



Undiagnosed HIV Infection Among New York City Jail Entrants, 2006: Results of Blinded Serosurvey

Bennani Y¹, Parvez F², Forgione L¹, Herrera J², Torian L¹, Begier E¹

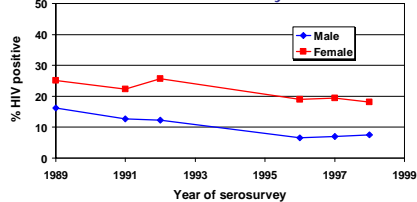
1 – Bureau of HIV Prevention and Control, New York City Department of Health and Mental Hygiene, New York, NY
2 – Bureau of Correctional Health Services, New York, NY

Background

HIV in New York City

- HIV prevalence in NYC population as of 12/31/2005 (known cases, diagnosed and reported to HARS and not known to be dead):
 - Males: 1.8%
 - Females: 0.7%
- HIV prevalence from most recent NYC jail serosurvey conducted in 1998:
 - Males: 7.6%
 - Females: 18.1%

Findings from Past NYC Correctional System HIV Serosurveys



NYC Correctional System

- NYC Department of Correction (DOC) operates 11 facilities:
 - Rikers Island (9 facilities)
 - 2 borough facilities
- During 2006:
 - 93,327 male admissions (64,383 unique individuals)
 - 11,896 female admissions (8,073 unique individuals)
 - Average daily census of 13,000 - 14,000
- Median length of stay = 7 days
- 25% of admissions are released within 3 days

Routine Medical Screening

- DOHMH's Bureau of Correctional Health Services (CHS) coordinates medical, mental health, and dental services for all inmates in NYC Correctional System (Rikers Island, 9 facilities)
- Includes routine, voluntary health screening at intake for all newly admitted inmates
 - Blood drawn for routine syphilis screening
 - HIV rapid testing offered beginning 3/2004
- As of April 2006, CHS used electronic record system for intake screening (Rikers Island Intake System or RIIS) at all facilities

HIV Testing Program

- Conducted 6,500 tests in 2003; after introduction of rapid testing in March 2004, testing volume increased to 25,000 in 2006
 - Believed to be second-highest volume HIV tester in NYC (after NYC DOHMH STD clinics)
- Among all NYC medical providers, NYC jails were largest volume HIV case reporter during 2005, with 180 new diagnoses (4.6% of all new diagnoses in NYC)

Objectives

- To determine prevalence of HIV infection in persons newly admitted to the NYC Correctional System
- To ascertain the proportion of HIV+ persons who are aware of their HIV status
- To understand extent to which jail testing currently detects previously undiagnosed HIV
- To ascertain the proportion of HIV+ persons who are known to the surveillance system

Study Population

- Consecutive new admissions to NYC Correctional System with remnant serum available from routine syphilis screening performed at intake
- Specimens collected for blinded HIV testing until target sample size reached (Targets: 4,411 males, 1,791 females). Specimen collection period:
 - Males: May 1 – June 1, 2006 (31 days)
 - Females: May 1 – August 13, 2006 (104 days)
- Male N = 4,699 (63.4% of all new admissions)
- Female N = 1,758 (60.9% of all new admissions)

Methods

Data Collection

- New admissions data obtained daily from DOC and merged with:
 - Electronic intake record (consent for HIV rapid testing, self-reported HIV status, risk data)
 - Syphilis laboratory specimen data (link to specimen)
 - HIV testing data
 - List of new positives from CHS testing program reported to HIV surveillance
- Resulting dataset matched to NYC surveillance registries:
 - HIV/AIDS Reporting System (HARS)
 - Hepatitis B registry

Unlinking/Laboratory Testing

- Records in dataset and corresponding serum specimens assigned random serosurvey ID number
- Data and specimens then stripped of all personal identifiers
- Specimens tested for HIV using standard commercial HIV-1/2 plus "O" EIA
 - Confirmed by Western blot

Results

Sample vs. Non-sample

- New admissions with specimen available for testing (vs. no specimen available) were:
 - Younger
 - More likely to be black or Hispanic than white/other*
 - Less likely to be IDU (37% less among males, 29% among females)
 - Less likely to self-report having HIV (54% less among males, 59% among females)
 - Less likely to be in HIV surveillance registry (52% less among both males and females)

HIV Seroprevalence

- Overall HIV prevalence in new admissions:
 - Males: 219 / 4,699 = 4.7% (4.1% - 5.3%)
 - Females: 171 / 1,758 = 9.7% (8.3% - 11.1%)
- Combined (male and female) HIV prevalence = 6.1% (5.5% - 6.7%)

HIV Seroprevalence in New Jail Admissions by Risk, Race

Self-reported risk/race	Males		Females	
	N	% HIV+ (95% CI)	N	% HIV+ (95% CI)
MSM*	57	33.3% (21.1% - 45.6%)	-	-
IDU*	222	15.3% (10.6% - 20.1%)	168	23.2% (16.8% - 29.6%)
High-risk heterosexual	2,083	4.1% (3.2% - 4.9%)	841	8.7% (6.8% - 10.6%)
Other/unknown risk	2,347	3.6% (2.8% - 4.3%)	749	7.9% (5.9% - 9.8%)
Black non-Hisp	2,079	5.1% (4.2% - 5.9%)	1,049	10.8% (8.9% - 12.6%)
Hispanic	1,536	4.4% (3.4% - 5.5%)	475	9.1% (6.5% - 11.6%)
White non-Hisp	319	3.8% (1.7% - 5.8%)	185	7.6% (3.8% - 11.4%)
Other/unknown	135	1.5% (0.0 - 3.5)	49	2.0% (0.0% - 6.0%)

HIV Seroprevalence in New Jail Admissions by Age

Age at admission	Males		Females	
	N	% HIV+ (95% CI)	N	% HIV+ (95% CI)
16-19	593	0.3% (0.0% - 0.8%)	154	3.2% (0.4% - 6.0%)
20-29	1,566	1.8% (1.1% - 2.4%)	463	3.5% (1.8% - 5.1%)
30-39	1,142	5.6% (4.3% - 6.9%)	498	12.7% (9.7% - 15.6%)
40-49	1,079	8.2% (6.5% - 9.8%)	546	13.9% (11.0% - 16.8%)
50-59	257	12.5% (8.4% - 16.5%)	88	10.2% (3.9% - 16.6%)
60+	62	8.1% (1.3% - 14.8%)	9	22.2% (0.0% - 49.4%)

Results (cont'd)

Multivariate predictors of HIV Seropositivity

Self-reported risk factor	Adjusted OR*	
	Males	Females
MSM	9.4 (4.9 – 17.9)	-
Ever had "other STD" dx*	5.3 (1.4 – 19.9)	2.7 (1.0 – 6.9)
Ever had hepatitis C dx	2.2 (1.3 – 3.7)	3.6 (2.1 – 6.1)
Ever had syphilis dx	2.0 (1.3 – 3.3)	1.8 (1.2 – 2.7)
IDU	1.8 (1.1 – 2.9)	2.4 (1.5 – 4.0)

*Controlling for age, race, and borough of residence
**Other STD excludes syphilis, gonorrhea, and chlamydia; most common specified were HSV and trichomonas

Percent of Positives Self-reporting HIV+ Status

	Males		Females	
	N	%	N	%
Overall	119 / 219	54.3%	103 / 171	60.2%
IDU*	31 / 34	91.2%	27 / 39	69.2%
MSM*	16 / 19	84.2%	-	-
High-risk heterosexual	46 / 85	54.1%	47 / 73	64.4%
Other/unknown risk	29 / 84	34.5%	29 / 59	49.2%

*MSM and IDU risk categories are not mutually exclusive

Previously Undiagnosed HIV

- 30% of male, 23% of female HIV+ persons had no evidence of a prior HIV diagnosis (i.e. no self-report at intake and not in HARS)
- An additional 16% of both males and females were in the surveillance registry but did not self-report being HIV+ at intake

Univariate Predictors of Having an HIV Diagnosis (among all HIV+)

Self-reported risk factor	Unadjusted OR	
	Males	Females
IDU	5.2 (1.5 - 17.7)	1.5 (0.62 - 3.8)
Has medical insurance	3.4 (1.8 - 6.4)	2.1 (1.0 - 4.4)
Treated for nervous/mental problems	3.1 (1.2 - 8.5)	4.5 (1.8 - 11.5)
Incarcerated before	2.4 (1.0 - 5.8)	3.0 (1.1 - 8.3)
Ever had an STD dx	2.3 (1.0 - 5.3)	2.4 (1.0 - 5.6)
MSM	2.3 (0.67 - 8.5)	-
Drug use	2.0 (1.1 - 3.7)	0.98 (0.45 - 2.1)

In red indicates significance at 0.05 level

Detection of Undiagnosed HIV through Jail Testing

- Of 390 new admissions that were HIV+, 105 (27%) had no evidence of prior HIV diagnosis (i.e., not in HARS and no self-report)
- 32 of the 105 (30.5%) gave voluntary consent for HIV rapid test at intake per RIIS
 - Not all persons consenting to a test will be tested
 - Some persons initially consenting will change their mind; HIV testing can also occur post-intake
- Of 23 who consented, 12 (52%) were tested in jail by the end of the serosurvey
- Thus, of 105 previously undiagnosed, 12 were newly diagnosed by HIV testing program
 - Most of the undiagnosed declined HIV testing at intake

Limitations

- Only 63% of male and 61% of female new admissions had specimens available for testing
- New admissions without a specimen had evidence of a higher prevalence; therefore the observed prevalence likely underestimates the true prevalence in the NYC Correctional System
- Possible underestimation of HIV prevalence:
 - Assuming distribution of HIV+ persons is similar to distribution of new admissions in HIV registry, estimated true prevalence would be:
 - Males: 6.5% (6.0% - 7.1%)
 - Females: 13.9% (12.6% - 15.2%)
- Possible underreporting of HIV-positive serostatus at intake
- Possible underreporting of risk factors at intake
- Matching to surveillance registries is an imperfect process
 - 21 HIV-negative persons matched to HIV registry
 - Common names difficult to evaluate and can lead to "overmatching"

Conclusions

- HIV prevalence among new admissions has decreased since 1998 serosurvey (males 8% vs 5%, females 18% vs. 10%)
- However, based on matches to HIV registry among new admissions without a specimen, true prevalence may be as high as 6.5% in males and 13.9% in females
 - Underestimate may also have occurred in past correctional serosurveys
- HIV prevalence remains significantly elevated in comparison with NYC population
 - Male admissions: ~2.6 times higher than NYC male pop
 - Female admissions: ~14 times higher than NYC female pop
- 30% of HIV+ men and 23% of HIV+ women appeared not to have been diagnosed prior to intake
- Most persons with undiagnosed HIV appear to come from populations NOT usually targeted for HIV testing
 - Confirms current routine HIV testing approach remains best model for diagnosing previously undiagnosed HIV infections
- Majority not in HARS have likely not yet been diagnosed
- Use of rapid test has increased testing, but it is still not widely accepted by new admissions to NYC correctional system
 - Need to improve acceptance of HIV rapid testing
 - CHS currently working to understand why inmates do not consent more often
- Despite four-fold increase in new admissions knowing their HIV status, many HIV+ persons remain undiagnosed
- Findings of this serosurvey will be used to further develop HIV testing, treatment, and discharge planning programs in NYC correctional system

Acknowledgements

Bureau of Correctional Health Services

Louise Cohen
Larry Chertoff
Barry Edison
Maria Gbur
Jason Hershberger

Prison Health Services

Peter Lento

Public Health Laboratories

Erica DeBernardo
Mona El-Fishawy
William Oleszko
Amado Punsalang
Eliza Wilson
Virology and Immunology Lab processing team

Bureau of HIV Prevention and Control

Scott Kent

Bio-Reference Laboratories, Inc.

Kathy Biscuiti

NYC Department of Corrections

Eric Sorenson