

# Risk factors for concurrent diagnosis of HIV/AIDS in New York City, 2004: the role of age, transmission risk, and country of birth

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## Background

- More than one-quarter of New Yorkers diagnosed with incident HIV are concurrently diagnosed with AIDS
- Every day in NYC, an average of three people first learn they are HIV-positive when they have already developed AIDS
- Concurrent diagnosis of HIV/AIDS complicates treatment and increases morbidity and short-term mortality
- People less likely to be tested for HIV (whether because of low risk perception or low access to testing) may be more likely to have their infection remain undiagnosed until they have AIDS

## Methods

- We calculated the rate and distribution of concurrent HIV/AIDS among incident diagnoses in 2004 by sex, race/ethnicity, age group, HIV transmission risk and country of birth
- Univariate and multivariate logistic regression in SAS 8.02 (SAS Institute, Cary, NC) with concurrent HIV/AIDS as the outcome and age, risk and country of birth as independent variables
- Analysis was performed on population-based surveillance data reported to the HIV Epidemiology Program of the New York City Department of Health and Mental Hygiene through September 30, 2005, in compliance with New York State public health law, which requires named reporting of HIV and AIDS diagnoses, HIV-related illness and positive Western Blot (WB) tests for HIV antibody

## Definitions

- **Incident HIV diagnosis:** A diagnosis of HIV confirmed by Western Blot and/or documented by a physician
- **Concurrent HIV/AIDS:** A diagnosis of AIDS within 31 days of initial diagnosis of HIV
- **AIDS:** CD4<200 cells/ $\mu$ L<sup>3</sup> (or <14% of total lymphocytes) and/or a CDC-defined opportunistic illness
- **Heterosexual risk:** CDC-defined heterosexual risk as well as probable heterosexual risk

Concurrent HIV/AIDS, Demographics and Transmission Risk Among Incident HIV Diagnoses, New York City 2004

	Non-concurrent		Concurrent HIV/AIDS		Total	
	N	row %	N	row %	N	col %
<b>Total</b>	<b>2,615</b>	<b>71.6</b>	<b>1,038</b>	<b>28.4</b>	<b>3,653</b>	<b>100.0</b>
<b>Sex</b>						
Male	1,779	71.1	723	28.9	2,502	68.5
Female	836	72.6	315	27.4	1,151	31.5
<b>Race/ethnicity</b>						
Black	1,379	70.5	576	29.5	1,955	53.5
Hispanic	738	70.6	308	29.4	1,046	28.6
White	418	77.1	124	22.9	542	14.8
Asian/Pacific Islander	58	70.7	24	29.3	82	2.2
Other/unknown	22	78.6	6	21.4	28	0.8
<b>Age group at HIV diagnosis</b>						
0-12	16	80.0	4	20.0	20	0.5
13-19	105	94.6	6	5.4	111	3.0
20-29	631	82.8	131	17.2	762	20.9
30-39	870	74.2	302	25.8	1,172	32.1
40-49	677	64.7	369	35.3	1,046	28.6
50-59	242	59.3	166	40.7	408	11.2
60+	74	55.2	60	44.8	134	3.7
<b>Age group at HIV diagnosis</b>						
0-29	752	84.2	141	15.8	893	24.4
30+	1,863	67.5	897	32.5	2,760	75.6
<b>Transmission risk</b>						
Men who have sex with men	1,026	79.2	269	20.8	1,295	35.5
Male heterosexual	198	58.1	143	41.9	341	9.3
Female heterosexual	327	71.7	129	28.3	456	12.5
Male unknown	384	61.8	237	38.2	621	17.0
Female unknown	408	71.7	161	28.3	569	15.6
Injection drug use history	249	73.2	91	26.8	340	9.3
Perinatal & other	23	74.2	8	25.8	31	0.8
<b>Country of birth</b>						
US	1,082	74.2	377	25.8	1,459	39.9
US dependency	80	66.1	41	33.9	121	3.3
Foreign	533	63.1	312	36.9	845	23.1
Unknown	920	74.9	308	25.1	1,228	33.6
<b>Country of birth</b>						
US or unknown	2,002	74.5	685	25.5	2,687	73.6
Foreign or US dependency	613	63.5	353	36.5	966	26.4

Univariate and Multivariate Analysis of Risk Factors for Concurrent Diagnosis of HIV/AIDS Among Persons Diagnosed with Incident HIV in New York City, 2004

	Total	% Non-concurrent	% Concurrent HIV/AIDS	Univariate		Multivariate	
				OR	(95% CI)	OR	(95% CI)
<b>Total</b>	<b>3,653</b>	<b>71.6</b>	<b>28.4</b>				
<b>Age group at HIV diagnosis</b>							
0-29 years	893	84.2	15.8	referent		referent	
30+ years	2,760	67.5	32.5	2.57 (2.11 - 3.13)		2.29 (1.87 - 2.81)	
<b>Transmission risk</b>							
Men who have sex with men	1,295	79.2	20.8	referent		referent	
Male heterosexual	341	58.1	41.9	1.95 (1.55 - 2.45)		2.11 (1.62 - 2.74)	
Female heterosexual	456	71.7	28.3	0.99 (0.80 - 1.24)		1.29 (1.01 - 1.66)	
Male unknown	621	61.8	38.2	1.72 (1.44 - 2.06)		1.98 (1.60 - 2.46)	
Female unknown	569	71.7	28.3	0.99 (0.81 - 1.21)		1.38 (1.09 - 1.73)	
Injection drug use history	340	73.2	26.8	0.91 (0.71 - 1.17)		1.19 (0.90 - 1.57)	
Perinatal & other	31	74.2	25.8	0.88 (0.39 - 1.96)		1.65 (0.71 - 3.81)	
<b>Country of birth</b>							
US or unknown	2,687	74.5	25.5	referent		referent	
Foreign country or US dependency	966	63.5	36.5	1.683 (1.44 - 1.97)		1.535 (1.30 - 1.81)	

## Results

- Overall, 28% of persons with an incident diagnosis of HIV in 2004 were concurrently diagnosed with AIDS (within 31 days of HIV diagnosis)
- Concurrent HIV/AIDS was positively associated with age:
  - 17% in persons 20-29 years
  - 26% in persons 30-39 years
  - 35% in persons 40-49 years
  - 41% in persons 50-59 years
  - 45% in persons 60+ years
- By transmission risk, MSM were least likely (21%) and males with heterosexual or unknown risk most likely (42% and 38%, respectively) to be diagnosed concurrently with HIV/AIDS
- 37% of incident HIV diagnoses were concurrent with AIDS in foreign-born persons vs. 26% of diagnoses in US-born persons
- Among men born in foreign countries or US dependencies, 48% with heterosexual risk and 49% with unknown risk were diagnosed concurrently with HIV/AIDS
- In multivariate analysis, being over 30 years old at diagnosis, being male with heterosexual or unknown transmission risk, and being born in a foreign country or US dependency were statistically significantly associated with concurrent HIV/AIDS diagnosis

## Conclusions

- Increasing age, unknown or heterosexual transmission risk among males, and foreign country of birth are associated with concurrent diagnosis of HIV/AIDS in NYC
- Older persons, males with unknown or heterosexual transmission risk, and persons born in a foreign country may have low risk perception or low access to testing, leading to late diagnosis of HIV infection
- The current practice of targeted HIV testing may not result in timely diagnosis for persons that do not fit a "traditional" risk and age profile or who do not actively seek testing

## Future Directions

- An HIV diagnosis that is delayed until development of immunodepletion or opportunistic illness represents a public health failure that may be addressed by replacement of targeted testing with routine testing, and by implementation of initiatives to increase availability and reduce stigma associated with testing
- The NYC Commission on HIV/AIDS recommends ensuring that all people living with HIV/AIDS know their status by:
  - Streamlining the consent process and routinizing HIV testing in medical settings
  - Increasing rapid testing
  - Testing more in community settings
  - Increasing partner elicitation, notification and testing