Missed Opportunities: Adapting the HIV Care Continuum to Reduce HIV-related Deaths

Sarah L. Braunstein[1], Rebekkah S. Robbins[1], Demetre C. Daskalakis[1]
[1]New York City Department of Health and Mental Hygiene (DOHMH)

Abstract #994

Contact: Sarah Braunstein
sbraunstein@health.nyc.gov
Phone: 347-396-7760

Background and Objective

HIV-related deaths among people with HIV (PWH) remain common in New York City (NYC). We developed a novel continuum of HIV care—HIV Mortality Reduction Continuum of Care (HMRCC)—that estimates care outcomes before death to identify opportunities to prevent HIV-related death.

Methods

- Data source: NYC HIV Surveillance Registry
- Eligibility criteria: PWH who died during 2007-2013, resided in NYC at death, and who died ≥15 months after HIV diagnosis
- CD4 and viral load (VL) tests from surveillance were used to measure outcomes during the "intervenable period," the period from 15 months to 3 months before death
- Outcomes included the proportion of patients who were:
  - ever linked to care (CD4/VL reported ≥8 days after diagnosis)
  - retained in care (≥2 CD4/VL tests ≥90 days apart during intervenable period)
  - presumed to have ever started antiretroviral therapy (ART) (95% of retained in care, based on 2013 NYC Medical Monitoring Project)
  - clinically well-managed (VL≤1500 cc/mL)
  - virally suppressed (VL≤200 cc/mL)
- We stratified the continuum by underlying cause of death (COD) (HIV-related vs. other), and then the HIV-related continuum by sex, race/ethnicity, age at death, and HIV transmission risk.

Results

A total of 12,010 PWH died during 2007-2013 in New York City; 11,187 PWH were eligible for this analysis (Table 1).

Overall, 98% (N=11,007) linked after HIV diagnosis; 80% (N=8,992) were retained in care during the intervenable period; 66% (N=7,376) had ever started ART; 47% (N=5,217) were clinically well-managed; and 40% (N=4,518) were virally suppressed (VS).

Half (47%) of all deaths were HIV-related (Figure 1). Retention in care was higher among PWH with HIV-related COD (83% vs. 78%), but VS was substantially lower (34% vs. 46%).

The stratified HIV-related continuum revealed disparities in VS (Figure 2). Despite comparable retention rates, Whites had higher VS (42%) than Blacks (32%) and Hispanics (33%). Retention and VS increased with increasing age at death: 75% of persons <30 years were retained and 30% had VS, vs. 88% and 56%, respectively, among persons ≥60 years. By risk, men who have sex with men had the lowest retention rate (81%), and persons with a history of injecting drugs had the highest VS (37%).

Results (Continued)

Table 1. Characteristics of NYC PWH[1] who died during 2007-2013 and were eligible for analysis[2]

	Total		HIV-related cause of death			Non-HIV cause of death		
	N	Col%	N	Col%	Row%	N	Col%	Row%
Total	11,187	100	5,183	100.0	46.3	6,004	100.0	53.7
Sex								
Male	7,573	67.7	3,390	65.4	44.8	4,183	69.7	55.2
Female	3,614	32.3	1,793	34.6	49.6	1,821	30.3	50.4
Race/ethnicity								
Black	5,763	51.5	2,803	54.1	48.6	2,960	49.3	51.4
Hispanic	3,919	35	1,852	35.7	47.3	2,067	34.4	52.7
White	1,364	12.2	472	9.1	34.6	892	14.9	65.4
Asian/Pacific Islander	95	0.8	34	0.7	35.8	61	1	64.2
Native American	33	0.3	16	0.3	48.5	17	0.3	51.5
Other/unknown	13	0.1	6	0.1	46.2	7	0.1	53.8
Age group (years) at death								
0-12	2	0	2	0	100.0	0	0	0.0
13-19	17	0.2	14	0.3	82.4	3	0	17.6
20-29	237	2.1	148	2.9	62.4	89	1.5	37.6
30-39	817	7.3	480	9.3	58.8	337	5.6	41.2
40-49	3,140	28.1	1,716	33.1	54.6	1,424	23.7	45.4
50-59	4,215	37.7	1,832	35.3	43.5	2,383	39.7	56.5
60+	2,759	24.7	991	19.1	35.9	1,768	29.4	64.1
Transmission risk								
Men who have sex with men (MSM)	1,873	16.7	834	16.1	44.5	1,039	17.3	55.5
Injection drug use history (IDU)	4,032	36	1,850	35.7	45.9	2,182	36.3	54.1
MSM + IDU	449	4	199	3.8	44.3	250	4.2	55.7
Heterosexual[3]	2,059	18.4	997	19.2	48.4	1,062	17.7	51.6
Perinatal	79	0.7	62	1.2	78.5	17	0.3	21.5
Other	38	0.3	18	0.3	47.4	20	0.3	52.6
Unknown	2,657	23.8	1,223	23.6	46.0	1,434	23.9	54.0
Median CD4 count at death[4] (cells/μL, range)	143 (0 - 7,315)		78 (0 - 7,315)			215 (0 - 4,984)		
Median HIV viral load at death[4] (copies/mL, range)	240.5 (0 - 750,000)		1,406 (0 - 750,000)			73 (0 - 750,000)		

Data as reported to the NYC DOHMH as of September 30, 2014.
[1]Cases diagnosed at death and those living outside of NYC at the time of death are excluded. [2]Patients who died at least 15 months after HIV diagnosis were eligible for analysis. [3]Includes persons who had heterosexual sex with a person they know to be HIV-infected, an injection drug user, or a person who has received blood products. For females only, also includes history of prostitution, multiple sex partners, sexually transmitted disease, crack/cocaine use, sex with a bisexual male, probable heterosexual transmission as noted in medical chart, or sex with a male and negative history of injection drug use.
[4] Includes the CD4 or VL closest to date of death.

Figure 2. HIV Mortality Reduction Continuum of Care among NYC PWH with HIV-related cause of death, 2007-2013, by sex, age at death, race/ethnicity, and HIV transmission risk

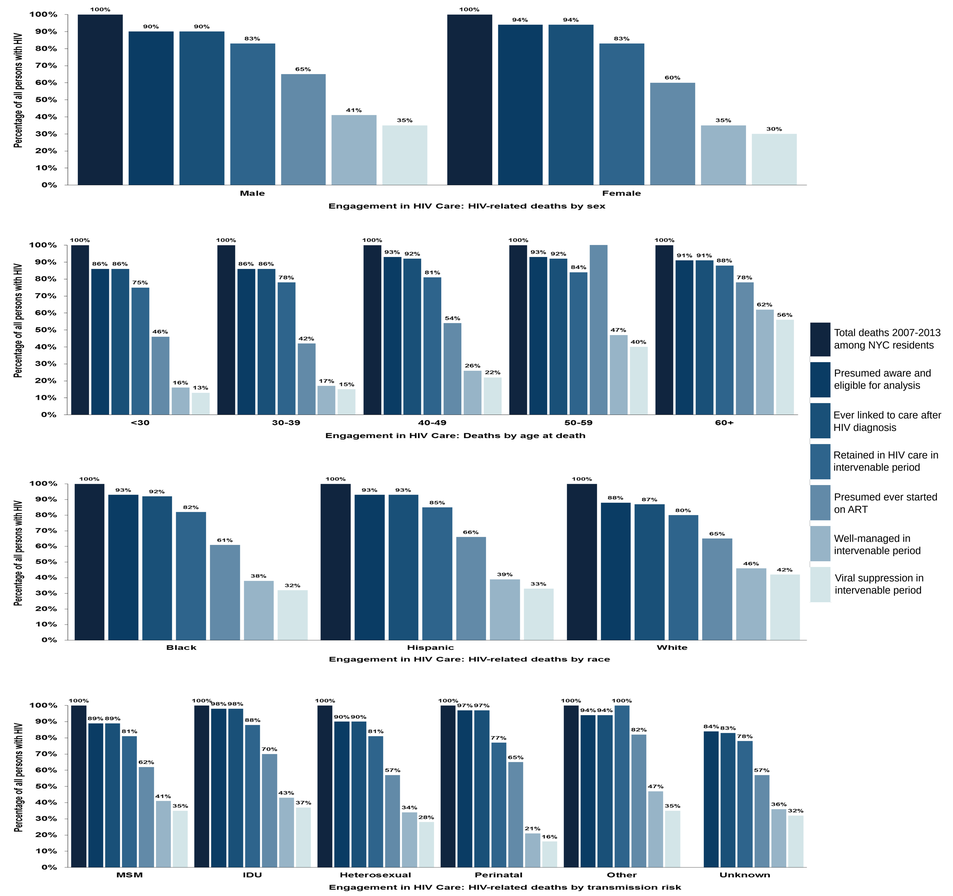
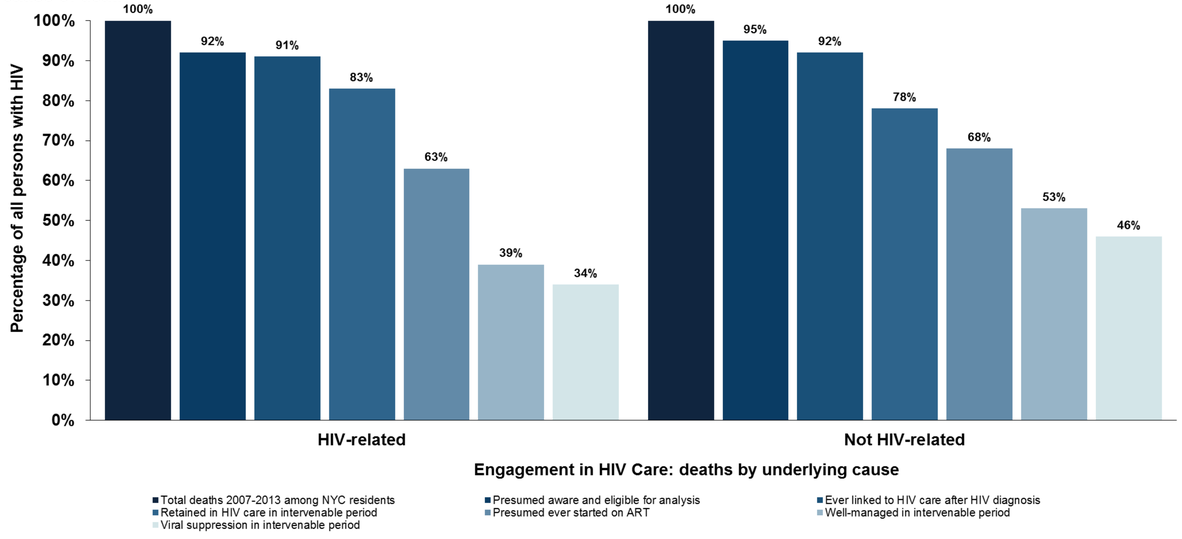


Figure 1. HIV Mortality Reduction Continuum of Care among all NYC PLWH who died 2007-2013 and were living in NYC at death by underlying cause of death



Strengths and Limitations

- Analysis limited to persons living in and/or accessing care in NYC. HIV care activity outside NYC is not reported to NYC HIV surveillance, and thus the extent of care patients received during the intervenable period could be underestimated.
- Analysis uses an estimate of 14% of PWH unaware of their HIV diagnosis; this proportion is likely lower in NYC now, and so viral suppression rates might be underestimated.
- Misclassification of COD on death certificates is possible. For example, there were persons who were virally suppressed at death or during the intervenable period, but were classified as having HIV as the underlying cause of death.
- This analysis did not include persons who died within 15 months of their HIV diagnosis.

Conclusions

- Although retention was high among NYC PWH who died during 2007-2013, VS was low, at nearly half that among all persons living with HIV in NYC (64% in 2013).
- High retention coupled with low VS suggests the need to develop strategies to improve VS and address psychosocial and structural barriers to optimal clinical management.
- The HIV Mortality Reduction Continuum of Care is a novel framework for evaluating pre-death care outcomes among PWH and identifying opportunities for intervention.

Next Steps

- This analysis did not focus on persons who died within 15 months of their HIV diagnosis (N=832 persons during 2006-2012 in NYC, 6.9% of all deaths). This is an important area for further analysis.