High HIV Incidence Among PWID and MSM Attending Integrated Care Centers in India

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BACKGROUND

- India and other lower- and middle-income countries have experienced declining HIV incidence among heterosexual populations due to large-scale HIV prevention, testing and treatment efforts
- HIV prevalence from surveillance suggests an increasing or stable burden among vulnerable populations such as men who have sex with men (MSM) and people who inject drugs (PWID)
- HIV incidence estimates among these populations are sparse
- Incidence estimates are vital for monitoring the epidemic and evaluating prevention efforts targeting these populations

METHODS

STUDY DESIGN

- Integrated care centers (ICCs) were established in 11 cities (6 PWID and 5 MSM) as part of a cluster-randomized trial
- ICCs provide core and PWID- or MSM-focused HIV prevention and treatment services, including HIV counseling and testing, in a single venue.
- ICCs have been running for ~2.5 years

DATA COLLECTION PROCEDURES

- Socio-demographic characteristics are collected from clients at their first visit (i.e., registration)
- HIV testing is performed on-site (three rapid tests as per Indian guidelines) and results delivered with pre- and post-test counseling
- Sexual and injection drug use-related risk behaviors are assessed using a short questionnaire during pre-test counseling

CLIENT & SERVICE TRACKING

- ICC staff and peer/community health workers track clients via mobile phone and home/field visits with respect to use of HIV services
- Clients who receive a negative HIV test are tracked within 6 months for repeat testing
- Client utilization of HIV testing as well as other ICC services such as opioid substitution therapy, counseling, and condom distribution is tracked at each ICC visit using biometric data (i.e., fingerprints)

METHODS continued

STATISTICAL METHODS

- Analyses were restricted to ICC clients with at least 2 HIV tests and who were negative on the first test
- Person-time was accrued from the first negative HIV test to the last negative HIV test or first positive test.
- Correlates of incident HIV infection were estimated using multi-level Poisson regression models with random-intercepts for each city and were stratified by population group
- All analyses were conducted using Stata v. 13 (College Station, TX)

RESULTS

3,589 (33.4%) PWID and 1,863 (24.0%) MSM ICC clients had 2 HIV tests and were negative on the first test

n (%) or median (IQR)	PWID (N=3,589)	MSM (N=1,863)
Median age	28 (24-33)	26 (22-33)
City (PWID)		
Aizawl	213 (5.9)	
Bilaspur	323 (9.0)	
Chandigarh	652 (18.2)	
Dimapur	726 (20.2)	
Imphal	716 (20.0)	
Ludhiana	959 (26.7)	
City (MSM)		
Bengaluru		319 (17.1)
Belgaum		517 (27.8)
Chennai		582 (31.2)
Hyderabad	226 (12.1)	
Vishakhapatnam	n/a	219 (11.8)
Female	147 (4.1)	n/a
Sexual identity		
Panthi		536 (28.8)
Kothi		486 (26.1)
Double-Decker		405 (21.7)
Gay/MSM/other		115 (6.2)
Bisexual	n/a	321 (17.2)
Marital status		
Never married	1848 (51.5)	1277 (68.6)
Currently married	1644 (45.8)	542 (29.1)
Widowed	14 (0.4)	10 (0.5)
Divorced/separated	83 (2.3)	34 (1.8)
No education	254 (7.1)	84 (4.5)
Injection/sharing in prior 6mo.		
No injection drug use	800 (22.4)	1859 (100)
Injection, no sharing	1830 (51.3)	
Injection and sharing	936 (26.3)	0
Unprotected sex in prior 6 mo.	1708 (48.0)	1353 (72.8)

Table 1 Baseline characteristics of ICC clients

RESULTS continued

Median (IQR) number of HIV tests per ICC client
- PWID: 3 (2-3) tests
- MSM: 2 (2-3) tests

Median (IQR) person-time accrued per ICC client
- PWID: 14.4 (9.1-19.5) months
- MSM: 10.0 (6.4-15.1) months

	Seroconversions	Rate	95% CI	P-value*
PWID	58	1.31	1.02 - 1.70	0.024
MSM	14	0.82	0.49 - 1.39	

Table 2 HIV incidence rate by population (per 100 PY)
*from multi-level logistic regression model

Figure

Population:
People who inject drugs (PWID)
Men who have sex with men (MSM)

Ludhiana 1.56
Chandigarh 0.38
Dimapur 0.63
Imphal 0.12
Aizawl 7.27
Bilaspur 3.60
Hyderabad 0.55
Vishakhapatnam 0.47
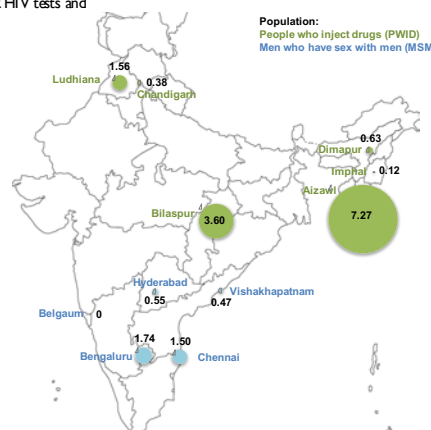Belgaum 0
Bengaluru 1.74
Chennai 1.50

Figure. HIV incidence rate among ICC clients by city (per 100 PY)

95% confidence intervals for rates: Aizawl (4.45 – NC), Bilaspur (2.04 - 6.34), Chandigarh (0.12 - 1.38), Dimapur (0.28 - 1.41), Imphal (0.02 - 0.85), Ludhiana (1.01 - 2.42), Bengaluru (0.65 - 4.63), Chennai (0.75 - 3.01), Hyderabad (0.08 - 3.89), Vishakhapatnam (0.07 - 3.33)

Table 3 (PWID)

	IRR (95% CI)	aIRR* (95% CI)
Age (per 10 year increase)	0.83 (0.56 -1.24)	1.10 (0.74-1.61)
Female (vs. male)	2.12 (0.81 - 5.56)	1.98 (0.76-5.11)
Marital status		
Never married	REF	REF
Currently married	1.80 (1.04 - 3.13)	
Widowed	12.2 (2.85 - 52.6)	
Divorced/Separated	2.38 (2.31 - 8.59)	
No education	4.45 (2.31 - 8.59)	4.21 (2.17-8.16)
Opioid substitution visits/mo.		
None	REF	REF
Less than monthly – 3 times/mo.	0.93 (0.51 - 1.71)	1.06 (0.57-1.97)
1-2 times/week	0.76 (0.28 - 2.02)	1.07 (0.39-2.92)
More than 2 times/week	0.17 (0.06 - 0.47)	0.23 (0.08-0.64)
Needle/syringe exchange use*	1.78 (0.92 - 3.42)	1.98 (1.01-3.89)
Safe injecting counseling*	0.50 (0.22 - 1.13)	
Safe sex counseling*	0.21 (0.11 - 0.41)	0.26 (0.13-0.51)
Received condoms*	0.56 (0.31 - 1.02)	
Sexual partners in prior 6 mo.		
None	REF	REF
1 or 2	120 (0.63 - 2.31)	
3 or more	3.55 (1.25 - 10.1)	
Unprotected sex in prior 6 mo.	2.29 (1.13 - 4.66)	
Injection and sharing needles/syringes in prior 6mo.		
No injection drug use	REF	REF
Injection, no sharing	3.00 (1.37 - 6.67)	3.21 (1.45-7.10)
Injection and sharing	23.0 (10.5 - 50.1)	23.4 (10.6-51.6)
Self-reported sexually transmitted infection in prior 6 mo.	0.99 (0.30 - 3.32)	

Table 3 Correlates of incident HIV infection among PWID ICC clients
*at least one use of service; *aIRRs estimated for behaviors and services using separate multivariable models, adjusted for age, sex and education

Table 4 (MSM)

	IRR (95% CI)	aIRR (95% CI)
Age (per 10 year increase)	0.77 (0.37 - 1.60)	0.71 (0.33 - 1.56)
Sexual identity		
Panthi	REF	REF
Kothi	6.01 (0.72 - 50.1)	6.42 (0.76 - 53.9)
Double-Decker	1.15 (0.07 - 18.6)	1.18 (0.07 - 19.0)
Gay/MSM/other	7.47 (0.66 - 84.7)	5.75 (0.49 - 67.2)
Bisexual	5.30 (0.58 - 48.6)	5.62 (0.60 - 52.7)
Marital status		
Never married	REF	REF
Currently married	0.71 (0.20 - 2.60)	
Widowed	–	–
Divorced/Separated	–	–
No education	4.03 (0.85 - 19.1)	–
Safe sex counseling*	3.81 (0.37 - 39.7)	
Received condoms*	2.02 (0.34 - 11.9)	
Male sexual partner in prior 6 mo.		
None	REF	REF
1 or 2	1.04 (0.09 - 11.6)	
3 or more	4.21 (0.71 - 10.7)	
Unprotected sex with male in prior 6 mo.	2.76 (0.71 - 10.7)	
Unprotected sex with female in prior 6 mo.	0.21 (0.05 - 0.96)	
Self-reported sexually transmitted infection in prior 6 mo.	10.5 (2.94 - 37.3)	9.38 (2.50 - 35.2)

Table 4 Correlates of incident HIV infection among MSM ICC clients
*at least one use of service

CONCLUSIONS

- PWID and MSM attending community HIV-focused integrated care centers in India experience high HIV incidence
- There is considerable variability of incidence across cities, especially among PWID
- Incidence is significantly higher among PWID compared to MSM
- Harm reduction utilization – regular opioid substitution therapy and safe sex counseling – is associated with decreased HIV risk among PWID
- Sub-groups continue to engage in high-risk behaviors such as needle/syringe sharing and unprotected sex
- Additional harm reduction services and biomedical prevention approaches such as pre-exposure prophylaxis (PrEP) are needed