Published in final edited form as:

J Assoc Nurses AIDS Care. 2020 ; 31(1): 35–41. doi:10.1097/JNC.0000000000000082.

Preliminary validation of an unannounced telephone pill count protocol to measure medication adherence among young adults with perinatal HIV infection

Amelia Bucek, MPH* [Consultant],

HIV Center for Clinical and Behavioral Studies, NY State Psychiatric Institute and Columbia University, New York, New York, USA

Jeannette Raymond, BA [Project Manager],

HIV Center for Clinical and Behavioral Studies, NY State Psychiatric Institute and Columbia University, New York, New York, USA

Cheng-Shiun Leu, PhD [Biostatistician and Research Scientist, Associate Professor],

HIV Center for Clinical and Behavioral Studies, NY State Psychiatric Institute and Columbia University, Columbia, Mailman School of Public Health, New York, New York, USA

Patricia Warne, PhD [Consultant],

HIV Center for Clinical and Behavioral Studies, NY State Psychiatric Institute and Columbia University, New York, New York, USA

Elaine J. Abrams, MD [Professor],

Columbia University College of Physicians & Surgeons, and Senior Director for Research, ICAP at Columbia, Mailman School of Public Health, New York, New York, USA

Curtis Dolezal, PhD [Research Scientist and Assistant Clinical Professor],

HIV Center for Clinical and Behavioral Studies, NY State Psychiatric Institute and Columbia University, New York, New York, USA

Andrew Wiznia, MD [Director of the Division of Allergy and Immunology and Family Based HIV Services, Jacobi Medical Center, and Professor],

Albert Einstein College of Medicine, Bronx, New York, USA

Seth Kalichman, PhD [Professor],

Institute for Collaboration on Health, Intervention, and Policy (InCHIP), University of Connecticut, Storrs, Connecticut, USA

Maira Kalichman, MSW [Research Coordinator and Project Manager],

Institute for Collaboration on Health, Intervention, and Policy (InCHIP), University of Connecticut, Storrs, Connecticut, USA

Claude A. Mellins, PhD [Professor and Co-Director]

*Corresponding Author: Amelia Bucek: amelia.bucek@gmail.com.

Disclosures

The authors report no real or perceived vested interests related to this article that could be construed as a conflict of interest.

Office of Clinical Psychology, Columbia University Medical Center, and Co-Director, HIV Center for Clinical and Behavioral Studies, NY State Psychiatric Institute and Columbia University, New York, New York, USA

Abstract

Unannounced telephone pill counts are an objective antiretroviral therapy (ART) adherence measurement tool, but this method has not been validated in young adults (YA) living with perinatal HIV infection (PHIV). Perinatally-infected YA, recruited from the Child and Adolescent Self-Awareness and Health study, agreed to unannounced telephone pill counts to measure medication adherence over 4 months, and phlebotomy to measure viral load (VL). Differences in pill count adherence scores among YA with a VL ≤ 20 versus > 20 , and demographic differences were assessed. Participants ($N = 62$) were, on average, 24 years old; 57% were African American, and 40% were Latino. Participants with VL ≤ 20 (60%) had significantly higher adherence scores, 85% versus 62% ($p = .004$). Associations were not significant among older YA (25-28 years) or Latinos. Unannounced telephone pill counts are a valid measure of ART adherence in YA with PHIV. Studies with larger samples are needed.

Keywords

adherence measurement; perinatal HIV; young adult

Valid antiretroviral therapy (ART) adherence measurement tools are important for both assessing adherence behaviors and determining effectiveness of adherence interventions. Unannounced telephone pill counts provide an objective measure of adherence that can be implemented by trained lay staff (Kalichman et al., 2007; Fredericksen et al., 2014) without the travel (Bangsberg, Hecht, Charlesbois, Chesney, & Moss, 2001), high up-front technology and medical costs, or recall biases of other measures (Lam & Fresco, 2015; Lehmann et al., 2014). The protocol consists of unscheduled calls where individuals count their pills from home while speaking with a pill count assessor over the phone. Although the procedure requires staff time to make calls, it has the potential for collecting important data on negative adherence behaviors (e.g., medication disorganization, late refills, skipped doses, etc.; Raymond et al., 2017). Unannounced home pill counts have yielded ART adherence data with high correlation to plasma viral load (VL) in adults (Bangsberg et al., 2001). Data from unannounced telephone pill counts are highly correlated with home pill count data in older adult populations (Kalichman et al., 2007), but the method has not been validated with young adults (YA) living with perinatal HIV infection (PHIV).

It is crucial to determine the validity of ART adherence measures for YA with PHIV. This population is aging into older adolescence and young adulthood in large numbers globally (Joint United Nations Programme on HIV/AIDS, 2018; Sohn & Hazra, 2013) and the transition to young adulthood has often been associated with decreased engagement in care, poor adherence to medications, and lower rates of viral suppression (Acree, 2017; Fish, Judd, Jungmann, O'Leary, & Foster, 2013). Furthermore, this developmental stage has been associated with manifold life changes (as individuals strive to achieve independence, engage in more complex social and sexual relationships, complete education and start work, and

often start families) that may threaten the external validity of unannounced telephone pill count data, previously validated with older adults (Kalichman et al., 2007).

To explore the validity of unannounced telephone pill counts with YA with PHIV, we included unannounced telephone pill counts within an ongoing longitudinal study. We have published a detailed description of the procedures and our findings that the protocol in that study was feasible to conduct with this population (Raymond et al., 2017). The present analysis assessed the validity of unannounced telephone pill count data collected from YA with PHIV by comparison to contemporaneous VL measurements.

Methods

Participants and Procedures

The Child and Adolescent Self-Awareness and Health study (CASA) is an ongoing longitudinal cohort study of YA with PHIV with a comparison group of YA who were perinatally exposed to HIV but uninfected (Mellins et al., 2009). Youth-caregiver dyads were originally recruited from 2003 to 2008 from four medical centers in New York City. Inclusion criteria at baseline were youth ages 9-16 years, with perinatal exposure to HIV, with a cognitive capacity to complete interviews (excluding youth with severe mental deficiency, autism, or psychosis), who were English- or Spanish-speaking, and who had a caregiver with legal capacity to sign consent for youth participation. Participants and caregivers completed an assessment battery at enrollment and at the 18-month follow-up. CASA received additional funding twice for additional yearly interviews (CASA2: 2008-2013; CASA3: 2013-2018). By CASA3, all participants were 18 years of age or older and caregivers were no longer enrolled.

For CASA3, trained research assistants administered a psychosocial interview to all participants at CASA offices, in participant homes, or over the phone. For adherence measurement data collection, all YA with PHIV were offered the opportunity to enroll in (a) an unannounced telephone pill count protocol to measure medication adherence over 4 months, and (b) a one-time blood draw by a trained phlebotomist to measure VL. VL was measured typically 1 week after the first adherence score was obtained, approximately 6 weeks after the CASA3 interview.

All procedures were approved by the Columbia University/New York State Psychiatric Institute Institutional Review Board. Participants provided written informed consent and were compensated \$40 for completing the full psychosocial interview, \$10 for completing a pill count training, \$10 for each completed pill count call, \$50 for completing the phlebotomy, and were reimbursed for travel expenses (eg: train or cab fare).

Measures

Demographics.

Participants reported their age, gender, race, and ethnicity.

Adherence score.

The pill count protocol included four monthly unannounced telephone calls: one baseline call and three consecutive calls approximately 30 days apart to determine ART adherence during the prior month, thus resulting in up to three adherence scores for each participant. YA with PHIV were trained to report their regimens, information from their pharmacy labels, and count out all the pills for each medication in their ART regimens during in-person visits. Pill counts were then conducted at each unannounced telephone call. The study team used this information to calculate the proportion of prescribed doses taken since the prior call, resulting in a *past-month adherence score* from 0-100%. A more detailed account of the protocol has been published elsewhere (Raymond et al., 2017). For these analyses, adherence scores for each participant were averaged across medications to assess regimen-level ART adherence. For this paper, we used the adherence score most proximal to the date of the blood draw to assess VL, which was the first of the three adherence scores for all participants.

HIV RNA viral load (VL).

Participants completed a blood draw to measure VL. The lower limit of detection for the assay was 20 copies/mL, and all results lower than 20 were coded as 20 for analysis. VL results were measured as a continuous variable then dichotomized as less than or equal to 20 copies/mL versus more than 20 copies/mL.

ART regimen.

Participants confirmed their medication regimens by reading from their pharmacy labels during the telephone pill count. Regimens were coded and reported by drug class.

Statistical Analysis

Descriptive data (means and frequencies) are presented on the sample of 62 participants who completed both the blood-draw and pill count. Variables examined included demographics, VL, adherence scores, and regimens. T-tests compared mean pill count adherence among participants with a contemporaneously assessed VLs up to 20 copies/ml versus those with VLs greater than 20 copies/ml. Chi-square analyses compared the proportion of participants with VLs up to 20 copies/ml versus greater than 20 copies/ml at five pill count adherence thresholds: 70%, 75%, 80%, 85%, and 90%. For the *t*-tests, subgroup analyses assessed differences in association by age (18-24 and 25+ years), gender (male, female), race (African American/Black), and ethnicity (Latino). In addition, using independent samples *t*-test (for continuous variables) or Chi-square test (for categorical variables), we compared participants who did and did not enroll in both the pill count and blood draw studies on both demographic and VL variables. Note that only those 62 participants who completed a blood draw had VL measured by the CASA study and these VL data were used for all the above VL-related analyses. However, these VL data were not available for those who did not complete the blood draw. Therefore, we used medical chart data collected for the 12 months prior to the CASA3 interview to compare VLs between participants we included (i.e., had blood draw and pill count) and excluded (i.e., either without blood draw or pill count) from the association analysis. With a total of 62 participants (37 with VL ≤ 20 copies/ml and 25

with VL > 20 copies/ml), we were able to declare 0.72 standardized effect size as statistically significant with 80% power. For the demographic subgroup analysis, the detectable standardized effect ranged from 0.92 to 1.14. We declared findings as statistically significant if their corresponding p values were no greater than .05.

Results

One hundred twenty YA with PHIV had completed a CASAH 3 interview at the time of these analyses. Of these, 108 were eligible to enroll in the pill count calls (e.g., they were prescribed ART, had access to a phone); 12 refused participation. Data from both the blood draw and pill count were not available for 34 participants. Thus, the analytic sample included 62 participants who had both an adherence score and blood sample (Figure 1). We compared the demographic characteristics and VL of the analytic sample of 62 participants to the 58 who were not included. There were no significant differences in age, gender, race, or ethnicity (available for $n = 120$), or medical chart VL ($n = 107$) between the two groups ($p > .05$).

Demographics of the 62 participants reflected the larger CASAH sample as well as the PHIV population in New York City (New York City Department of Health and Mental Hygiene, 2017): 61% were female, 57% African American/Black and 40% Latino (see Table 1). Ages ranged from 18 to 28 years ($M = 24$ years). The mean pill count adherence score was 76%; 68% of participants had an adherence score of at least 70%, 58% had a score of at least 80%, and 48% had a score of at least 90%. Mean VL was 6,206 copies/mL, with values ranging from less than 20 to 151,506 copies/mL; 60% of the sample had VLs less than or equal to 20 copies/mL, and 21% had VLs of 1,000 copies/mL or greater.

Findings from chi-square tests showed significant associations between VL (< 20 versus > 20 copies/mL) and pill count adherence score cut-offs of 70% ($p = .012$), 75% ($p = .033$), 80% ($p = .008$), and 85% ($p = .01$), but not 90% ($p = .128$; see Table 2).

In the full sample, mean pill count adherence score was significantly higher among participants with VLs less than or equal to 20 versus greater than 20 copies/mL (85% versus 62%, $p = .004$; see Table 3). Mean pill count adherence was not significantly different between groups based on other VL thresholds (i.e., < 400 versus > 400 copies/mL; < 1,000 versus > 1,000 copies/mL; data not shown).

We also examined associations between pill count adherence and VL for each of several demographic subgroups, which included age (18-24, 25+ years), gender (male, female), race (African American/Black), and ethnicity (Latino). In all sub-group analyses mean pill count adherence was higher among those with a VL less than or equal to 20 copies/mL, but the association was only significant in the following sub-groups: 18 to 24 year olds ($p = .019$), females ($p = .049$), males ($p = .015$), and African American/Black participants ($p = .019$). The association between older participants (25+) and Latinos did not achieve statistical significance; however, the difference in mean pill count score by VL among the older participants was still large, spanning 22 percentage points: 80% versus 58%. The difference

in mean pill count for Latinos with a VL less than or equal to 20 versus those with a VL greater than 20 was smaller: 89% versus 75%.

Given the findings, we conducted a post-hoc analysis to examine VL and pill count adherence in Latino and older YA. The proportion of Latinos (64%) and older YA (59%) with a VL less than or equal to 20 copies/mL was comparable to the full sample (60%). Latinos had the highest mean pill count adherence score (84%) compared to the full sample (76%) and all other subgroups (range of means: 71%–80%). Older YA had the lowest mean adherence score (71%). Among those with a detectable VL (> 20 copies/mL), mean VL was 22,155 copies/mL among Latinos, and 7,588 copies/mL among older YA.

Discussion

Our analyses provided evidence that unannounced telephone pill counts were a valid measure of ART adherence in YA with PHIV through association with VL. Pill count scores were significantly higher among those with a VL less than or equal to 20 copies/mL, compared to those with a VL greater than 20 copies/mL. Furthermore, the average adherence scores among those with VLs less than or equal to 20 versus greater than 20 copies/mL were clinically meaningful in that the mean pill count score of those with VLs less than or equal to 20 was 85%, a level of adherence that has been shown to be associated with virologic suppression (Bezabhe, Chalmers, Bereznicki, & Peterson, 2016; Viswanathan et al., 2015), compared to the sub-optimal mean adherence score of 62% in those with VLs greater than 20.

Chi-square analyses showed significant associations between VL and four out of five levels of pill count adherence: 70%, 75%, 80%, and 85% (but not 90%). It is possible that the 90% threshold failed to achieve significance due to the smaller number of participants ($n = 30$) meeting or exceeding this pill count score, and thus there were statistical power limitations. The ART adherence literature is not consistent in defining a threshold of optimal adherence, but some studies have suggested that adherence as low as 80% is sufficient to achieve viral suppression in patients taking triple-drug class regimens (Bezabhe et al., 2016). In our analyses, three quarters of participants with a pill count score of at least 80% had a VL of 20 or fewer copies/mL, and we found the strongest association between pill count score and VL at the 80% threshold ($p = .008$). This suggests that 80% might be the most clinically useful cutoff to ascertain adequate pill-taking behavior in other samples of YA with PHIV.

In our subgroup analyses, mean pill count scores were not significantly associated with VL in the older age (25–28 years) and Latino subgroups. As these non-significant findings achieved moderate to large effect (the standardized effect size ranged from 0.57 to 0.87), the failure for declaring such effect as statistically significant may reflect a lack of statistical power due to the small sample size in some groups. This was particularly true for the older age group. The standardized effect size reached 0.87, which is generally considered a large effect. Therefore, the lack of power seems to be a more plausible explanation for not being able to declare a large effect as statistically significant rather than a lack of meaningful association.

Conclusion

Our findings provided evidence that the unannounced telephone pill count method was valid with a population of YA with PHIV, but additional research is needed to investigate variations found by demographic subgroups, particularly studies with larger samples. Furthermore, these analyses did not account for the participants' current ART regimens, history of virologic failure, or drug resistance, which may alter the extent to which adherence assessment is reflected in VL (Kahana, Rohan, Allison, Frazier, & Drotar, 2013). While our study provided evidence for pill count validity, using VL as a gold standard, it is important to note that the utility of this approach may face challenges, as a large percentage of eligible participants did not take part in the pill count protocol (Kuhns et al., 2016). Researchers should explore the validity of pill count data in a larger cohort of YA with PHIV, including analyses of how medication regimen and medical history may affect the association between pill counts and VL, and consider ways to improve acceptability to YA participants. It is also important to test the acceptability and feasibility of using this method of adherence measurement in international settings, such as sub-Saharan Africa where the vast majority of YA with PHIV reside and where access to telephone interviews in a private setting may be limited. That said, this approach seems promising given its relatively low cost for contexts where resources may be limited, prohibiting the use of electronic monitoring devices or costly blood tests to assess drug levels. Furthermore, our aforementioned feasibility study exhibited that individual, social, and system-level barriers to adherence were identified by participants during the telephone pill counts (Raymond et al., 2017). This information could be used in conjunction with adherence scores to better understand and address correlates of poor adherence among YA with PHIV.

Acknowledgements

The authors would like to thank all of the individuals who participated in this study. In addition, they thank Erica Wynn, Stephanie Benson, Amy Weintraub, and Rehema Korich for research support and Christina Amaral, Tamar Grebler, Ginger Hoyt, and Cynthia Merly for training.

This research was supported by NIMH grant R01-MH069133 (PI: Claude Ann Mellins, PhD) and NIMH center grant P30-MH43520 (PI: Robert H. Remien, PhD).

The funding source had no involvement in the study design, collection analysis, or interpretation of data, writing the report, or the decision to submit the article for publication.

References

- Acree ME (2017). Transition of care for youth with HIV. *Pediatric Annals*, 46(5), e198–e202. doi:10.3928/19382359-20170424-02 [PubMed: 28489226]
- Bangsberg DR, Hecht FM, Charlebois ED, Chesney M, & Moss A (2001). Comparing objective measures of adherence to HIV antiretroviral therapy: Electronic medication monitors and unannounced pill counts. *AIDS and Behavior*, 5(3), 275–281. doi:10.1023/a:1011396711486
- Bezabhe WM, Chalmers L, Bereznicki LR, & Peterson GM (2016). Adherence to antiretroviral therapy and virologic failure: A meta-analysis. *Medicine*, 95(15), e3361. doi: 10.1097/MD.0000000000003361 [PubMed: 27082595]
- Fish R, Judd A, Jungmann E, O'Leary C, & Foster C (2013). Mortality in perinatally HIV-infected young people in England following transition to adult care: An HIV young persons network (HYPNet) audit. *HIV Medicine*, 15(4), 239–244. doi:10.1111/hiv.12091 [PubMed: 24112550]

- Fredericksen R, Feldman BJ, Brown T, Schmidt S, Crane PK, Harrington RD,...Crane HM (2014). Unannounced telephone-based pill counts: A valid and feasible method for monitoring adherence. *AIDS and Behavior*, 18(12), 2265–2273. doi:10.1007/s10461-014-0916-7. [PubMed: 25331265]
- Joint United Nations Programme on HIV/AIDS. (2018). Global HIV & AIDS statistics – 2018 fact sheet. Retrieved from <http://www.unaids.org/en/resources/fact-sheet>
- Kahana SY, Rohan J, Allison S, Frazier TW, & Drotar D (2013). A meta-analysis of adherence to antiretroviral therapy and virologic responses in HIV-infected children, adolescents, and young adults. *AIDS and Behavior*, 17(1), 41–60. doi:10.1007/s10461-012-0159-4 [PubMed: 22411426]
- Kalichman SC, Amaral CM, Stearns H, White D, Flanagan J, Pope H,...Kalichman M (2007). Adherence to antiretroviral therapy assessed by unannounced pill counts conducted by telephone. *Journal of General Internal Medicine*, 22(7), 1003–1006. doi:10.1007/s11606-007-0171-y [PubMed: 17390095]
- Kuhns LM, Hotton AL, Garofalo R, Muldoon AL, Jaffe K, Bouris A,...Schneider J (2016). An index of multiple psychosocial, syndemic conditions is associated with antiretroviral medication adherence among HIV-positive youth. *AIDS Patient Care and STDs*, 30(4), 185–192. doi:10.1089/apc.2015.0328 [PubMed: 27028184]
- Lam WY, & Fresco P (2015). Medication adherence measures: An overview. *BioMed Research International*, 2015(5 suppl.), 1–12. doi:10.1155/2015/217047
- Lehmann A, Aslani P, Ahmed R, Celio J, Gauchet A, Bedouch P,...Schneider MP (2014). Assessing medication adherence: Options to consider. *International Journal of Clinical Pharmacy*, 36(1), 55–69. doi:10.1007/s11096-013-9865-x [PubMed: 24166659]
- Mellins CA, Brackis-Cott E, Leu CS, Elkington KS, Dolezal C, Wiznia A,...Abrams EJ (2009). Rates and types of psychiatric disorders in perinatally human immunodeficiency virus-infected youth and seroreverters. *Journal of Child Psychology and Psychiatry*, 50(9), 1131–1138. doi:10.1111/j.1469-7610.2009.02069.x [PubMed: 19298479]
- New York City Department of Health and Mental Hygiene. (2017). Perinatal HIV in NYC, 2016. Retrieved from <http://www1.nyc.gov/assets/doh/downloads/pdf/dires/hiv-in-peds.pdf>
- Raymond JF, Bucek A, Dolezal C, Warne P, Benson S, Abrams EJ,...Mellins CA (2017). Use of unannounced telephone pill counts to measure medication adherence among adolescents and young adults living with perinatal HIV infection. *Journal of Pediatric Psychology*, 42(9), 1006–1015. doi:10.1093/jpepsy/jsx064 [PubMed: 28369465]
- Sohn AH & Hazra R (2013). The changing epidemiology of the global paediatric HIV epidemic: Keeping track of perinatally HIV-infected adolescents. *Journal of the International AIDS Society*, 16(1), 18555. doi:10.7448/ias.16.1.18555 [PubMed: 23782474]
- Viswanathan S, Justice AC, Alexander GC, Brown TT, Gandhi NR, McNicholl IR,...Jacobson LP (2015). Adherence and HIV RNA suppression in the current era of highly active antiretroviral therapy. *Journal of Acquired Immune Deficiency Syndromes*, 69(4), 493–498. doi:10.1097/QAI.0000000000000643 [PubMed: 25886923]

Key Considerations

- Unannounced telephone pill counts provide a valid assessment of pill taking behavior for young adults with perinatal HIV infection.
- Adherence scores from unannounced telephone pill counts can be considered when developing treatment plans for young adults.
- The accuracy of adherence data from unannounced telephone pill counts may vary by demographic subgroup.
- A pill count adherence score of greater than 80% may be an appropriate threshold to assess adequate adherence for viral suppression.

Figure 1.
Participant enrollment.

Table 1*Description of Sample: Demographics, Viral Load, and Pill Count Adherence (N = 62)*

	Mean (range)
Age	24 (18-28)
Days between pill count and blood draw	5 (1-26)
Viral Load (copies/ml)	6,206 (20 – 151,506)
Pill Count Adherence	76% (8-100%)
	<i>N (%)</i>
Female (%)	38 (61%)
Black/African American	35 (57%)
Latino	25 (40%)
Age 18-24 years (vs. 25+)	33 (53%)
VL 20	37 (60%)
VL 200	44 (71%)
VL 400	47 (76%)
VL > 1000	13 (21%)
Pill count adherence 70%	42 (68%)
Pill count adherence 80%	36 (58%)
Pill count adherence 90%	30 (48%)
Most common drug class combinations	
NRTI+bINSI	13 (21%)
NRTI+bPI+INSI	11 (18%)
NRTI+NNRTI	9 (15%)
NRTI+bPI	8 (13%)
INSI-containing regimen	38 (61%)
bPI-containing regimen	31 (50%)

Note: NRTI = nucleoside reverse transcriptase inhibitors; bPI = boosted protease inhibitor; INSI = integrase strand transfer inhibitor; bINSI = boosted integrase strand transfer inhibitor; NNRTI = non-nucleoside reverse transcriptase inhibitors; VL = plasma viral load.

Table 2*Chi Square Results of Pill Count Adherence Cutoffs and Viral Load up to 20 Copies/mL (N = 62)*

Pill count adherence	N	% VL ≤ 20	% VL > 20	p value
		N(%)	N(%)	
70%	42	30 (71%)	12 (29%)	0.012
< 70%	20	7 (35%)	13 (65%)	
75%	40	28 (70%)	12 (30%)	0.033
< 75%	22	9 (41%)	13 (59%)	
80%	36	27 (75%)	9 (25%)	0.008
< 80%	26	10 (39%)	16 (62%)	
85%	35	26 (74%)	9 (26%)	0.010
< 85%	27	11 (41%)	16 (59%)	
90%	30	21 (70%)	9 (30%)	0.128
< 90%	32	16 (50%)	16 (50%)	

Note: VL = plasma viral load. Bolded *p* values are significant.

Table 3

T-tests of Mean Pill Count Adherence and Viral Load ≥ 20 Copies/mL by Demographic Subgroup (N = 62)

	<i>N</i>	Mean adherence for YA with VL ≥ 20	Mean adherence for YA with VL > 20	<i>p</i>
Full sample	62	85%	62%	0.004
Age 18-24 years	33	89%	66%	0.019
Age ≥ 25	29	80%	58%	0.081
Female	38	84%	65%	0.049
Male	24	86%	56%	0.015
African American/Black	35	82%	56%	0.019
Latino	25	89%	75%	0.129

Note: VL = plasma viral load, YA = young adults. Bolded *p* values are significant.