

The Big Epidemic of HIV among Drug Users in New York

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1975 to 2009

- Where have we been?
- Where are we now?
- Where should we be going

HIV/AIDS Epidemic among IDUs in New York City

Cases of AIDS: over 60,000

Cases of HIV Infection: 100,000

METHODS

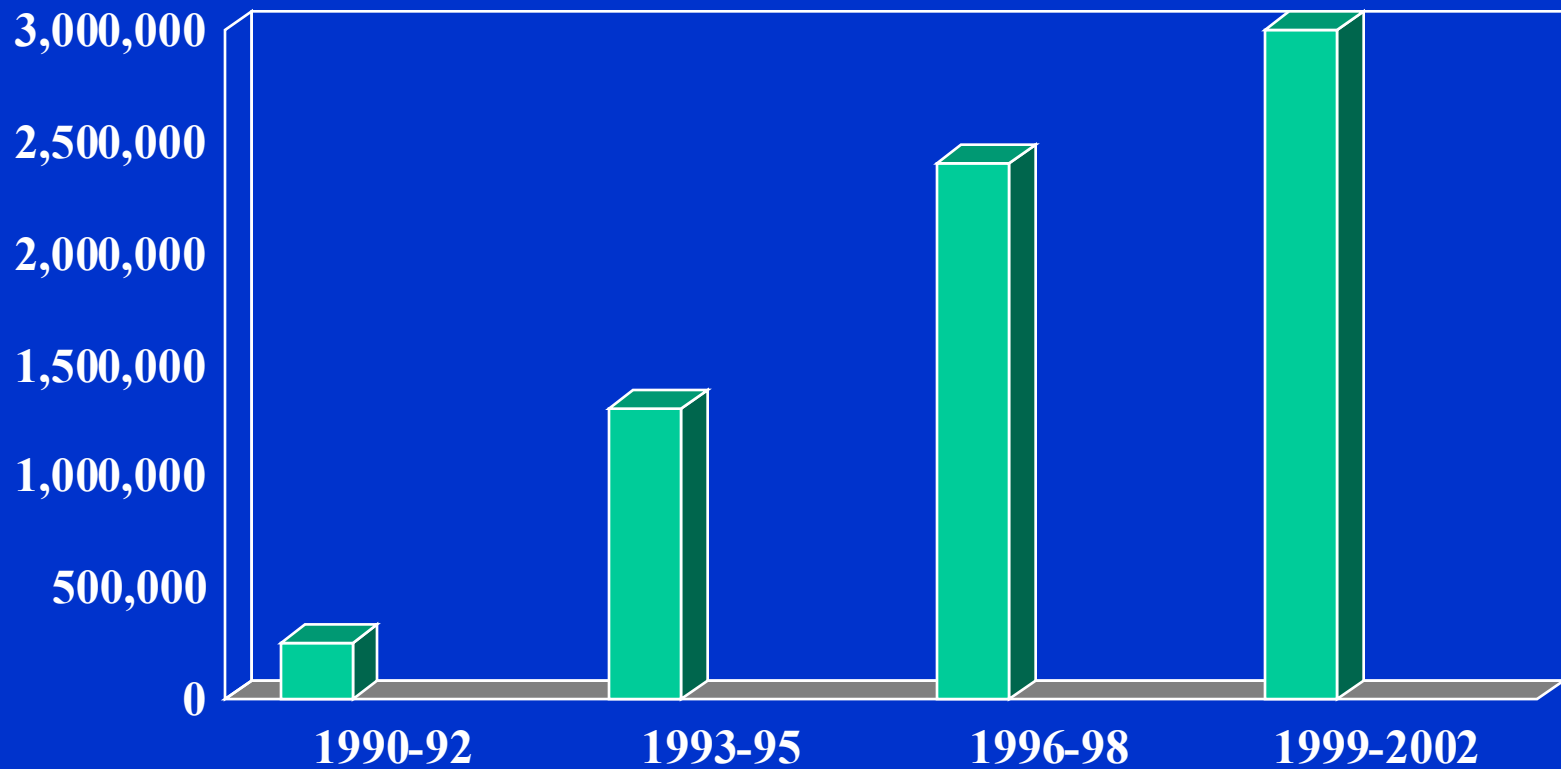
- Subjects recruited from drug detoxification program at Beth Israel Medical Center
- City-wide program, approximately 7000 patients per year
- Approximately 300 subjects per year, 1990 to 2008
- Structured interview and HIV test

Historical Reconstruction of HIV-1 Seroprevalence among Active Intravenous Drug Users in Manhattan, New York City*

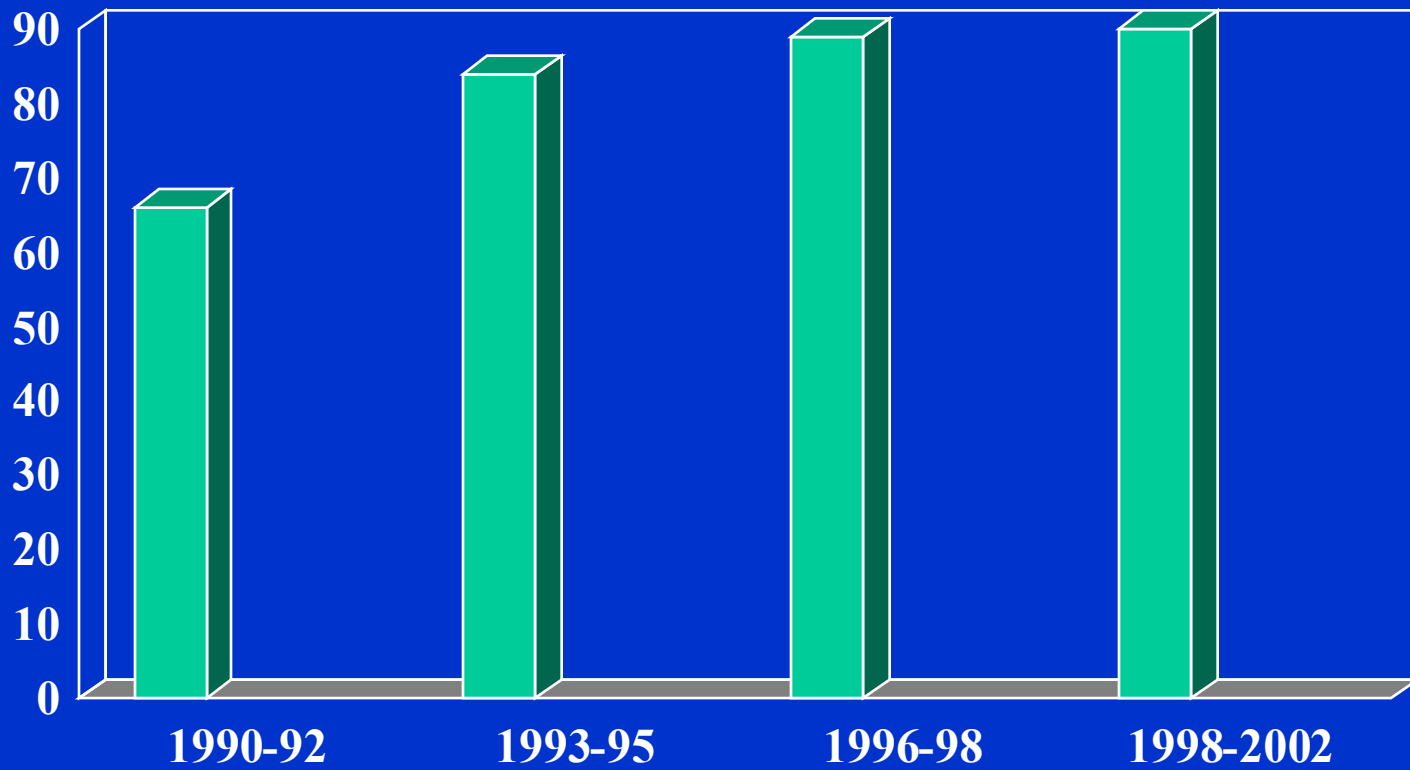


* This reconstruction is based on seroprevalence data for 1978-84, and 1986-87, with AIDS case data used to estimate seroprevalence for the other years. The curve has been smoothed for 1984-1987.

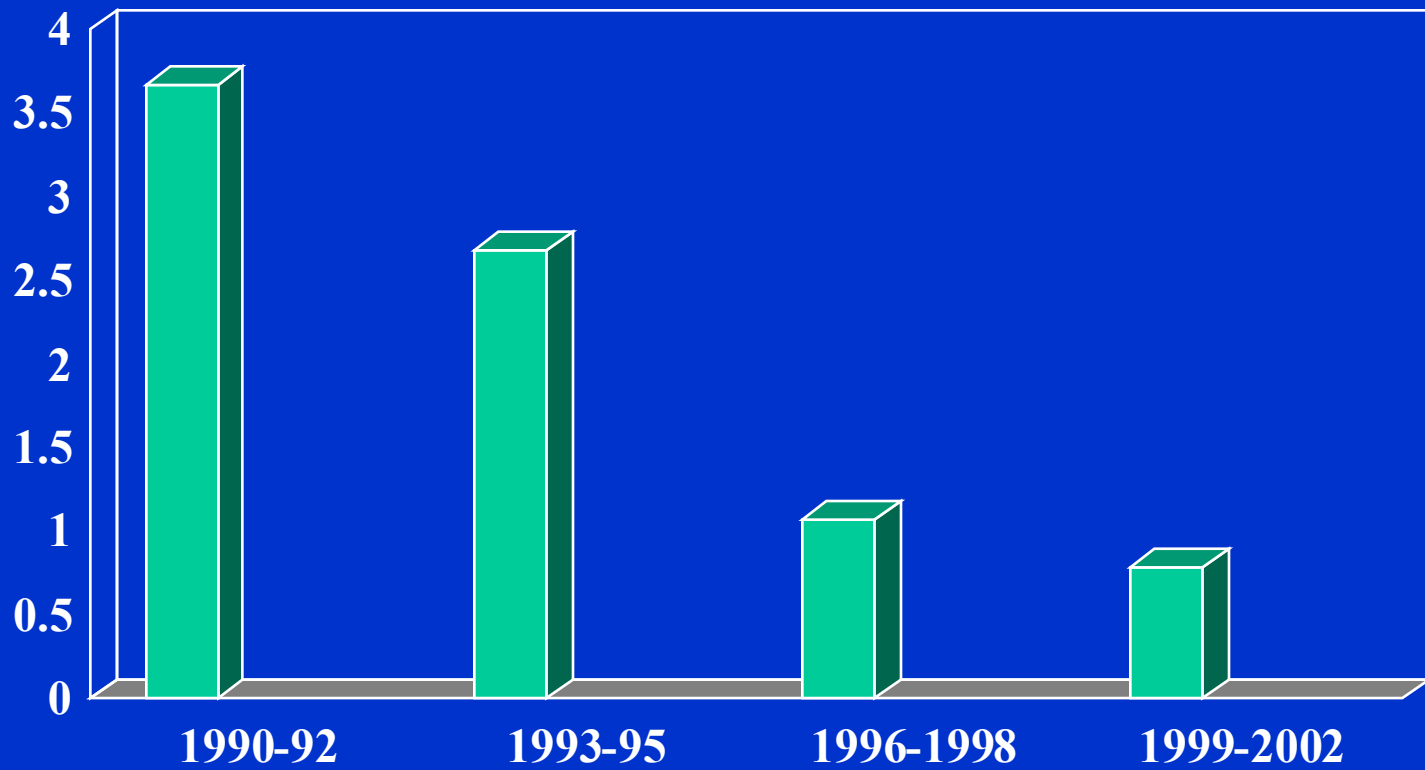
Annual Numbers of Syringes Exchanged



Received HIV Testing



HIV incidence from STARHS

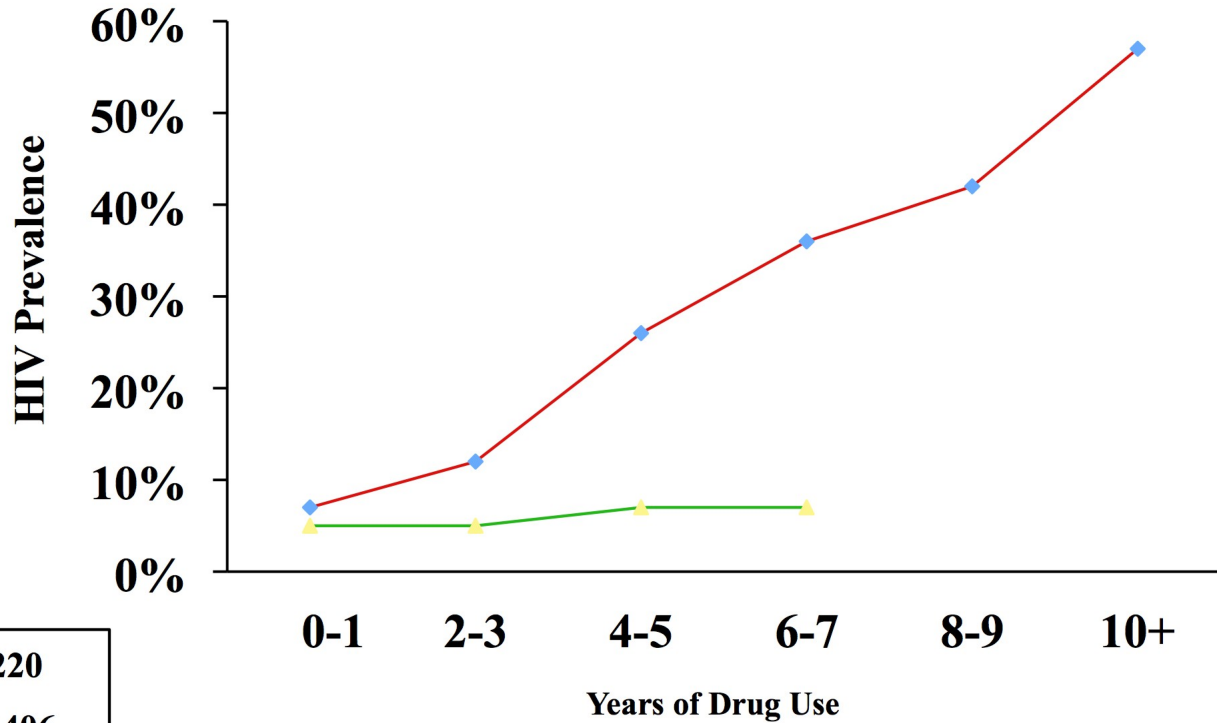


Comparing Initial to Combined Program Environment IDUs

Initial program environment: 1985 -1994,
community outreach, methadone
treatment

Combined program environment: 1995 to
present, above plus large scale syringe
exchange programs

HIV Prevalence by Years of Drug Use



pre 1995 IDUs N=1220
post 1995 IDUs N=1406

HIV Prevalence among IPE IDUs and CPE IDUs

	HIV Prevalence IPE IDUs n/N (%)	HIV Prevalence CPE IDUs n/N (%)	CPE to IPE OR (95% CI)
Total (ref = IPE)	55/261 (21%)	66/1153 (6%)	0.23 (0.15-0.34)
Gender/Sexual behavior (ref = IPE Non-MSM Males)			
Non-MSM Males	25/166 (15%)	29/817 (4%)	0.21 (0.12-0.37)
MSM Males	5/15 (33%)	12/60 (18%)	0.50 (0.14-1.74)
Females	25/80 (31%)	25/276 (9%)	0.22 (0.12-0.41)
Race/Ethnicity (ref = IPE Whites)			
Whites	10/74 (14%)	9/333 (3%)	0.18 (0.07-0.46)
Blacks	8/27 (30%)	20/137 (15%)	0.41 (0.16-1.05)
Hispanics	36/154 (23%)	35/639 (5%)	0.19 (0.12-0.32)
Other	1/5 (20%)	2/44 (5%)	0.19 (0.01-2.59)
Age (ref = IPE <40)			
<40	50/247 (20%)	45/988 (5%)	0.19 (0.12-0.29)
40 and older	5/14 (36%)	21/165 (13%)	0.26 (0.08-0.86)

Sexual and Injection Risk Behaviors among IPE and CPE IDUs in New York City

Risk Behaviors	IPE IDUs n (%)	CPE IDUs n (%)	CPE to IPE OR (95% CI)	CPE to IPE AOR (95% CI)*
Unprotected sex w/ primary partner of opposite sex	129/261 (49)	564/1153 (49)	0.98 (0.75-1.28)	1.05 (0.80-1.39)
Unprotected sex w/ casual partner of opposite sex	39/261 (15)	166/1153 (14)	0.96 (0.66-1.40)	0.94 (0.64-1.38)
Unprotected sex w/ commercial partner of opposite sex	9/261 (4)	59/1153 (5)	1.51 (0.74-3.09)	2.00 (0.94-4.22)
Receptive sharing of used needles/syringes	95/261 (36)	394/1153 (34)	0.91 (0.69-1.20)	1.03 (0.77-1.38)
Distributive sharing of used needles/syringes	137/261 (53)	360/1153 (31)	0.41 (0.31-0.54)	0.45 (0.34-0.60)

Potential HIV Acquisition and Transmission Behaviors among IPE and CPE IDUs in New York City

Potential Acquisition and Transmission Behaviors	IPE IDUs n (%)	CPE IDUs n (%)	CPE to IPE OR (95% CI)	CPE to IPE AOR (95% CI)*
Any unprotected sex among HIV seronegatives	130/206 (63)	677/1087 (62)	1.00 (0.71-1.31)	1.05 (0.76-0.99)
Any unprotected sex among HIV seropositives	28/55 (51)	24/66 (36)	0.55 (0.27-1.14)	0.78 (0.35-1.73)
Receptive sharing among HIV seronegatives	77/206 (37)	375/1086 (35)	0.88 (0.65-1.20)	1.00 (0.73-1.38)
Distributive sharing among HIV seropositives	26/55 (47)	11/66 (17)	0.22 (0.10-0.52)	0.22 (0.09-0.54)

*(Odds ratios adjusted for age as a continuous variable, gender, and race/ethnicity)

Potential HIV Acquisition and Transmission Behaviors among IPE and CPE IDUs in New York City Population Level

Potential Acquisition and Transmission Behaviors	IPE IDUs n (%)	CPE IDUs n (%)	CPE to IPE OR (95% CI)	CPE to IPE AOR (95% CI)*
Any unprotected sex by HIV seronegatives among all IDUs	130/261 (50)	677/1153 (59)	1.43 (1.10-1.88)	1.56 (1.18-2.07)
Any unprotected sex by HIV seropositives among all IDUs	28/261 (11)	24/1153 (2)	0.18 (0.10-0.31)	0.19 (0.11-0.34)
Receptive sharing by HIV seronegatives among all IDUs	77/261 (30)	375/1153 (33)	1.15 (0.86-1.54)	1.30 (0.96-1.77)
Distributive sharing by HIV seropositives among all IDUs	26/261 (10)	11/1153 (1)	0.09 (0.04-0.18)	0.08 (0.04-0.17)

*(Odds ratios adjusted for age as a continuous variable, gender, and race/ethnicity)

IDUs Since Combined Programming

- Very low HIV prevalence
- Higher among females, MSM, African-Americans
- Very low transmission behavior among HIV seropositives

HIV among IDUs and Non-Injecting Drug Users (NIDUs)

- Sexual transmission associated with drug use (crack cocaine)
- Relative lack of services for NIDUs

Methods: Two Studies

Respondent Driven Sampling Study and Risk Factors Study

- Both studies recruited injecting (IDU) and non-injecting (NIU) heroin and cocaine users
- IDUs: injected heroin or cocaine within previous 6 months
- NIUs: used heroin or cocaine within previous 6 months but had never injected any illicit drugs

Methods: Respondent Driven Sampling Study

- Lower Eastside section of NYC, Summer 2004,
- Structured peer recruitment
- 8 initial subjects, all IDUs
- After participating each subject could recruit up to 3 new subjects, recruiter paid \$10 per eligible new subject
- Coupon system used to track who recruits whom
 - Cross-recruitment of injectors and non-injectors:
 - 46% of current injectors recruited by non-injectors
 - 44% of non-injectors recruited by injectors
- Data collected on social network characteristics of subjects for weighting of final sample

Socio-demographic characteristics of IDUs and NIUs in both studies

	RDS		RF	
	IDUs n=229	NIUs n=219	IDUs n=1725	NIUs n=396
Average Age (SD)	43 (9)	45 (8)	37 (9)	39 (8)
	%	%	%	%
Male	78	80	81	74
Race/ethnicity				
White	24	5	28	8
Black	31	61	16	51
Hispanic	41	29	54	41
Other	3	5	2	< 1

HIV Prevalence Among IDUs and Never Injectors (Weighted HIV Prevalence in RDS Study)

	RDS		RF	
	IDUs % (95% CI)	NIUs % (95% CI)	IDUs % (95% CI)	NIUs % (95% CI)
Total HIV+	15 (11-19)	17 (12-21)	13 (12-15)	12 (9-16)
Gender				
Among males	18 (13-23)	12 (8-16)	13 (11-15)	12 (8-16)
Among females	13 (6-20)	15 (7-24)	15 (11-19)	15 (9-23)
Race/ethnicity				
Among Whites	13 (5-22)	*	9 (6-12)	7 (1-22)
Among Blacks	29 (19-39)	21 (14-28)	24 (19-29)	14 (10-20)
Among Hispanics	13 (7-18)	4 (2-7)	13 (11-15)	11 (7-17)

* n too small to provide reliable estimate

Comparison of current injectors to heroin and cocaine users who had never injected

- Nearly identical HIV prevalence between current injectors and never injectors in both RF and RDS studies
- Overlap in 95% confidence intervals for prevalence in all demographic subgroups
- Removing small numbers of MSM subjects did not affect results

Herpes Simplex Virus-2 (HSV-2) and HIV among NIDUs

- HSV-2 common infection in US (17% in total adult population)
- HSV-2 is incurable, though can be suppressed
- HSV increases both acquisition and transmission of HIV by factor of 2 to 3
- But suppression of HSV-2 does not reduce acquisition or transmission of HIV

Selected demographic and drug use characteristics of never-injecting heroin and cocaine users, New York City, 2004-2009

	N (%)
Total	1418 (100)
Gender	
Males	1075 (76)
Race/Ethnicity	
Whites	74 (5)
Blacks	951 (67)
Hispanics	357 (25)
Other/Mixed	36 (3)
MSM (% of Males)	114 (11)
Drug Use	
Heroin	518 (37)
Cocaine	586 (41)
Crack Cocaine	1055 (74)
Average Age (SD)*	42 (7)
HIV+	233 (16)
HSV-2+	859 (61)

*Average age and standard deviation of age in years

HSV-2 and HIV prevalence by demographic characteristics among never-injector drug users, New York City, 2004-2009

	Total	HSV-2+	HIV+
	N (%)	N (%)	N (%)
Total	1418 (100)	859 (61)	233 (16)
Gender/MSM		**	**
Men (non-MSM)	956 (100)	482 (50)	112 (12)
MSM	114 (100)	82 (72)	52 (46)
Women	343 (100)	293 (85)	69 (20)
Race/Ethnicity		**	*
Whites	74 (100)	29 (39)	4 (5)
Blacks	951 (100)	631 (66)	171 (18)
Hispanics	357 (100)	177 (50)	54 (15)
Other/Mixed	36 (100)	22 (61)	4 (11)
Age		#	
18-29	75 (100)	29 (39)	7 (9)
30-39	372 (100)	198 (53)	63 (17)
40-49	776 (100)	498 (64)	132 (17)
50+	195 (100)	126 (64)	31 (16)

Significant difference by chi-square test * $p < 0.05$ ** $p < 0.001$
Significant difference by Cochran-Armitage test for trend # $p < 0.001$

Relationship of HSV-2 to HIV among NIDUs

- HSV-2 was associated with HIV, (PR = 2.7, 95% CI 2.0 to 3.7),
- The association was particularly strong for females (PR = 5.7, 95% CI 1.5 to 22.6)

Relationship of HSV-2 to HIV among NIDUs

HSV-2 and HIV rates and association between the two viruses among NIDUs similar to situation in many sub-Saharan African countries

No platforms for delivering services to NIDUs, especially young NIDUs

Conclusions

IDUs: Remarkable success of combined programs, need to maintain services

NIDUs: High HIV and HSV-2, need for new programs and new service delivery platforms