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

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Background: Surveillance points to an urgent public health need for HIV prevention, access, and retention among young men of color who have sex with men (YMSM). The purpose of this multisite study was to evaluate the association between organizational- and individual-level characteristics and retention in HIV care among HIV-positive YMSM of color.

Methods: Data were collected quarterly via face-to-face interviews and chart abstraction between June 2006 and September 2008. Participants were aged 16–24 years, enrolled at 1 of 8 participating youth-specific demonstration sites, and engaged or reengaged in HIV care within the last 30 days. Generalized estimating equations were used to examine factors associated with missing research and care visits. Stata v.9.0se was used for analysis.

Results: Of 224 participants, the majority were African American (72.7%), 19–22 years old (66.5%), had graduated high school or equivalent (71.8%), identified as gay or homosexual (80.8%), and disclosed having had sex with a man before HIV diagnosis (98.2%). Over the first 2¼ years of the study, only 11.4% of visits were missed without explanation or patient contact. Characteristics associated with retention included being <21 years old, a history of depression, receipt of program services, and feeling respected at clinic; those associated with poorer retention included having a CD4 count <200 at baseline and being Latino.

Conclusions: Special Projects of National Significance programs were able to achieve a high level of retention over time, and individual and program characteristics were associated with retention. Latino YMSM, those not receiving services, and those not perceiving respect at the clinic were at increased risk of falling out of care. Retention is essential to providing HIV+ adolescents with treatment, including reducing antiretroviral resistance development. Innovative programs that address the needs of the YMSM of color population may result in improved retention.

Key Words: adolescent, HIV/AIDS, MSM, retention

(*J Acquir Immune Defic Syndr* 2010;53:529–536)

BACKGROUND

Surveillance data point to an increasing public health need for HIV prevention, access, and retention in care among young men of color who have sex with men (YMSM). Among adolescents diagnosed with HIV/AIDS through 2006 in the United States, 64% were attributed to men who have sex with men (MSM) behavior with an increased proportion among adolescents.[1,2] Between 2001 and 2006, MSM aged 13–24 years had the greatest proportional increase in cases; of those

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Received for publication April 7, 2009; accepted June 30, 2009.

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Supported by Grant Number 5-H97-06-003.

The content of this publication does not necessarily reflect the views or policies of DHHS or HRSA. Responsibility for the content of this report rests solely with the authors.

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adolescents, black YMSM experienced a 93% increase in HIV/AIDS.[1,2] YMSM of color have also shown an increased risk of unrecognized HIV infection.[3–5] For example, the Young Men's Survey found that a substantial proportion of black MSM participants were unaware of their HIV status.[6]

Adolescence presents unique challenges to linkage and retention in HIV care for YMSM of color. The added facets of sexual orientation and gender identity development, homophobia, racism, poverty, stigmatization, and developmental proclivity toward risk taking result in frequent marginalization of minority MSM, which can create barriers to care.[3,5–21] HIV facilities may not be culturally or age appropriate, have specialty staff, and accommodate bilingual needs for Latino youth or other characteristics sufficient to address the adolescent's unique and constantly changing needs.[3,5–21] Youth have been found to be less likely to return for HIV test results, reducing opportunity for harm reduction or access to care; African American MSM and MSM with other high-risk behaviors are often the least likely to return and the most likely to be unaware of their HIV-positive status.[3,5–21]

More information is needed about YMSM of color to create innovative effective prevention and care services. Such models are critical for nonwhite YMSM not already receiving HIV prevention or treatment services. HIV-positive youth are more likely to "fall through the cracks"[10] and have been described as a "special type of hidden population"[7] requiring unique case finding strategies, with distinctive program characteristics that engage and retain youth.[7] These novel strategies may include case management and care programs that actively engage adolescents and young adults in youth-friendly environments while recognizing their needs through the stages of develoment.[7,10,14,15] Specialized services may also be better able to provide the support youth need to remain on antiretroviral treatment. Given that the risk of viral resistance is increased in the face of poor adherence to treatment, the need for such services becomes more pronounced among subpopulations of youth at risk.

To expand on findings of an earlier multisite study on adolscents,[7] the Health Resources Services Administration HIV/AIDS Bureau funded 8 demonstration sites and 1 evaluation center in 2003 for a 5-year Special Projects of National Significance (SPNS). The objective of the initiative was to identify innovative strategies for outreach, linkage, entry, and retention in care for HIV-positive YMSM of color, primarily those out of care or not accessing prevention or treatment services or other research. The purpose of this study was to examine characteristics of participants and associations between program delivery and retention in care.

METHODS

Participants were enrolled at 1 of 8 SPNS-funded demonstration sites (Bronx, NY; Chapel Hill, NC; Chicago, IL; Detroit, MI; Houston, TX; Los Angeles, CA; Oakland, CA; and Rochester, NY), each with its own outreach, linkage, and retention strategy. Interventions at the sites varied based on local standards and the selected program under evaluation. The projects are described in Table 1. Two involved intensive case management provided to YMSM, 1 used motivational interviewing to increase HIV testing and return for results, 2 developed youth-centered support environments with groups and educational offerings, 2 used youth organizer/enhanced organizational outreach approach, and 1 was a statewide YMSM outreach initiative. All sites were required to enhance linkages with primary care providers with experience in HIV+ youth, and most collaborated closely with them on a regular basis. One consistent characteristic was that all the programs were specific to the YMSM of color population. In addition, each had at least 1 newly developed adolescent feature, such as adolescent medicine specialists, youth environment, support groups, peer outreach/navigation, waiting room redesign, outreach/care linkages, and/or social marketing.

One evaluation and support center was funded to assist local evaluations and conduct a multisite evaluation. To be eligible for the prospective multisite study from which these data were drawn, participants had to be: (*a*) male (biologically born male or female-born individuals who selfidentify as male), (*b*) HIV+, (*c*) diagnosed HIV+ within the past 30 days or reengaged in care in the past 30 days after being out of care for at least 6 months, (*d*) a male who had sex with males or had intent/wish to have sex with males, (*e*) selfidentified as nonwhite, (*f*) between 13 and 24 years at the time of the first interview, and (*g*) able to provide written informed consent. Eligible participants were administered a standardized face-to-face interview by local study staff at baseline and every 3 months thereafter. Data collected between June 2006 and September 2008 were analyzed. The questionnaire was adapted from standardized tools, including the Young Men's Survey, the Youth Risk Behavior Survey, National HIV Behavioral Surveillance tools, the HIV Cost and Service Utilization Study, previous SPNS instruments, and Adolescent Trials Network questions. Clinical data were abstracted by local staff. De-identified data were entered into a secure web-based data portal by study staff and analyzed by evaluation center faculty. All participants provided written informed consent to participate in the study. All instruments and protocols were approved by Health Resources Services Administration/HIV/AIDS Bureau/SPNS, local Institutional Review Boards (IRBs), and the George Washington University IRB.

Uni- and bivariate analyses were used to describe participants and potential confounders. Multivariable methods were used to describe characteristics associated with being unable to reach the participants at any quarterly visit. This outcome was chosen to assess program ability to prevent falling out of the system for any 3-month period. If the participant had contact with any part of the program—medical, program, or other ancillary care, even if not the research visit—he was not considered to have missed the visit. Medical or otherwise explained absences were not counted as negative outcomes. Generalized estimating equations (GEE) were used to assess associations between independent variables and missing the visit. GEE allows analysis of associations between the predictors under study (individual- and program-level characteristics) and low retention in the study and clinic after adjusting for confounders and the effect of time; it also allows reduction in variance attributable to the intraperson correlation between the multiple visit time points.[22–24] An exchangeable correlation structure and robust estimators of variance were

TABLE 1. Characteristics of Demonstration Sites (N = 8)

Organization	Description
AIDS Project East Bay	New and adapted programs, within an existing network of programs, comprise a youth-directed, community-based outreach system and referral network. Direct linkage into care in an adolescent HIV specialty clinic. Psychosocial retention activities
Bronx AIDS Services, Inc	Use of trained peers to conduct outreach and work as Community Ethnographic Organizers, characterizing YMSM community and referring youth into HIV testing and care. Enhanced collaboration with Adolescent AIDS Program of the Children's Hospital at Montefiore Medical Center
Harris County Public Health and Environmental Services, with involvement of City of Houston Health and Human Services, Thomas Street Health Center, and Baylor College of Medicine	Weekly surveillance reports from the City of Houston were utilized to identify newly diagnosed HIV+ youth. A standardized linkage to care procedure involving a direct handoff of newly diagnosed HIV+ youth between outreach workers and Thomas Street Health Center case managers was implemented. Intensive case management with motivational interviewing was offered to all HIV+ youth
Los Angeles County Department of Public Health, Los Angeles	Expanded, active community-based outreach to HIV counseling and testing, followed by referral and linkage into a youth-focused case management intervention at 2 community-based clinics
The MOCHA Center, Inc	A collaborative between the MOCHA Center, Inc and the University of Rochester—School of Nursing that focused on modification and adaptation of comprehensive, theory-based, and culturally appropriate prevention intervention programs for use with HIV-infected YMSM of color and those at high risk. Established a drop-in center and outreach program (including the Internet) to identify infected youth as well a local care collaborative to link them into HIV care services
University of North Carolina, Chapel Hill	A collaborative between University of North Carolina, Chapel Hill and community-based prevention and case management agencies. This project will conduct and evaluate a social marketing campaign, promote access to HIV treatment and care among newly diagnosed YMSM of color, and focus on colleges on campus
Working for Togetherness, Inc.	Conduct outreach and in-reach strategies to deliver HIV prevention messages and increase early detection and treatment of HIV-positive youth and create and operate a Youth Empowerment Center to increase youth selfefficacy to enter and remain in culturally and developmentally appropriate HIV primary care
Wayne State University, Horizons Project	Field- and Internet-based outreach to encourage African American YMSM to know their HIV status and enroll and remain in medical care. Motivational interviewing is provided in addition to field outreach to encourage HIV counseling and testing and returning for test results

used; parameter estimates were exponentiated to provide odds ratios (OR) and confidence intervals (CI). Exact time was used in the model as the time variable. Multivariable models were developed by conducting a bivariate screening procedure; variables that were moderately associated ($P < 0.25$) with the outcome were eligible for inclusion in the model. A backward stepwise procedure was then used, with significant ($P < 0.05$) variables and known confounders and predictors of interest left in the model. Potential confounders were reentered into the model, and the model was checked for alteration (>5%) in the coefficients to ensure that residual confounding was not missed. All 2-way interactions were assessed for significance. Stata software, version 9.0SE (Stata Corporation, College Station, TX) was used for analysis.

RESULTS

Baseline characteristics of study participants are described in Tables 2 and 3. Of the 224 clients enrolled in the study, the majority were African American (72.7%), 19–22 years of age (66.5%), selfidentified as gay or homosexual (80.8%), and had high school equivalency or beyond (71.8%) at the time of the baseline interview. Almost all disclosed having had sex with a man before HIV diagnosis (98.2%), and most (92.2%) were comfortable with their sexual orientation. The majority (94.2%) were identified as male, with the remainder a combination of female, transgender, transsexual, "realness" (a participant-defined term often part of the house/ball culture), butch or femme queen, or cross-dresser.

Before being referred into the SPNS projects, nearly a quarter (24.8%) of participants first tested HIV+ at a clinic or doctor's office and 60.3% at other health care facilities. At baseline, 12.2% had an absolute CD4 <200 and 35.8% had an HIV viral load >100,000 copies per milliliter. Nearly a quarter (24.9%) had received routine health care in the last 3 months, whereas 18.3% had been seen in an emergency room in the last 3 months and 10.7% had been hospitalized. By protocol, the baseline interview took place within 30 days of being engaged or reengaged in care; most participants (84.4%) were able to complete their first HIV care visit by the time the baseline interview took place. The mean time to enter care was 1.37 months after first HIV+ result (SD 2.51, median 0.46 months), with the range of 0.03–17.89 months. A fifth (19.6%) of participants were reengaged in care after an absence of more than 6 months.

TABLE 2. Baseline Characteristics of Participants (N = 224)

	n (%)
Site	
Chapel Hill, NC	52 (23.2)
Bronx, NY	46 (20.5)
Los Angeles County, CA	44 (19.6)
Harris County, TX	28 (12.5)
Detroit, MI	28 (12.5)
Oakland, CA	15 (6.7)
Chicago, IL	8 (3.6)
Rochester, NY	3 (1.3)
Age (yrs)	
<19	42 (19.0)
19–22	147 (66.5)
>22	32 (14.5)
Race/ethnicity	
African American	162 (72.7)
Other	61 (27.4)
Latino/Hispanic	63 (28.3)
Highest level of education	
Less than high school	63 (28.3)
Completed high school or equivalent	64 (28.7)
Beyond high school equivalent	96 (43.1)
Currently not in school	143 (64.7)
Currently unemployed	106 (48.4)
Sexual identity[*]	
Homosexual	57 (25.7)
Gay	134 (60.4)
Bisexual	47 (21.2)
Queer or 2 spirited	8 (3.6)
Heterosexual	7 (3.2)
Other	18 (8.1)
Comfort with sexual orientation	
Very comfortable or comfortable	193 (92.2)
Uncomfortable or very uncomfortable	12 (6.9)
Drug use (ever)	
Marijuana[†]	138 (72.3)
Other drugs[‡]	148 (66.1)
Drank alcohol at least 1 d in last 14 d	118 (58.7)
Mean (SD) days drank alcohol in last 14 d	2.3 (3.23), range 0–14
Condom use	
Last insertive oral sex	41 (32.8)
Last receptive oral sex	40 (32.3)
Last insertive anal sex	76 (79.2)
Last receptive anal sex	84 (68.9)
If had anal sex, used condom at last anal sex, past 3 mo	115 (77.7)
Run out of money for basic needs, last 3 mo	
Many times	71 (33.8)
A few times	45 (21.4)
Once or twice	44 (21.0)
Never	50 (23.8)
Made fun of because of sexuality, ever	
Many or a few times	112 (54.4)
Made fun of because of race/ethnicity	
Many or a few times	42 (19.0)
Sexuality hurt/embarrassed family, ever	
Many or a few times	39 (39.5)
Afraid of violence in neighborhood	42 (19.9)
Have ever seen someone shoved, kicked, or punched	162 (77.5)
Have ever seen someone attacked with a knife	74 (35.8)
Have ever seen someone attacked with a gun	69 (33.2)
Have ever seen someone killed with a gun	27 (13.2)
Ever been hit or tried to be hit with object	73 (32.7)
Any emotional abuse[§]	82 (36.8)
Any physical abuse[‖]	127 (57.0)
Any abuse	158 (70.9)
Any exchange of sex	29 (13.0)
Depressive symptomatology (Center for Epidemiologic Studies—Depression score at baseline)	
≥16	104 (50.2)
<16	103 (49.8)
Ever depressed	79 (36.1)
Ever attempted suicide	29 (14.0)

[*] Could check more than 1.

[†] n = 191.

[‡] Heroin, cocaine, painkillers, and hallucinogens.

[§] "When your parent or primary caretaker has disagreements with you, do they ever: Hurt your feelings/emotionally abuse you?"

[‖] "When your parent or primary caretaker has disagreements with you, do they ever: [respondent could select all that apply from list that included kick, bite, hit with fist, with object, beat you up, burn or scald you, threaten you with knife or gun, threaten your life in some other way, touch you in a way that makes you uncomfortable]."

TABLE 3. Baseline Clinical Characteristics (N = 224)

	n (%)
On any ARV (including prescription written that day)	34 (20.7)
Absolute CD4 count[*]	
>200	144 (87.8)
<200	20 (12.2)
HIV viral load (HIV RNA copies/mL)[*]	
<10,000	31 (25.2)
10,000–100,000	48 (39.0)
>100,000	44 (35.8)
Any emergency room visit, 3 mo	39 (18.3)
Any routine, preventive, or adolescent care, 3 mo	53 (24.9)
Client hospitalized, 3 mo	17 (10.7)

ARV, antiretroviral medication.

[*] At baseline or at first occurrence.

As shown in Table 2, drug and alcohol use were common, with 72.3% of participants ever having used marijuana and 66.1% ever having used other drugs (eg, heroin, cocaine, painkillers, and hallucinogens); 58.7% drank alcohol at least 1 day out of the last 14, including 57.2% of participants under 21 years of age. Nearly half (47.4%) cited problems associated with drug or alcohol use in the last 3 months. Condom use at last sex varied based on type of sex, but the majority (77.7%) reported condom use at last anal sex. Condom use varied based on behavior, with a low of 32.3% at last receptive oral sex to a high of 79.2% for insertive anal sex. Participants reported having experienced a substantial variety of negative situations. These included running out of money for basic needs in the last 3 months (86.2%), witnessing ambient violence (77.5%), seeing someone attacked with (33.2%) or killed with a gun (13.2%), and fear of violence (19.9%). Participants also had lifetime histories frequently including violence due to their race (19.0%) or sexuality (54.4%) and reported high rates of ever being depressed (36.1%), attempting suicide (14.0%), and experiencing emotional or physical abuse (70.9%). On the Center for Epidemiologic Studies—Depression index, 50.2% scored above the cut point, demonstrating depressive symptomatology (≥16).

The programs maintained high levels of participation: only 11.5% of all quarterly follow-up visits were missed for unknown reasons, suggesting an 88.9% retention rate. This missed visit rate included all visits in which both the study and the clinic visits were missed, and the participant could not be contacted for up to 6 weeks after the scheduled visit. There were no significant differences in retention between demonstration sites. As shown in Table 4, the aggregate level of participants responding to the question "… Did any of these things help you keep your HIV-related medical care appointments in the last 3 months?" increased significantly in the following: transportation increased to 53.3% at follow-up vs. 43.3% at baseline, appointment reminders 77.3% vs. 62.0%, concrete items at visit (eg, food, incentive, and phone card) 27.5% vs. 10.2%, flexible scheduling 72.7% vs. 58.3%, other services (eg, support group and case management) 40.7% vs. 27.3%, and feeling respected by the provider 66.7% vs. 55.1%.

There were significant differences between groups perceiving respect at the clinic, with African American youth more likely than others to feel respected (OR: 1.73, 95% CI: 1.10 to 2.75, $P < 0.02$), as were those with parental insurance (OR: 1.68, 95% CI: 1.04 to 2.72, $P < 0.04$) and those in school (OR: 1.66, 95% CI: 1.09 to 2.53, $P < 0.02$). Latino youth were significantly less likely to feel respected at the clinic (OR: 0.63, 95% CI: 0.40 to 0.98, $P < 0.04$). Similarly, there were significant differences between groups receiving program services: those in school (OR: 3.54, 95% CI: 1.50 to 8.30, $P < 0.05$) and work (OR: 16.23, 95% CI: 6.41 to 41.05, $P < 0.001$) were more likely to receive services, and those experience depressive symptoms at baseline were less likely to receive program services (OR: 0.40, 95% CI: 0.18 to 0.89, $P < 0.03$). Those with viral loads at baseline >10,000 vs. ≤ 10,000 were more likely to receive concrete items (OR: 1.79, 95% CI: 1.08 to 3.00, $P < 0.03$), although there were no other significant differences seen between those receiving and not receiving services or concrete items.

As shown in Table 4, after adjustment for baseline age and CD4 count, receipt of any program service (OR: 0.16, 95% CI: 0.03 to 0.92) and feeling respected at the clinic (OR: 0.06, 95% CI: 0.006 to 0.58) were associated with being less likely to miss a visit, whereas having other additional concrete item (eg, food and phone card) at the clinic was associated with being more likely to miss a visit (OR: 10.36, 95% CI: 1.23 to 87.36). As shown in Table 5, after adjustment, younger age (<21 years) (OR: 0.09, 95% CI: 0.01 to 0.74) and ever feeling depressed (OR: 0.15, 95% CI: 0.03 to 0.74) were associated with being less likely to miss a visit. Having a lower CD4 count (<200) (OR: 4.46, 95% CI: 1.05 to 18.90) and being Latino (OR: 3.85, 95% CI: 1.15 to 12.88) were associated with being more likely to miss a visit.

DISCUSSION

This study of newly engaged in care HIV-positive YMSM of color reveals that despite the challenges that this population experiences on a day-to-day basis, YMSM of color may successfully be retained in care and in research. Latino youth may need further specialized ancillary care: even within youth-focused programs such as these, they were more likely to encounter barriers to staying in care and were less likely to

TABLE 4. Organizational and Service Characteristics Associated With Missing a Visit (N = 224)

	Baseline Visits (n = 224) (%)	Follow-Visits (n = 396)* (%)	Unadjusted OR	95% CI	Adjusted OR†	95% CI
Receipt of any program service‡	54.9	51.7	0.07§	0.01 to 0.45	0.16[‖]	0.03 to 0.92
Perception that the following helped keep visits:						
Transportation	43.3[‖]	53.3	0.67	0.29 to 1.53	2.79	0.34 to 22.75
Appoint reminder	62.0¶	77.3	0.85	0.30 to 2.36	2.94	0.38 to 22.72
Someone came with me to my appointment	35.3[‖]	23.5	0.44	0.18 to 1.08	—	—
Some additional value (eg, food, incentive, phone card)	10.2¶	27.5	0.91	0.38 to 2.15	10.36[‖]	1.23 to 87.36
Flexible scheduling	58.3§	72.7	0.29§	0.13 to 0.64	—	—
Other services available there	27.3§	40.7	0.50	0.21 to 1.12	—	—
I like the provider§	55.1§	66.7	0.43[‖]	0.19 to 0.95	0.14	0.01 to 1.96
Felt respected	54.6	62.4	0.40[‖]	0.18 to 0.89	0.06[‖]	0.006 to 0.58

*Only visits with data available from participant visit displayed; N = 536 total forms completed for follow-up visits.

†Adjusted for age and baseline CD4 count.

‡Ever use of services was used instead of a time-dependent covariate in adjusted model due to limited degrees of freedom.

§$P < 0.01$; [‖]$P < 0.05$; ¶$P < 0.001$.

—, Not included in the model.

TABLE 5. Individual Characteristics Associated With Missing a Visit (N = 224)

	Unadjusted OR	95% CI	Adjusted OR*	95% CI
Age (yrs)				
<21 vs. ≥ 21	0.11†	0.02 to 0.75	0.09†	0.01 to 0.74
CD4 count				
<200 vs. ≥ 200	2.11	0.52 to 8.54	4.46†	1.05 to 18.90
Told Mom or Dad				
Yes vs. no	0.49	0.21 to 1.14	2.63	0.60 to 11.41
African American				
Yes vs. no	0.66	0.28 to 1.55	—	—
Latino				
Yes vs. no	1.61	0.68 to 3.80	3.85†	1.15 to 12.88
Used parents' insurance				
Yes vs. no	0.10†	0.01 to 0.62	—	—
Ever felt depressed				
Yes vs. no	0.40†	0.16 to 0.97†	0.15†	0.03 to 0.74
Any schooling				
Yes vs. no	0.56	0.24 to 1.32	—	—
Center for Epidemiologic Studies—Depression score at baseline				
<16 vs. ≥ 16	0.38	0.14 to 1.02	—	—
Currently working				
Yes	0.97	0.36 to 2.63	—	—

*Adjusted for all other variables listed in the column and time.

†$P < 0.05$.

—, Not included in the model.

perceive positive elements of the clinic environment, such as feeling respected. As has been seen by other authors,[6–14,19,21,25] HIV+ YMSM of color often face multifaceted profound challenges. These include parental abuse, substance abuse, depression, violence, stigmatization, poor access to medical care, and evolving gender identity and sexual orientation issues, all against the backdrop of adolescent developmental changes. However, even the YMSM in this study considered difficult to reach with active retention procedures; only 11.4% of visits were completely missed over the study period to date—an acceptable attrition rate.

This study found that there were several program-level factors associated with retention, including, perhaps most importantly, feeling respected at the clinic and receiving program services. Feeling respected may have emerged as a result of the wide variety of youth-focused services, including flexible scheduling, having accompaniment to clinic, transportation, appointment reminders, liking the providers, and having colocated services. Uptake of all these services increased over time, and service receipt was associated with increased retention.

Concrete item receipt was associated with reduced retention, although this may be an artifact of the association found between provision of these and high viral loads and current enrollment in school (which is associated with being younger age). YMSM in both of those categories may have presented increased challenges for retention and thus precipitated provision of the concrete items. The concrete items were distinct from receipt of program receipt, which was associated with increased retention although it is not possible to separate the availability of services at the site with the program itself. Whereas younger participants and those with increased depressive symptomatology were actually more likely to be retained, participants with lower CD4 counts at baseline and Latino YMSM were less likely to be. It may be that sicker participants who access care later need additional or differentiated support from those identified earlier in the disease process. In addition, the SPNS project did not have Latino-specific approaches. Latino youth often experience very different family and social contexts, which may necessitate additional approaches, even within programs providing minority YMSM care. For example, Latino ethnicity has been associated with late HIV testing; our finding that Latino YMSM were at increased risk of falling out of care may emphasize the need for specific cultural approaches for Latino YMSM. The finding that depression was linked to increased retention suggests that youth-specific services can actively engage depressed youth and devote special case management to those in need. This approach of identifying depressed youth and treating them may result in increased retention of those most at-risk youth.

LIMITATIONS

There are several limitations to this study. SPNS initiatives examine innovative approaches to retention and care for HIV+ youth; as a result, each of the 8 participating sites had a unique program, rendering it difficult to compare interventions despite common evaluation methodology. As with all questionnaires, information bias presents a particular concern, subject to interviewer, recall, social desirability, and other biases. Computer techniques have been shown to effectively reduce such biases among some populations, but among adolescents, there have been mixed findings.[26–34] Due to resource constraints, a computer-assisted selfinterview approach was not feasible. The high rates of depression, suicidality, and substance abuse reported suggest that participants were candid with interviewers. Whereas training and data collection quality checks were centralized, supervision and quality assurance were provided and overseen locally, which may have introduced increased variability in data quality, although this was not observed statistically. Finally, this was a convenience sample; thus, these findings may not be generalizable.

This study has several strengths. Unlike other studies of adolescents, this study focused on enrolling individuals not already in HIV care who had multiple barriers to access, including being young, HIV+, belonging to a minority group, and MSM; all were newly engaged or reengaged in care. Thus, this cohort represents harder to reach adolescents and sought to identify what were effective means of keeping them in the program. Another strength was the diversity in site locations throughout the country with different program approaches. As a longitudinal design, with GEE, this study allowed examination of changes over time related to baseline and time-varying covariates, including service delivery.

CONCLUSIONS

As HIV/AIDS continues to affect African American and Latino YMSM populations, it is becoming increasingly important to develop, implement, and evaluate innovative approaches to linking and retaining them in care. Adolescents effectively engaged in care are more likely to adopt harm reduction behaviors and to reduce their own risks—not only for HIV-related illness but also for concomitant conditions such as mental illness, substance abuse, and socio-environmental challenges—and increase secondary prevention behaviors. YMSM of color are at particular risk of threats to mental health and substance abuse, and unique approaches to addressing their needs are required. This initiative suggests that YMSM of color can be treated neither like children nor like adults: unique age- and developmental-specific interventions must be created for them. These, in turn, need to be customized for the needs of young MSM of color and also be culturally appropriate for the population being served. Innovative approaches may need to provide for the cultural context of Latino youth individually and those youth more progressed in their HIV disease. Without careful attention paid to the needs of the population, ensuring retention of those in care will not happen. Future study is needed to improve program offerings and to develop additional innovative approaches to supporting HIV+ YMSM of color.

ACKNOWLEDGMENTS

For their assistance and expertise throughout the study, the authors acknowledge all the clients, faculty, and staff at the 9 SPNS-funded sites and staff at collaborating agencies, without whom these innovative approaches would not have been possible. For his work on the secure web portal, the authors gratefully acknowledge Kris Wackerman for his expertise and patience. For his work at the initiation of the projects, the authors also acknowledge Blaine Parrish who was a critical support in the project. For her comments on the draft articles, we extend thanks to Jessica Xavier of Health Resources Services Administration/HIV/AIDS Bureau/SPNS.

REFERENCES

1. Division of HIV/AIDS Prevention National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention. CDC. *HIV/AIDS Surveillance in Men Who Have Sex with Men (MSM)*. 2006. Available at: http://www.cdcgov/hiv/topics/surveillance/resources/slides/msm/. Accessed November 21, 2008.
2. CDC. HIV/AIDS surveillance report, 2006. Atlanta:US Department of Health and Human Services, Centers for Disease Control and Prevention. 2008;18:1–55. Available at: http://www.cdc.gov/hiv/topics/surveillance/resources/reports. Accessed September 10, 2010.
3. CDC. HIV incidence among young men who have sex with men—Seven U.S. Cities, 1994–2000. *MMWR Morb Mortal Wkly Rep*. 2001;50:40–44.
4. CDC. HIV prevalence, unrecognized infection, and HIV testing among men who have sex with men—five U.S. cities, June 2004–April 2005. *MMWR Morb Mortal Wkly Rep*. 2005;54:597–601.
5. Valleroy LA, MacKellar DA, Karon JM, et al. HIV prevalence and associated risks in young men who have sex with men. *JAMA*. 2000;284:198–204.
6. MacKellar DA, Valleroy LA, Secura GM, et al. Unrecognized HIV infection, risk behaviors, and perceptions or risk among young men who have sex with men: opportunities for advancing HIV prevention in the third decade of HIV/AIDS. *J Acquir Immune Defic Syndr*. 2005;38:603–614.
7. Bell DN, Martinez J, Botwinick G, et al. Case finding for HIV-positive youth: a special type of hidden population. *J Adolesc Health*. 2003;33S:10–22.
8. Catallozzi M, Futterman DC. HIV in adolescents. *Curr Infect Dis Rep*. 2005;7:401–405.
9. Chabon B, Futterman D. Adolescents and HIV. *AIDS Clin Care*. 1999;11:9–11, 5–6.
10. Flicker S, Skinner H, Read S, et al. Falling through the cracks of the big cities: who is meeting the needs of HIV-positive youth? *Can J Public Health*. 2005;96:308–312.
11. Futterman DC. HIV and AIDS in adolescents. *Adolesc Med Clin*. 2004;15:369–391.
12. Futterman DC. HIV in adolescents and young adults: half of all new infections in the United States. *Top HIV Med*. 2005;13:101–105.
13. Futterman DC, Peralta L, Rudy BJ, et al. The ACCESS (Adolescents Connected to Care, Evaluation, and Special Services) project: social marketing to promote HIV testing to adolescents, methods and first year results from a six city campaign. *J Adolesc Health*. 2001;29(Suppl):19–29.
14. Hightow LB, Miller WC, Leone PC, et al. Failure to return for HIV posttest counseling in an STD clinic population. *AIDS Educ Prev*. 2003;15:282–290.
15. Johnson RL, Botwinick G, Sell RL, et al. The utilization of treatment and case management services by HIV-infected youth. *J Adolesc Health*. 2003;33S:31–38.
16. MacKellar DA, Valleroy LA, Behel S, et al. Unintentional HIV exposures from young men who have sex with men who disclose being HIV-negative. *AIDS*. 2006;20:1637–1644.
17. Millet GA, Flores SA, Peterson JL, et al. Explaining disparities in HIV infection among Black and White men who have sex with men: a meta-analysis of HIV risk behaviors. *AIDS*. 2007;21:2083–2091.
18. Murphy DA, Mitchell R, Vermund SH, et al. Factors associated with HIV testing among HIV-positive and HIV-negative high-risk adolescents: the REACH Study. Reaching for Excellence in Adolescent Care and Health. *Pediatrics*. 2002;110:e36.
19. Ryan C, Futterman D. Lesbian and gay adolescents: identity development. *School Nurse News*. 2002;19:18–22.
20. Wilson CM, Houser J, Partlow C, et al. The REACH (Reaching for Excellence in Adolescent Care and Health) project: study design, methods, and population profile. *J Adolesc Health*. 2001;29(Suppl):8–18.
21. Ziff MA, Harper GW, Chutuape KS, et al. Laying the foundation for connect to protect: a multi-site community mobilization intervention to reduce HIV/AIDS incidence and prevalence among urban youth. *J Urban Health*. 2006;83:506–522.
22. Stokes ME, Koch GG. *Categorical Data Analysis Using the SAS System*. 2nd ed. Cary, NC: SAS; 1998.
23. Zeger SL, Liang KY. An overview of methods for the analysis of longitudinal data. *Stat Med*. 1992;11:1825–1839.
24. Zeger SL, Liang KY. Longitudinal data analysis for discrete and continuous outcomes. *Biometrics*. 1986;42:121–130.
25. Carballo-Dieguez A, Miner M, Dolezal C, et al. Sexual negotiation, HIV-status disclosure, and sexual risk behavior among Latina men who use the internet to seek sex with other men. *Arch Sex Behav*. 2006;35:473–481.
26. Bangsberg DR, Bronstone A, Chesney MA, et al. Computer-assisted self-interviewing (CASI) to improve provider assessment of adherence in routine clinical practice. *J Acquir Immune Defic Syndr*. 2002;31(Suppl 3):S107–S111.
27. Bangsberg DR, Bronstone A, Hofmann R. A computer-based assessment detects regimen misunderstandings and nonadherence for patients on HIV antiretroviral therapy. *AIDS Care*. 2002;14:3–15.
28. Ellen JM, Gurvey JE, Pasch L, et al. A randomized comparison of A-CASI and phone interviews to assess STD/HIV-related risk behaviors in teens. *J Adolesc Health*. 2002;31:26–30.
29. Jennings TE, Lucenko BA, Malow RM, et al. Audio-CASI vs interview method of administration of an HIV/STD risk of exposure screening instrument for teenagers. *Int J STD AIDS*. 2002;13:781–784.
30. Newman JC, Des Jarlais DC, Turner CF, et al. The differential effects of face-to-face and computer interview modes. *Am J Public Health*. 2002;92:294–297.
31. Tideman RL, Chen MY, Pitts MK, et al. A randomised controlled trial comparing computer-assisted with face-to-face sexual history taking in a clinical setting. *Sex Transm Infect*. 2007;83:52–56.
32. Turner CF, Villarroel MA, Rogers SM, et al. Reducing bias in telephone survey estimates of the prevalence of drug use: a randomized trial of telephone audio-CASI. *Addiction*. 2005;100:1432–1444.

33. Webb PM, Zimet GD, Fortenberry JD, et al. Comparability of a computer-assisted versus written method for collecting health behavior information from adolescent patients. *J Adolesc Health*. 1999;24:383–388.
34. Kissinger P, Rice J, Farley T, et al. Application of computer-assisted interviews to sexual behavior research. *Am J Epidemiol*. 1999;149:950–954.

APPENDIX

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