

# Undiagnosed HIV Infection Among New York City Jail Entrants, 2006: Results of Blinded Sero survey

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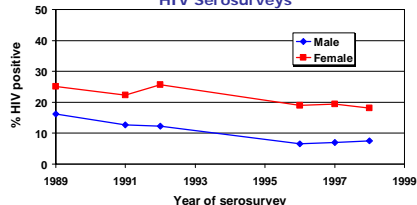
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## Background

### 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 Sero surveys



### 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 Sero prevalence

- 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 Sero prevalence in New Jail Admissions by Risk, Race

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

### HIV Sero prevalence in New Jail Admissions by Age

Age at admission	Males		Females	
	N	% HIV+ (95% CI)	N	% HIV+ (95% CI)
<b>16-19</b>	593	0.3% (0.0% - 0.8%)	154	3.2% (0.4% - 6.0%)
<b>20-29</b>	1,566	1.8% (1.1% - 2.4%)	463	3.5% (1.8% - 5.1%)
<b>30-39</b>	1,142	5.6% (4.3% - 6.9%)	498	12.7% (9.7% - 15.6%)
<b>40-49</b>	1,079	8.2% (6.5% - 9.8%)	546	13.9% (11.0% - 16.8%)
<b>50-59</b>	257	12.5% (8.4% - 16.5%)	88	10.2% (3.9% - 16.6%)
<b>60+</b>	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
<b>MSM</b>	9.4 (4.9 – 17.9)	-
<b>Ever had "other STD" dx*</b>	5.3 (1.4 – 19.9)	2.7 (1.0 – 6.9)
<b>Ever had hepatitis C dx</b>	2.2 (1.3 – 3.7)	3.6 (2.1 – 6.1)
<b>Ever had syphilis dx</b>	2.0 (1.3 – 3.3)	1.8 (1.2 – 2.7)
<b>IDU</b>	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	%
<b>Overall</b>	119 / 219	54.3%	103 / 171	60.2%
<b>IDU*</b>	31 / 34	91.2%	27 / 39	69.2%
<b>MSM*</b>	16 / 19	84.2%	-	-
<b>High-risk heterosexual</b>	46 / 85	54.1%	47 / 73	64.4%
<b>Other/unknown risk</b>	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
<b>IDU</b>	5.2 (1.5 - 17.7)	1.5 (0.62 - 3.8)
<b>Has medical insurance</b>	3.4 (1.8 - 6.4)	2.1 (1.0 - 4.4)
<b>Treated for nervous/mental problems</b>	3.1 (1.2 - 8.5)	4.5 (1.8 - 11.5)
<b>Incarcerated before</b>	2.4 (1.0 - 5.8)	3.0 (1.1 - 8.3)
<b>Ever had an STD dx</b>	2.3 (1.0 - 5.3)	2.4 (1.0 - 5.6)
<b>MSM</b>	2.3 (0.67 - 8.5)	-
<b>Drug use</b>	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

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