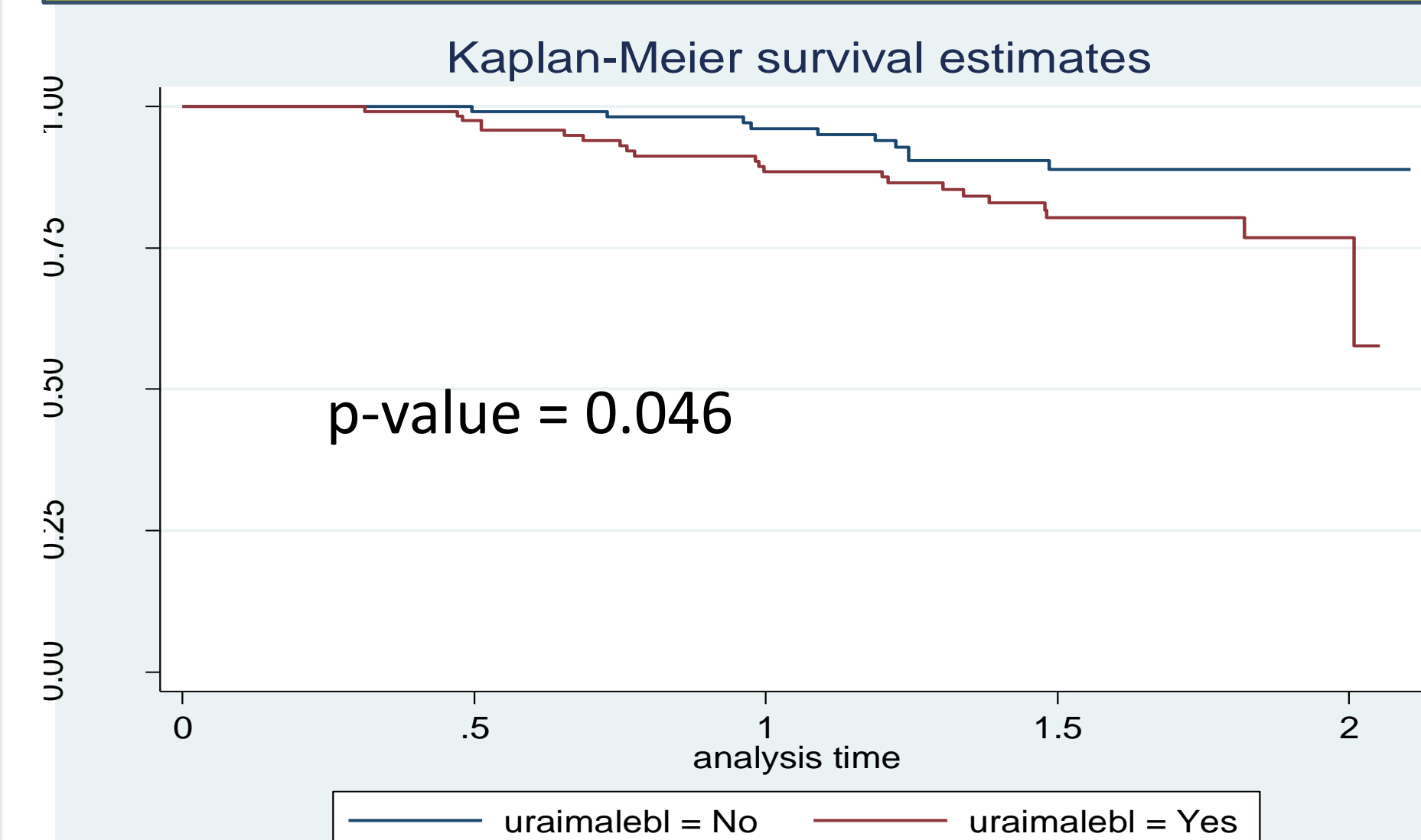
### Comparing those who sero-converted during follow-up:

- Among the 32 sero-converters during follow-up, all of the reported sexual risk behaviors significantly decreased post-diagnosis.
- Anal gonorrhea and/or chlamydia were diagnosed among 47% prior and 68% after diagnosis among the observed sero-converters (p-value=0.18).

## DISCUSSION

- Despite the reported decreases in sexual risk behavior, more participants with incident HIV were diagnosed with anal STIs after sero-conversion.
- This is cause for concern:
  - In Peru, entrance into care takes time and few of those diagnosed would already be receiving ART.
  - Measurement is an issue, given laws against 'knowingly' infecting others and potential for biased reporting of risk behavior.
- In the baseline comparison, while condomless insertive anal sex was similar between participants with known vs. unknown HIV infection, 45% is high given the chance to transmit HIV.
- Our results lead to several gaps in existing prevention and care programs for MSM/TW in Peru.
  - There is evidence of continuing HIV transmission within this population (high incidence and biological evidence of sexual risk behavior post diagnosis)
  - Less than half of the known HIV positives at baseline were receiving ART. Additionally, reported times to enroll in the existing care program have been long.
  - Improved prevention is needed for PLHIV and MSM/TW in Peru.

**FIGURE 1: Survival to HIV sero-conversion, comparing those with URAI to those without URAI**



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