The Continuum of HIV Care in the Urban United States: Black Men Who Have Sex With Men (MSM) Are Less Likely Than White MSM to Receive Antiretroviral Therapy

Sten H. Vermund^a

Vanderbilt Institute for Global Health and Department of Pediatrics, Vanderbilt University School of Medicine, Nashville, Tennessee

(See the brief report by Hoots et al, on pages 808–12.)

Keywords. HIV; health disparities; urban health; continuum of care; antiretroviral therapy.

The US Centers for Disease Control and Prevention houses the Division of HIV/AIDS Prevention within the National Center for HIV, Viral Hepatitis, STD, and TB Prevention, renamed in late 2016 to highlight hepatitis. Its National HIV Behavioral Surveillance (NHBS) study is a vital vehicle through which epidemiologists and behavioral scientists mine periodically collected NHBS data to track components of the continuum of human immunodeficiency virus (HIV) care. The NHBS was begun in 2003 by the Centers for Disease Control and Prevention “to conduct behavioral surveillance among persons at high risk for HIV infection” [1]. The surveillance is conducted yearly in 1 at-risk population (men who have sex with men [MSM], persons who inject drugs, or heterosexuals at increased risk for HIV infection); that is, 1 of the 3 populations is surveyed every year, such that each of the 3 populations is surveyed every 3 years and there is a single annual survey of 1 population.

The NHBS permits tracking health system components that are needed to optimize both clinical care for persons living with HIV/AIDS and prevention of HIV transmission to others [2–4]. The continuum of care begins with testing and confirmatory diagnosis to identify infected persons [5]. After diagnosis, a person living with HIV must be linked to care, retained in care, promptly prescribed antiretroviral therapy (ART), and be highly adherent to the ART regimen [6]. The ultimate goal of this care cascade is viral suppression, to both slow HIV disease progression and minimize viral transmission to others.

In this issue of *The Journal of Infectious Diseases*, Hoots and colleagues [7] from the NHBS Study Group team estimated 2 elements of the care continuum among HIV-infected MSM in the United States, the prevalence of linkage to care and ART coverage. In 2008, a total of 1144 men participated and were included in the linkage analysis, increasing to 1338 in 2011 and 1716 in 2014, with 2 fewer participating in each study year for the ART analysis, that is, 2 missing ART data for each of the years. From 2008 to 2014 surveys, 14% fewer white MSM participated and 13% more black MSM were included. There were no significant differences in education, income, or region across the time period, but insurance coverage rose steadily, from 7% in 2008 to 86% in 2014,

and the median age of participants was younger in more recent surveys.

Both linkage to care and ART coverage improved over time, consistent across all groups studied by Hoots et al [7]. However, a conspicuous health disparity was rediscovered, namely, that black MSM were less likely to secure ART in each of the 3 NHBS MSM study years of 2008, 2011, and 2014. This finding (a 9% coverage gap in 2014) persisted even after controlling for other predictors of lower access, namely, less education, lower income, and lack of health insurance. In this pithy report, other potential contributors to the racial differences were not addressed, including substance and alcohol use, mental health, disclosure of HIV status, whether sexual orientation was open or clandestine, incarceration experience, stigma and community attitudes, or social support and network phenomena. Hence, a more nuanced interpretation of why black men are less likely than white men to access ART must be sought elsewhere [8–36].

When racial or ethnic disparities in access to care are well documented, which programs can reduce such disparities? This remains a conspicuous priority for current research in the United States, whether focused primarily on care for persons living with HIV/AIDS or for prevention of HIV infection [37,38]. Innovative programs suggest that the gap may be bridged using community outreach and participation, community health workers and

Received 3 January 2017; editorial decision 3 January 2017; accepted 5 January 2017; published online March 29, 2017.

^aPresent affiliation: Yale School of Public Health, Yale University, New Haven, Connecticut.

Correspondence: S. H. Vermund, Yale School of Public Health, 60 College St (Office of the Dean), PO Box 208034, New Haven, CT 06520-8034 (sten.vermund@yale.edu).

The Journal of Infectious Diseases® 2017;216:790–4

© The Author 2017. Published by Oxford University Press for the Infectious Diseases Society of America. All rights reserved. For permissions, e-mail: journals.permissions@oup.com. DOI: 10.1093/infdis/jix009

peers, Internet-based engagement, short messaging system reminders, and bridging from significant transitions into care (eg, self-disclosure of sexual orientation, gender identity, or HIV status; incarceration; adolescent changes; or learning of one's own or a partner's HIV seropositive status) [39–53]. Use of incentives linked to contingencies of adherence are promising but lack societal commitment for sustainable funding. Structural barriers loom large as a new administration takes over under our 45th president. Elimination of the Patient Protection and Affordable Care Act (ie, “Obamacare” or the ACA), a likely reduction in Medicare and Medicaid expenditures, and a potential reduction in Ryan White Act investments would all be expected to exacerbate racial/ethnic health disparities. This is assumed given that all are focused on lower-income, middle-class, or older individuals with limited resources for private insurance or self-funding of healthcare.

Methodological challenges are rife in this complex health services research arena [54–57]. The link between treatment and prevention introduces the desirability to measure the ultimate continuum of care outcome of viral suppression among all HIV-infected persons; a further goal is assessing the extent to which HIV transmission declines at varying levels of ART saturation within communities [58–62]. If we could identify and successfully treat all HIV-infected persons, then the risk of further HIV transmission would diminish, analogous to strategies used in the control of sexually transmitted infections and tuberculosis.

Although regional differences were not noted to be predictors of linkage or ART initiation, independent of other factors, the NHBS Study Group authors did well to acknowledge special challenges in the southeastern United States [7]. The disproportionate disease burden, lower state health investments, and challenging contextual elements are all elements fueling the southern HIV epidemic [63–69]. It may also be true that progress has been made in this part of the nation, given that

this NHBS study failed to find regional disparities [70].

The research agenda for reducing HIV disparities in access to care is a substantial one. Such groups and projects as the HIV Prevention Trials Network, YMSM of color Special Projects of National Significance Initiative Study Group, Medical Monitoring Project, NYC M2M Study, the Mpowerment Project, the Adolescent Trials Network, and weCARE (to name but a few) are all striving to discover better and more effective models of outreach for HIV testing and care, with the goal of sustained viral suppression. Still, jurisdictions struggle with only limited success to solve their black-Hispanic-white disparities in HIV risk and access to care. The issues involved are often as much societal as medical, as with access to housing and education, employment and adequate income, substance use and mental health services, and other social determinants of health. How health systems can be improved and linked to communities of need without addressing these overarching issues remains a massive challenge for investigators and implementers alike.

Notes

Financial support. This work was supported by the National Institutes of Health (grantP30 AI110527).

Potential conflicts of interest. Author certifies no potential conflicts of interest. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

References

- Centers for Disease Control and Prevention. National HIV Behavioral Surveillance (NHBS). <https://www.cdc.gov/hiv/statistics/systems/nhbs/>. Accessed 29 December 2016.
- Burns DN, Dieffenbach CW, Vermund SH. Rethinking prevention of HIV type 1 infection. *Clin Infect Dis* **2010**; 51:725–31.

- Gardner EM, McLees MP, Steiner JF, Del Rio C, Burman WJ. The spectrum of engagement in HIV care and its relevance to test-and-treat strategies for prevention of HIV infection. *Clin Infect Dis* **2011**; 52:793–800.
- Centers for Disease Control and Prevention. Vital signs: HIV prevention through care and treatment—United States. *MMWR Morb Mortal Wkly Rep* **2011**; 60:1618–23.
- Cooley LA, Wejnert C, Spiller MW, Broz D, Paz-Bailey G; NHBS Study Group. Low HIV testing among persons who inject drugs—National HIV Behavioral Surveillance, 20 U.S. cities, 2012. *Drug Alcohol Depend* **2016**; 165:270–4.
- Kay ES, Batey DS, Mugavero MJ. The HIV treatment cascade and care continuum: updates, goals, and recommendations for the future. *AIDS Res Ther* **2016**; 13:35.
- Hoots BE, Finlayson TJ, Wejnert C, Paz-Bailey G; NHBS Study Group. Updated data on linkage to HIV care and antiretroviral treatment among men who have sex with men—20 cities, United States. *J Infect Dis* **2017**; 216:808–12.
- St Lawrence JS, Kelly JA, Dickson-Gomez J, Owczarzak J, Amirkhanian YA, Sitzler C. Attitudes toward HIV voluntary counseling and testing (VCT) among African American men who have sex with men: concerns underlying reluctance to test. *AIDS Educ Prev* **2015**; 27:195–211.
- Latkin CA, Van Tieu H, Fields S, et al. Social network factors as correlates and predictors of high depressive symptoms among black men who have sex with men in HPTN 061. *AIDS Behav* **2016**. DOI:10.1007/s10461-016-1493-8.
- Nelson LE, Wilton L, Moinuddin R, et al; HPTN 061 Study Team. Economic, legal, and social hardships associated with HIV risk among black men who have sex with men in six US cities. *J Urban Health* **2016**; 93:170–88.
- Tieu HV, Liu TY, Hussen S, et al. Sexual networks and HIV risk among

- black men who have sex with men in 6 U.S. cities. *PLoS One* **2015**; 10:e0134085.
12. Irvin R, Wilton L, Scott H, et al. A study of perceived racial discrimination in black men who have sex with men (MSM) and its association with healthcare utilization and HIV testing. *AIDS Behav* **2014**; 18:1272–8.
 13. Mayer KH, Wang L, Koblin B, et al. Concomitant socioeconomic, behavioral, and biological factors associated with the disproportionate HIV infection burden among black men who have sex with men in 6 U.S. cities. *PLoS One* **2014**; 9:e87298.
 14. Koblin BA, Mayer KH, Eshleman SH, et al. Correlates of HIV acquisition in a cohort of black men who have sex with men in the United States: HIV Prevention Trials Network (HPTN) 061. *PLoS One* **2013**; 8:e70413.
 15. Beer L, Bradley H, Mattson CL, Johnson CH, Hoots B, Shouse RL; Medical Monitoring Project. Trends in racial and ethnic disparities in antiretroviral therapy prescription and viral suppression in the United States, 2009–2013. *J Acquir Immune Defic Syndr* **2016**; 73:446–453.
 16. Castel AD, Kalmin MM, Hart RL, et al. Disparities in achieving and sustaining viral suppression among a large cohort of HIV-infected persons in care—Washington, DC. *AIDS Care* **2016**; 28:1355–64.
 17. Tieu HV, Nandi V, Hoover DR, et al. Do sexual networks of men who have sex with men in New York City differ by race/ethnicity? *AIDS Patient Care STDS* **2016**; 30:39–47.
 18. Wejnert C, Hess KL, Rose CE, Balaji A, Smith JC, Paz-Bailey G; NHBS Study Group. Age-specific race and ethnicity disparities in HIV infection and awareness among men who have sex with men—20 US cities, 2008–2014. *J Infect Dis* **2016**; 213:776–83.
 19. Vagenas P, Zelenev A, Altice FL, et al. HIV-infected men who have sex with men, before and after release from jail: the impact of age and race, results from a multi-site study. *AIDS Care* **2016**; 28:22–31.
 20. Sullivan PS, Rosenberg ES, Sanchez TH, et al. Explaining racial disparities in HIV incidence in black and white men who have sex with men in Atlanta, GA: a prospective observational cohort study. *Ann Epidemiol* **2015**; 25:445–54.
 21. Hightow-Weidman LB, Muessig KE, Pike EC, et al. HealthMpowerment.org: building community through a mobile-optimized, online health promotion intervention. *Health Educ Behav* **2015**; 42:493–9.
 22. Rosenberg ES, Millett GA, Sullivan PS, Del Rio C, Curran JW. Understanding the HIV disparities between black and white men who have sex with men in the USA using the HIV care continuum: a modeling study. *Lancet HIV* **2014**; 1:e112–8.
 23. Marlin RW, Young SD, Bristow CC, et al. Piloting an HIV self-test kit voucher program to raise serostatus awareness of high-risk African Americans, Los Angeles. *BMC Public Health* **2014**; 14:1226.
 24. Neaigus A, Reilly KH, Jenness SM, Wendel T, Marshall DM 4th, Hagan H. Multilevel risk factors for greater HIV infection of black men who have sex with men in New York City. *Sex Transm Dis* **2014**; 41:433–9.
 25. van Griensven F, Stall RD. Racial disparity in HIV incidence in MSM in the United States: how can it be reduced? *AIDS* **2014**; 28:129–30.
 26. Golub SA, Gamarel KE. The impact of anticipated HIV stigma on delays in HIV testing behaviors: findings from a community-based sample of men who have sex with men and transgender women in New York City. *AIDS Patient Care STDS* **2013**; 27:621–7.
 27. Maulsby C, Millett G, Lindsey K, et al. HIV among black men who have sex with men (MSM) in the United States: a review of the literature. *AIDS Behav* **2014**; 18:10–25.
 28. Gillman J, Davila J, Sangsiry S, et al. The effect of conspiracy beliefs and trust on HIV diagnosis, linkage, and retention in young MSM with HIV. *J Health Care Poor Underserved* **2013**; 24:36–45.
 29. Stein MS, Spaulding AC, Cunningham M, et al. HIV-positive and in jail: race, risk factors, and prior access to care. *AIDS Behav* **2013**; 17(suppl 2):S108–17.
 30. Balaji AB, Oster AM, Viall AH, Heffelfinger JD, Mena LA, Toledo CA. Role flexing: how community, religion, and family shape the experiences of young black men who have sex with men. *AIDS Patient Care STDS* **2012**; 26:730–7.
 31. McKirnan DJ, Du Bois SN, Alvy LM, Jones K. Health care access and health behaviors among men who have sex with men: the cost of health disparities. *Health Educ Behav* **2013**; 40:32–41.
 32. Mustanski B, Newcomb ME, Clerkin EM. Relationship characteristics and sexual risk-taking in young men who have sex with men. *Health Psychol* **2011**; 30:597–605.
 33. Wohl AR, Galvan FH, Myers HE, et al. Do social support, stress, disclosure and stigma influence retention in HIV care for Latino and African American men who have sex with men and women? *AIDS Behav* **2011**; 15:1098–110.
 34. Glick SN, Golden MR. Persistence of racial differences in attitudes toward homosexuality in the United States. *J Acquir Immune Defic Syndr* **2010**; 55:516–23.
 35. Magnus M, Jones K, Phillips G 2nd, et al. Characteristics associated with retention among African American and Latino adolescent HIV-positive men: results from the outreach, care, and prevention to engage HIV-seropositive young MSM of color special project of national significance initiative. *J Acquir Immune Defic Syndr* **2010**; 53:529–36.

36. Millett GA, Flores SA, Peterson JL, Bakeman R. Explaining disparities in HIV infection among black and white men who have sex with men: a meta-analysis of HIV risk behaviors. *AIDS* **2007**; 21:2083–91.
37. Mugavero MJ. Elements of the HIV Care Continuum: Improving Engagement and Retention in Care. *Top Antivir Med* **2016**; 24:115–9.
38. Vermund SH, Hodder SL, Justman JE, et al. Addressing research priorities for prevention of HIV infection in the United States. *Clin Infect Dis* **2010**; 50(suppl 3):S149–55.
39. Golden MR, Bennett AB, Dombrowski JC, Buskin SE. Achieving the goals of the National HIV/AIDS Strategy: declining HIV diagnoses, improving clinical outcomes, and diminishing racial/ethnic disparities in King County, WA (2004–2013). *Sex Transm Dis* **2016**; 43:269–76.
40. Tanner AE, Mann L, Song E, et al. weCARE: A social media-based intervention designed to increase HIV care linkage, retention, and health outcomes for racially and ethnically diverse young MSM. *AIDS Educ Prev* **2016**; 28:216–30.
41. Young SD, Cumberland WG, Lee SJ, Jaganath D, Szekeres G, Coates T. Social networking technologies as an emerging tool for HIV prevention: a cluster randomized trial. *Ann Intern Med* **2013**; 159:318–24.
42. Schillinger JA, Gorwitz R, Rietmeijer C, Golden MR. The expedited partner therapy continuum: a conceptual framework to guide programmatic efforts to increase partner treatment. *Sex Transm Dis* **2016**; 43(2 suppl 1):S63–75.
43. Cervia JS. Easing the transition of HIV-infected adolescents to adult care. *AIDS Patient Care STDS* **2013**; 27:692–6.
44. Simoni JM, Kutner BA, Horvath KJ. Opportunities and challenges of digital technology for HIV treatment and prevention. *Curr HIV/AIDS Rep* **2015**; 12:437–40.
45. Crepaz N, Baack BN, Higa DH, Mullins MM. Effects of integrated interventions on transmission risk and care continuum outcomes in persons living with HIV: meta-analysis, 1996–2014. *AIDS* **2015**; 29:2371–83.
46. Iroh PA, Mayo H, Nijhawan AE. The HIV care cascade before, during, and after incarceration: a systematic review and data synthesis. *Am J Public Health* **2015**; 105:e5–16.
47. MacCarthy S, Hoffmann M, Ferguson L, et al. The HIV care cascade: models, measures and moving forward. *J Int AIDS Soc* **2015**; 18:19395.
48. Muessig KE, Nekkanti M, Bauermeister J, Bull S, Hightow-Weidman LB. A systematic review of recent smartphone, Internet and Web 2.0 interventions to address the HIV continuum of care. *Curr HIV/AIDS Rep* **2015**; 12:173–90.
49. Morales-Aleman MM, Sutton MY. Hispanics/Latinos and the HIV continuum of care in the southern USA: a qualitative review of the literature, 2002–2013. *AIDS Care* **2014**; 26:1592–604.
50. Storey D, Seifert-Ahanda K, Andaluz A, Tsoi B, Matsuki JM, Cutler B. What is health communication and how does it affect the HIV/AIDS continuum of care? a brief primer and case study from New York City. *J Acquir Immune Defic Syndr* **2014**; 66(suppl 3):S241–9.
51. Sheehan DM, Trepka MJ, Dillon FR. Latinos in the United States on the HIV/AIDS care continuum by birth country/region: a systematic review of the literature. *Int J STD AIDS* **2015**; 26:1–12.
52. Rich JD, DiClemente R, Levy J, et al; Centers for AIDS Research at the Social and Behavioral Sciences Research Network; Centers for AIDS Research–Collaboration on HIV in Corrections Working Group. Correctional facilities as partners in reducing HIV disparities. *J Acquir Immune Defic Syndr* **2013**; 63(suppl 1):S49–53.
53. Meyer JP, Althoff AL, Altice FL. Optimizing care for HIV-infected people who use drugs: evidence-based approaches to overcoming healthcare disparities. *Clin Infect Dis* **2013**; 57:1309–17.
54. Mugavero MJ, Amico KR, Horn T, Thompson MA. The state of engagement in HIV care in the United States: from cascade to continuum to control. *Clin Infect Dis* **2013**; 57:1164–71.
55. Medland NA, McMahon JH, Chow EP, Elliott JH, Hoy JF, Fairley CK. The HIV care cascade: a systematic review of data sources, methodology and comparability. *J Int AIDS Soc* **2015**; 18:20634.
56. Hull M, Lange J, Montaner JS. Treatment as prevention—where next? *Curr HIV/AIDS Rep* **2014**; 11:496–504.
57. Shepherd BE, Blevins M, Vaz LM, et al. Impact of definitions of loss to follow-up on estimates of retention, disease progression, and mortality: application to an HIV program in Mozambique. *Am J Epidemiol* **2013**; 178:819–28.
58. Brennan A, Browne JP, Horgan M. A systematic review of health service interventions to improve linkage with or retention in HIV care. *AIDS Care* **2014**; 26:804–12.
59. Vermund SH, Tique JA, Cassell HM, Pask ME, Ciampa PJ, Audet CM. Translation of biomedical prevention strategies for HIV: prospects and pitfalls. *J Acquir Immune Defic Syndr* **2013**; 63(suppl 1):S12–25.
60. McNairy ML, Cohen M, El-Sadr WM. Antiretroviral therapy for prevention is a combination strategy. *Curr HIV/AIDS Rep* **2013**; 10:152–8.
61. Vermund SH, Hayes RJ. Combination prevention: new hope for stopping the epidemic. *Curr HIV/AIDS Rep* **2013**; 10:169–86.
62. Chang LW, Serwadda D, Quinn TC, Wawer MJ, Gray RH, Reynolds SJ. Combination implementation for HIV prevention: moving from

- clinical trial evidence to population-level effects. *Lancet Infect Dis* **2013**; 13:65–76.
63. Qian HZ, Taylor RD, Fawal HJ, Vermund SH. Increasing AIDS case reports in the South: U.S. trends from 1981–2004. *AIDS Care* **2006**; 18(suppl 1):S6–9.
 64. Krawczyk CS, Funkhouser E, Kilby JM, Kaslow RA, Bey AK, Vermund SH. Factors associated with delayed initiation of HIV medical care among infected persons attending a southern HIV/AIDS clinic. *South Med J* **2006**; 99:472–81.
 65. Baumann KE, Phillips AL, Arya M. Overlap of HIV and low health literacy in the southern USA. *Lancet HIV* **2015**; 2:e269–70.
 66. Morales-Aleman MM, Sutton MY. Hispanics/Latinos and the HIV continuum of care in the southern USA: a qualitative review of the literature, 2002–2013. *AIDS Care* **2014**; 26:1592–604.
 67. Zhang S, McGoy SL, Dawes D, Fransua M, Rust G, Satcher D. The potential for elimination of racial-ethnic disparities in HIV treatment initiation in the Medicaid population among 14 southern states. *PLoS One* **2014**; 9:e96148.
 68. Adimora AA, Ramirez C, Schoenbach VJ, Cohen MS. Policies and politics that promote HIV infection in the southern United States. *AIDS* **2014**; 28:1393–7.
 69. Reif SS, Whetten K, Wilson ER, et al. HIV/AIDS in the southern USA: a disproportionate epidemic. *AIDS Care* **2014**; 26:351–9.
 70. Wester C, Rebeiro PF, Shavor TJ, et al. The 2013 HIV continuum of care in Tennessee: progress made, but disparities persist. *Public Health Rep* **2016**; 131:695–703.