Clinical Infectious Diseases Advance Access published January 23, 2014

Disparities in the quality of HIV care when using US Department of Health and Human Services Indicators

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ABSTRACT

We estimated US Department of Health and Human Services (DHHS)-approved HIV indicators. Among patients, 71% were retained in care, 82% were prescribed treatment, and 78% had HIV RNA ≤200 copies/mL; younger adults, women, blacks, and injection drug users had poorer outcomes. Interventions are needed to reduce retention- and treatment-related disparities.

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INTRODUCTION

Identifying indicators and monitoring HIV care is an established practice.[1-3] In 2012, the Health Resources and Services Administration put forth clinical quality measures, which were endorsed by the National Quality Forum for monitoring HIV care services in the U.S. Three of these measures were also approved by the Department of Health and Human Services (DHHS) for monitoring DHHS-funded HIV services.[3] The indicators are consistent with the Institute of Medicine's recommendations for monitoring HIV services[2] and overlap with indicators from the National Committee for Quality Assurance.[1]

The North American AIDS Cohort Collaboration on Research and Design (NA-ACCORD) was identified by the Institute of Medicine as a potential data source to monitor HIV care in the U.S.[2] The NA-ACCORD has previously shown that 3% of all adults living with HIV in the U.S. are captured in the clinical cohorts of the NA-ACCORD and participants are demographically similar to persons living with HIV in the U.S.[4] The objectives of this study were to: 1) apply DHHS-approved indicators for retention in HIV medical care, antiretroviral therapy (ART) use and HIV viral load (VL) suppression;[3] and 2) to identify differences in these indicators by age, sex, race/ethnicity and HIV risk.

METHODS

Study population

The NA-ACCORD is a multi-site collaboration of cohort studies of HIV-infected adults in the U.S. and Canada and is a regional group of the International Epidemiologic Database to Evaluate AIDS. Details on the NA-ACCORD collaboration have been published previously.[5] Cohorts contribute data on patient demographics, prescribed ART, dates of primary HIV clinical visits, clinical diagnoses, vital status, and results of laboratory tests (including HIV-1 RNA viral load). All data are transferred securely to the NA-ACCORD's central Data Management Core,

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where they undergo quality control per a standardized protocol before they are combined into harmonized data files. The activities of the NA-ACCORD have been reviewed and approved by the local institutional review boards for each site and at Johns Hopkins School of Medicine.

We conducted a cross-sectional analysis using data contributed by NA-ACCORD US clinical cohorts from 2009; Canadian and interval cohorts were excluded to allow for focus on DHHS indicators for monitoring US HIV clinical care. Ten US clinical cohorts were included with sites in 48 US states (participants hail from all 50 states), Washington DC, the Virgin Islands, and Puerto Rico (Figure 1).

Outcomes

We evaluated the following three DHHS-defined indicators: 1) retention in care, measured as the percentage of patients with ≥1 HIV care visit in January-June of 2008 and encounters in each of the next 3 semesters of the 24-month period (1/1/2008-12/31/2009), at least 60 days apart; 2) ART use, measured as the percentage with ≥1 HIV care visit who were prescribed ART for ≥1 month in 2009; 3) VL suppression, measured as the percentage of patients with ≥1 HIV care visit who had an HIV RNA ≤200 copies/mL at their last measurement in 2009.[3] ART was defined as a regimen of >3 antiretroviral agents from at least two classes or a triple nucleoside/nucleotide reverse transcriptase inhibitor regimen containing abacavir or tenofovir.

Demographics analyzed for disparities

Potential disparities in the DHHS indicators by age, sex, race/ethnicity, and HIV risk group were analyzed. Race/ethnicity was categorized as non-Hispanic black, non-Hispanic white, Hispanic, and other/unknown. HIV risk group was categorized as men who have sex with men (MSM), injection drug use (IDU), heterosexual contact, and other/unknown. Patients with both sexual and IDU risks were categorized as IDU.

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Statistical Analysis

Chi-square test statistics were used to determine differences in the indicators by demographic characteristics. Multivariate Poisson regression models were used to estimate adjusted prevalence ratios (aPR) and 95% confidence intervals ([,]); models included age, sex, race/ethnicity, HIV risk group, and cohort. In sensitivity analyses, we excluded the Veterans Aging Cohort Study (VACS) and Kaiser Permanente Northern California (KPNC) as participants in these cohorts were thought to have reduced barriers to accessing care.

RESULTS

From the participating US clinical cohorts in the NA-ACCORD, 35,324 participants had ≥1 HIV care visit during January-June 2008, making them eligible to be included in the estimation of the retention in care indicator; 38,331 participants had ≥1 HIV care visit in 2009 making them eligible to be included in the estimation of the ART use and VL suppression indicators. Although these groups differed slightly in size, demographics were the same in both groups: 49% of participants were ≥50 years of age; 83% were male; 45% were black; and 19% were IDUs.

Of participants, 71% were retained in care, 82% were prescribed ART, and 78% had a suppressed VL (Table 1). All three indicators were higher in older age groups in unadjusted analyses. Differences in crude proportions existed by age, sex, race/ethnicity and HIV risk for all three indicators, with the exception of no statistically significant difference in retention in care by sex.

After adjustment for sex, race/ethnicity, HIV risk group and cohort, all three indicators were statistically more prevalent in older age groups (Table 1). Females had a 7% higher proportion retained in care and a 6% lower proportion prescribed ART compared with males, but no significant statistical difference in the proportion with VL suppression. Hispanics had a 9% higher proportion retained in care compared with whites; blacks had a statistically significant

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lower proportion retained in care (3%), prescribed ART (3%), and with VL suppression (9%). IDUs and heterosexuals had an 11% and 4% lower proportion retained in care compared to MSM, respectively. Additionally, IDUs had a 6% lower proportion prescribed ART and a 7% lower proportion with VL suppression compared to MSM. There were no meaningful differences in the results after excluding VACS and KPNC.

DISCUSSION

In this era of "treatment as prevention," there is renewed emphasis on achieving VL suppression through the use of ART; adults in HIV care should be the most easily-accessible group in which 100% VL suppression could potentially be achieved. Our study, nested in the largest US collaboration of HIV-infected adults, showed 29% of HIV-infected adults in care fail to meet the definition for retention in care, 18% were not prescribed ART, and 22% of adults did not achieve VL suppression; and these proportions were higher for younger adults, females, non-Whites, and those with IDU and heterosexual HIV risk.

Our estimate of 71% retained in care is higher than the regularly used meta-analysis estimate of 59%,[6] which is similar to that employed in the cascade of care.[7] To date, there is currently no "gold standard" for measuring the definition of retention in care, but use of the DHHS indicator allows for consistency in this measurement.[8] The indicator may need to be modified, however, to reflect changes in clinical practice with less-frequent (i.e. once per year) clinical visits for stable, suppressed patients. Consistent with previous studies,[12] disparities in retention existed, with lower retention in younger adults, males, and those with IDU or heterosexual HIV risk, suggesting the need for programs specifically targeting these groups.

Overall, 18% of adults were not prescribed ART. Females were less likely than males to be prescribed ART, but were previously shown to have a higher mean CD4 count at presentation for care in the NA-ACCORD.[9] In the current study, 41% of women had at least one CD4 measurement <350 cells/mm^3 in 2009, of whom 80% were prescribed ART; 49% of men

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met this CD4 threshold for HIV treatment initiation, of whom 79% were prescribed ART. Younger adults, blacks, and IDUs also had lower proportions prescribed ART in adjusted analyses. Identifying the drivers of these disparities and translation into programmatic efforts is necessary to increase the proportion prescribed ART in these groups.

Almost a quarter of the individuals with at least one visit in 2009 were not suppressed; of these individuals, 69% were prescribed ART. In adjusted analyses, those who were younger, black, or with IDU or heterosexual HIV risk were more likely to have a detectable viral load. Assuming assortative mixing, this is consistent with findings from national surveillance data showing younger adults and blacks have the highest incidence rates of HIV infection.[10] Differences in viral suppression are likely to play a role in disparities of HIV incidence; for example a higher prevalence of detectable viral load among black MSM likely contributes to the increase in odds of HIV infection if one has a black partner.[11]

Although these DHHS-approved measures are similar in concept to the steps depicted in the cascade of care[12] and the continuum of care,[13,14] proportions cannot be directly compared as the concepts and the denominators are not the same. Another important limitation to our study is the lack of distinction in active versus former IDU. Finally, enrollment criteria in the NA-ACCORD includes ≥2 HIV primary care visits in 12 months, >90 days apart among patients in clinical cohorts; thus our study population is enriched with those who successfully linked into care.

Our study provides empiric data on three DHHS-approved indicators from the large and diverse NA-ACCORD using clinical HIV cohort population data. The disparities found highlight: 1) the need for additional research to determine the drivers of these disparities; and 2) the need for programs tailored by age, race/ethnicity, and HIV risk to improve retention, ART use, and VL suppression. Prioritization of program efforts could be guided by targeting the characteristic with the largest differences in all outcomes: young adults (<40 years old). Our results suggest that

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continued efforts are needed to optimize these measures among patients who have successfully linked into HIV care.

ACKNOWLEDGEMENTS

This work was supported by grants U01-AI069918, U01-AA013566, U24-AA020794, U01-AA020790, U01-AI31834, U01-AI34989, U01-AI34993, U01-AI34994, U01-AI35004, U01-AI35039, U01-AI35040, U01-AI35041, U01-AI35042, U01-AI35043, U01-AI37613, U01-AI37984, U01-AI38855, U01-AI38858, U01-AI42590, U01-AI68634, U01-AI68636, U01-AI69432, U01-AI69434, U01-HD32632, U10-EY08057, U10-EY08052, U10- EY08067, UL1-RR024131, UL1-TR000083, U54- MD007587, F31-DA035713 (P Rebeiro), G12- MD007583, K01-AI071754 (BR Lau), K01-AI093197 (KN Althoff), K23 EY013707, K24-AI065298, K24-00432, MO1-RR-00052, N02-CP55504, P30-AI027763, P30-AI094189, P30-AI27757, P30-AI27767, P30-AI50410, P30-AI54999, P30-AI036219, P30-MH62246, R01-CA165937, R01-AA16893, R01-DA11602, R01-DA04334, R01-DA12568, R24-AI067039, R56-AI102622, Z01-CP010214, and Z01-CP010176 from the National Institutes of Health, USA; contract CDC200-2006-18797 from the Center's for Disease Control and Prevention, USA; contract 90047713 from the Agency for Healthcare Research and Quality, USA; contract 90051652 from the Health Resources and Services Administration, USA; grants TGF-96118, HCP-97105, CBR-86906, CBR-94036 from the Canadian Institutes of Health Research, Canada; Ontario Ministry of Health and Long Term Care; and the Government of Alberta, Canada. The funding sources did not influence the design and conduct of the study, collection, management, analysis, and interpretation of the data, preparation, review, or approval of the manuscript or the decision to submit the manuscript for publication; with the exception of the Centers for Disease Control and Prevention, which did review the manuscript and provide optional feedback prior to submission.

Disclosures:

Dr. Gebo reports grants from Tibotec, personal fees from BMS, grants from Federal Government, outside the submitted work. Dr. Klein reports grants from Canadian Institute of Health Research, grants from Fonds de recherches en santé du Québec, grants from CIHR Canadian HIV Trials Network, personal fees from Glaxo-SmithKline/Viiv, personal fees from Bristol Myers Squibb, personal fees from Glaxo-SmithKline/Viiv, personal fees from Gilead, personal fees from Glaxo-SmithKline/Viiv, personal fees from travel/accommodations/meeting expenses unrelated to activities listed, outside the submitted work. Dr. Silverberg reports grants

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from Pfizer, grants from Merck, outside the submitted work. Dr. Thorne reports grants from NIAID, grants from NEI, during the conduct of the study; grants and other from AbbVie, grants and personal fees from XOMA, personal fees from Gilead, personal fees from Navigent, personal fees from Santen, grants from Allergan, Inc., outside the submitted work.

Dr. Althoff and Peter Rebeiro had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

NA-ACCORD Collaborating Cohorts and Representatives

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Fenway Health HIV Cohort: Stephen Boswell, Chris Grasso, and Kenneth H. Mayer.

HAART Observational Medical Evaluation and Research: Robert S. Hogg, P. Richard Harrigan, Julio SG Montaner, Angela Cescon, and Hasina Samji.

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Johns Hopkins HIV Clinical Cohort: Richard D. Moore.

John T. Carey Special Immunology Unit Patient Care and Research Database, Case Western Reserve University: Benigno Rodriguez.

Kaiser Permanente Mid-Atlantic States: Michael A. Horberg.

Kaiser Permanente Northern California: Michael J. Silverberg.

Longitudinal Study of Ocular Complications of AIDS: Jennifer E. Thorne.

Multicenter Hemophilia Cohort Study–II: James J. Goedert.

Multicenter AIDS Cohort Study: Lisa P. Jacobson.

Montreal Chest Institute Immunodeficiency Service Cohort: Marina B. Klein.

Ontario HIV Treatment Network CohortStudy: Sean B. Rourke, Ann N. Burchell, and Anita R. Rachlis.

Retrovirus Research Center, Bayamon Puerto Rico: Robert F. Hunter-Mellado and Angel M. Mayor.

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Veterans Aging Cohort Study: Amy C. Justice, Robert Dubrow, and David Fiellin.

Vanderbilt-Meharry Centers for AIDS Research Cohort: Timothy R. Sterling, David Haas, Sally Bebawy, and Megan Turner.

Women's Interagency HIV Study: Stephen J. Gange and Kathryn Anastos.

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DISCLAIMER

The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention (CDC).

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Table 1: Crude proportions, adjusted prevalence ratios (aPR), and 95% confidence intervals for three indicators to monitor Department of Health and Human Services-Funded HIV Services, NA-ACCORD, 2009

	Retained in care				ART use				Suppressed (≤200 copies/mL) HIV viral load			
	%	N= 35,324 p-value	aPR[a]	95% CI	%	N= 38,331 p-value	aPR[a]	95% CI	%	N= 38,331 p-value	aPR[a]	95% CI
Overall	71%	--	--	--	82%	--	--	--	78%	--	--	--
Age												
<40 years	59%		ref	--	76%		ref	--	69%		ref	--
40-49 years	69%	**<0.001**	**1.17**	**(1.14 , 1.20)**	85%	**<0.001**	**1.12**	**(1.10 , 1.13)**	77%	**<0.001**	**1.12**	**(1.10 , 1.14)**
50-59 years	74%		**1.26**	**(1.23 , 1.29)**	83%		**1.12**	**(1.10 , 1.15)**	79%		**1.16**	**(1.14 , 1.18)**
≥60 years	80%		**1.34**	**(1.31 , 1.38)**	82%		**1.10**	**(1.08 , 1.12)**	84%		**1.22**	**(1.20 , 1.24)**
Sex												
Male	71%	0.15	ref	--	83%	**<0.001**	ref	--	78%	**<0.001**	ref	--
Female	70%		**1.07**	**(1.04 , 1.10)**	80%		**0.94**	**(0.92 , 0.96)**	73%		0.99	(0.97 , 1.01)
Race/ethnicity												
White	72%		ref	--	83%		ref	--	82%		ref	--
Black	71%	**<0.001**	**0.97**	**(0.96 , 0.99)**	81%	**<0.001**	**0.97**	**(0.96 , 0.98)**	73%	**<0.001**	**0.93**	**(0.92 , 0.94)**
Hispanic	72%		**1.09**	**(1.06 , 1.11)**	86%		1.01	(0.99 , 1.03)	78%		1.01	(0.99 , 1.03)
Other[b]	64%		**0.94**	**(0.91 , 0.98)**	80%		0.98	(0.96 , 1.00)	82%		0.99	(0.96 , 1.01)
HIV risk												
MSM	68%		ref	--	86%		ref	--	81%		ref	--
IDU	72%	**<0.001**	**0.89**	**(0.86 , 0.92)**	79%	**<0.001**	**0.94**	**(0.93 , 0.96)**	74%	**<0.001**	**0.93**	**(0.91 , 0.95)**
Heterosexual	69%		**0.96**	**(0.94 , 0.99)**	80%		1.01	(0.99 , 1.03)	74%		**0.97**	**(0.95 , 0.99)**
Other[b]	74%		**0.91**	**(0.88 , 0.94)**	81%		1.01	(0.99 , 1.09)	79%		**0.97**	**(0.94 , 0.99)**

Abbreviations:
aPR=adjusted prevalence ratio
ART=antiretroviral therapy
CI=confidence interval
IDU=history of injection drug use
MSM=Men who have sex with men

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Footnotes:
[a] Prevalence ratios are adjusted for all the variables in the table as well as cohort.
[b] Those with an unknown race/ethnicity or HIV risk are also included in this category.
Bold signifies statistical significance (p<0.05)

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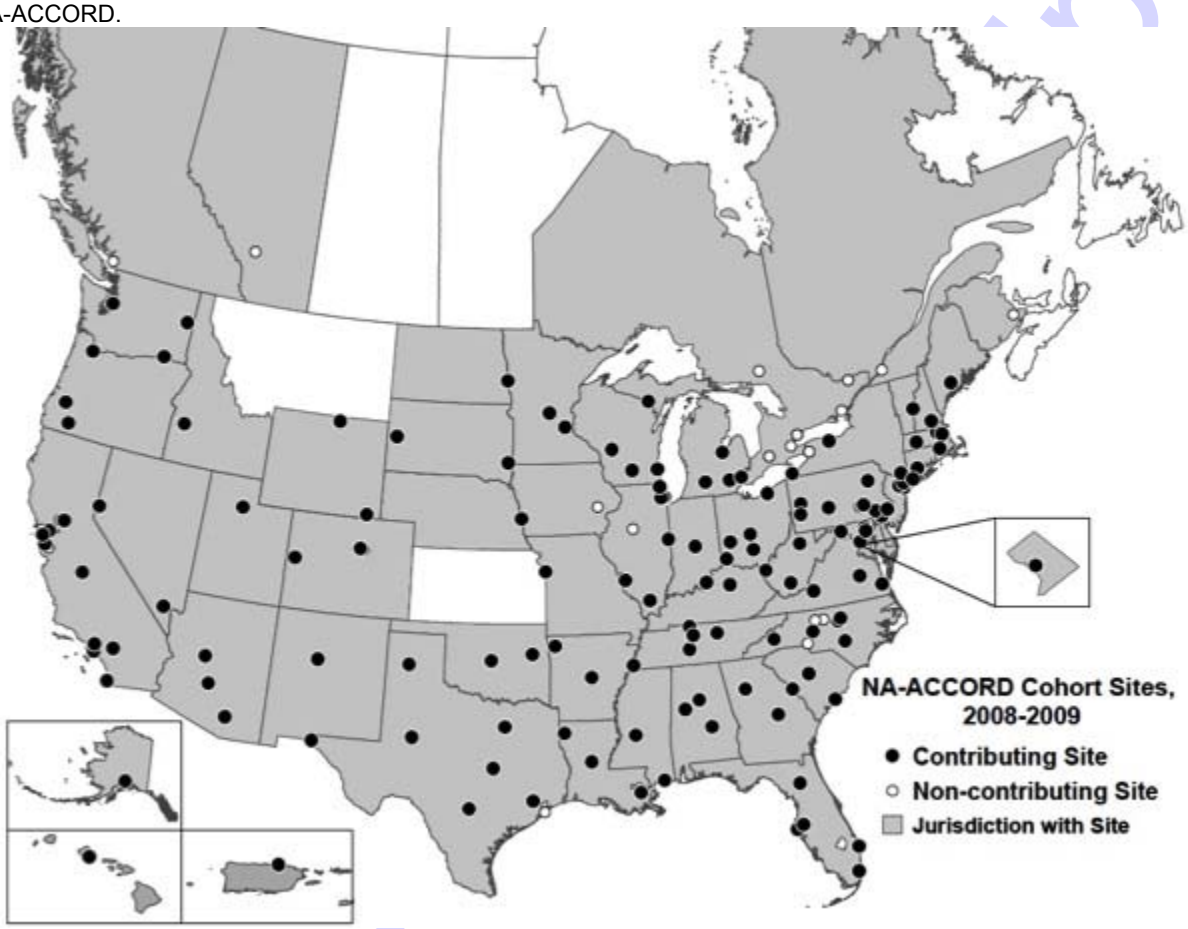
Figure 1: Geographic distribution of sites within the North American AIDS Cohort Collaboration on Research and Design (NA-ACCORD).

Footnotes:
Cohorts that were non-contributing were either interval cohorts or Canadian cohorts (excluded because the focus of this study was on those in clinical care in the US), or the cohort does not currently contribute HIV care visit data to the NA-ACCORD.



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