

## Background

- Recent CDC statistics report that low proportions of persons living with HIV in the US are retained in care and have achieved viral suppression.
- The conventional methodology used by CDC, when applied to NYC, overestimates the population denominator and results in implausibly low proportions in care and suppressed.
- We tested a new method for estimating the true number of PLWHA in NYC and the proportions in care and suppressed.

## Methods

- We used NYC laboratory surveillance data to measure retention in care and viral suppression in all persons who had at least one HIV-related laboratory test indicating HIV-related medical care in NYC within the past five years.
- We validated our method by calculating the proportions of patients returning for care after absences of one, two, three, four and five years and reviewing their clinical status at the time of diagnosis or last laboratory report.
- Our denominator eliminated persons who were unlikely to be PLWHA living in NYC during this time.

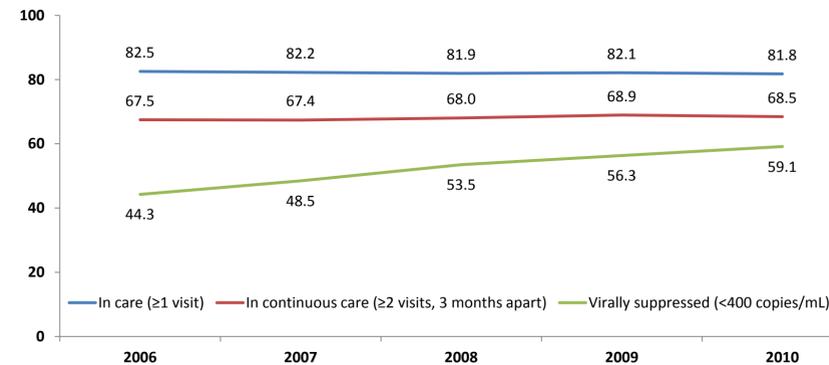
## Definitions

- PLWHA
  - CDC/conventional count = all persons diagnosed, reported in NYC and not known to be dead or moved out of state.
  - NYC count = all persons believed, based on their indicators of care and clinical status, to be in NYC at any time during the five years spanning 2006-2010.
- Retention in care: at least one HIV-related laboratory test (CD4, Viral load, or genotype) within the calendar year.
- Retention in continuous care:  $\geq 2$  visits at least 3 months apart within a calendar year.
- Viral suppression: last VL of calendar year was undetectable ( $< 400$  copies/ml).

## Table 1. Comparison of Populations

	2006	2007	2008	2009	2010
Retained in care	66,481	67,722	68,893	70,319	71,255
Retained in continuous care	54,347	55,501	57,219	59,024	59,664
Virally suppressed	35,643	39,926	44,993	48,232	51,544
<b>CDC/Conventional PLWHA population count</b>					
N	102,728	105,036	107,248	109,191	111,144
Retained in care (%)	64.7	64.5	64.2	64.4	64.1
Retained in continuous care (%)	52.9	52.8	53.4	54.1	53.7
Virally suppressed (%)	34.7	38.0	42.0	44.2	46.4
<b>NYC PLWHA population count</b>					
N	80,547	82,357	84,091	85,615	87,146
Retained in care (%)	82.5	82.2	81.9	82.1	81.8
Retained in continuous care (%)	67.5	67.4	68.0	68.9	68.5
Virally suppressed (%)	44.3	48.5	53.5	56.3	59.1

## Figure 1. Trends in Care and Viral Suppression



## Results: Retention in Care

- The proportions of patients retained in care were stable over the five-year period (~82%).
- There were significant differences in retention in care by age and clinical status.
  - Persons aged  $< 20$  and  $> 50$  were significantly more likely to be retained in care and in continuous care than were persons aged 20-49.
  - Persons with AIDS diagnoses were significantly more likely to be retained in care and in continuous care.

## Results: Viral Suppression

- The proportions with evidence of viral suppression increased significantly, from 44.3% in 2006 to 59.1% in 2010.
  - Blacks were least likely to have viral suppression.
  - Age and viral suppression had a U-shaped relationship, with 20-29 year-olds least likely and 0-12 year-olds and 60+ year-olds most likely to have achieved suppression.
  - IDU and heterosexuals were less likely to be suppressed than MSM.

## Limitations

- Our method depends on completeness of HIV-related laboratory reporting and accurate matching of reports to cases.
- Undercounting of events can occur with inconsistencies, changes, and inaccurate reporting of names, dates of birth and other identifiers.
  - These losses would result in an underestimate of care and viral suppression.
- We conduct comprehensive death registry matching but this may be subject to the same limitations. Moreover, some deaths occur outside the US and are not reported.
- We have limited means to identify patients who have moved out of jurisdiction after diagnosis or the last care event.
  - Including these patients would also result in an underestimate.

## Table 2. Care and Viral Suppression by Demographic Characteristics, Risk Factor, and Clinical Status

	Total		Receiving HIV care ( $\geq 1$ care visit)		Established in care ( $\geq 2$ care visits, 3 mos apart)		Virally suppressed ( $< 400$ copies/mL)	
	N	Column %	n	Row %	n	Row %	n	Row %
<b>Total</b>	87,146	100.0	71,255	81.8	59,664	68.5	51,504	59.1
<b>Sex</b>								
Male	61,344	70.4	49,574	80.8	41,130	67.0	36,387	59.3
Female	25,802	29.6	21,681	84.0	18,534	71.8	15,117	58.6
<b>Race/Ethnicity</b>								
Black	39,488	45.3	32,057	81.2	26,566	67.3	21,705	55.0
Hispanic	28,445	32.6	23,848	83.8	20,648	72.6	17,274	60.7
White	17,254	19.8	13,748	79.7	11,091	64.3	11,245	65.2
Asian/Pacific Islander	1,497	1.7	1,218	81.4	1,032	68.9	987	65.9
Native American	233	0.3	200	85.8	175	75.1	141	60.5
Multiracial	46	0.1	36	78.3	30	65.2	25	54.3
Unknown	183	0.2	148	80.9	122	66.7	127	69.4
<b>Age group (years)</b>								
0 - 12	273	0.3	242	88.6	226	82.8	158	57.9
13 - 19	1,070	1.2	924	86.4	811	75.8	518	48.4
20 - 29	7,253	8.3	5,402	74.5	3,974	54.8	2,883	39.7
30 - 39	13,932	16.0	10,613	76.2	8,441	60.6	7,010	50.3
40 - 49	30,335	34.8	24,776	81.7	20,704	68.3	17,670	58.2
50 - 59	24,436	28.0	20,845	85.3	18,033	73.8	16,132	66.0
60+	9,847	11.3	8,453	85.8	7,475	75.9	7,133	72.4
<b>Transmission risk</b>								
MSM	30,931	35.5	24,983	80.8	20,374	65.9	18,901	61.1
IDU	14,616	16.8	12,503	85.5	11,012	75.3	8,510	58.2
Heterosexual	18,351	21.1	15,214	82.9	12,809	69.8	10,747	58.6
Perinatal	1,827	2.1	1,606	87.9	1,436	78.6	917	50.2
Other	188	0.2	166	88.3	147	78.2	128	68.1
Unknown	21,233	24.4	16,783	79.0	13,886	65.4	12,301	57.9
<b>Area of birth</b>								
US	49,415	56.7	40,414	81.8	33,599	68.0	28,012	56.7
US Dependency	4,754	5.5	4,004	84.2	3,502	73.7	2,675	56.3
Foreign	15,571	17.9	12,581	80.8	10,640	68.3	9,624	61.8
Unknown	17,406	20.0	14,256	81.9	11,923	68.5	11,193	64.3
<b>Clinical Status</b>								
HIV (non-AIDS)	35,731	41.0	26,353	73.8	20,913	58.5	18,078	50.6
AIDS	51,415	59.0	44,902	87.3	38,751	75.4	33,426	65.0

AIDS, acquired immunodeficiency syndrome; HIV, human immunodeficiency virus; IDU, injection drug users; MSM, men who have sex with men.

## Conclusions and Recommendations

- Our method more accurately estimates the number of PLWHA currently living in NYC, retained in care, and virally suppressed.
- As state and local health departments prepare to use their surveillance data to measure NHAS outcomes, they should evaluate the accuracy and completeness of their surveillance systems and adopt methods that will accurately reflect the number of patients still living in their jurisdictions.