

# The Navigation Program: An Intervention to Reengage Lost Patients at 7 HIV Clinics in Los Angeles County, 2012–2014

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**Abstract:** The Navigation Program is a health department-community agency collaboration to reengage lost HIV clinic patients in Los Angeles County using best practices from disease investigator services locator activities and the Antiretroviral Treatment Access Study (ARTAS), a CDC-recommended intervention. Clinic databases were reviewed to identify HIV patients who: (1) had no HIV care visits in 6–12 months and last viral load was greater than 200 copies per milliliter; (2) had no HIV care visits in >12 months; (3) were newly diagnosed and never in care; or (4) were recently released from jail/prison/other institution with no regular HIV medical provider. Patients were contacted by trained Navigators using locator information from clinic medical records, HIV/sexually transmitted disease surveillance, and people-finder databases and offered enrollment in a modified ARTAS intervention. Among the 1139 lost clinic patients identified, 36% were in care elsewhere, 29% could not be located, 8% returned to the clinic independently, 4% declined enrollment, and 7% (n = 78) were located and enrolled in the intervention. Participants received an average of 4.5 Navigator sessions over 11.6 hours. Among reengaged patients, 68% linked within 3 months, 85% linked within 6 months, and 94% linked within 12 months, and 82% of linked patients were retained in care 12 months after study enrollment. The percentage of linked patients virally suppressed was compared at time of linkage by the

Navigators (52%) with a second viral load measure after linkage to care (63%) ( $\chi^2 = 11.8$ ;  $P = 0.01$ ). The combined disease investigator services/ARTAS model of reengagement was effective for locating and reengaging lost HIV clinic patients. Access to HIV surveillance data is critical for the efficient identification of persons truly in need of reengagement.

**Key Words:** HIV patient care, ARTAS, linkage to care, reengagement in care, retention in care

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## INTRODUCTION

Recent estimates of the proportion of HIV-infected persons who received regular HIV clinical care in the United States (US) have ranged from 37% to 55%.<sup>1–5</sup> In Los Angeles County (LAC), California, the urban jurisdiction with the second highest number of reported HIV cases in the US, it is estimated that 78% of all persons diagnosed with HIV in 2013 were linked to care within 3 months, 51% of all persons diagnosed and living with HIV were in regular medical care (based on having at least 2 viral loads (VLs) at least 90 days apart) and 50% were virally suppressed.<sup>6</sup> Poor retention in HIV care has been associated with suboptimal adherence to antiretroviral treatments (ART), virologic failure, community viral resistance, increased secondary HIV transmission, and poorer survival rates.<sup>7–13</sup> Furthermore, a recent analysis attributed most new HIV infections (61%) in the US to persons who are not adequately retained in care, underscoring the public health importance of reengagement and retention in HIV care.<sup>14</sup>

These and other data underscore the need to develop programs to improve linkage, reengagement, and retention in HIV care to support ongoing ART use with the goal of improved individual health, widespread sustained VL suppression, and reduced forward HIV transmission. The International Association of Providers of AIDS Care guidelines for improving entry into and retention in care and ART adherence for persons with HIV recommends systematic monitoring of entry and retention in HIV care.<sup>16</sup> However existing evidence-based interventions to guide efforts to actually engage patients in care are sparse.<sup>15,16</sup> Some promising practices for improving linkage to care for newly diagnosed individuals and retention in HIV care have included intensive outreach to locate out-of-care patients and the use of strengths-based case management

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interventions to address barriers to care and promote linkage and retention.<sup>16–18</sup> The Patient Navigator model, first developed for the care of cancer patients, has grown increasingly popular as a potential tool to support linkage and engagement in HIV care; however, there is limited evaluation data on the efficacy of this model among HIV-infected persons who are lost to HIV clinical care.<sup>15,18,19</sup>

To address improved engagement in care among HIV-infected clinic patients in LAC and realize the potential utility of HIV surveillance and other public health databases, the LAC Department of Public Health (DPH) Division of HIV and STD Programs (DHSP), in partnership with AIDS Project Los Angeles, AIDS United, and Johns Hopkins University, developed the Navigation Program. The Navigation Program used the rich information available in public health databases, best practices from public health disease investigator services (DIS), locator techniques for hard-to-reach populations, and a modified version of the US Centers for Disease Control and Prevention (CDC) Antiretroviral Treatment Access Study (ARTAS) linkage-to-care intervention.<sup>17,20–22</sup> Results from the Navigation Program demonstration project are presented to help other health departments and agencies develop and implement effective linkage and reengagement programs as there is limited published information on the implementation and evaluation of interventions to promote linkage to and/or reengagement in HIV care.<sup>15</sup>

## MATERIALS AND METHODS

### HIV Care Facility Identification and Staffing

LAC HIV providers with high numbers of HIV-infected patients out of care were identified based on Ryan White medical outpatient program data. Seven publicly funded LAC HIV clinics with a large number and/or percentage of patients out of care were selected as demonstration project sites.

Health department staff provided the project coordination and oversight for locator and other information abstracted from public health databases and community-based agency staff served as the Navigators who located patients and administered the intervention. Six Navigators were hired by a local community-based organization involved in the demonstration project. The Navigators were bachelor-level paraprofessionals with experience in HIV case management and most was bilingual in Spanish. The Navigators who did not already have a formal affiliation with the selected clinics became clinic volunteers.

All demonstration project Navigators completed a CDC-approved ARTAS and Retention in Care training and a local training on the modified ARTAS intervention. The Navigators were also trained in the use of patient locator techniques used by public health staff following up on communicable disease cases. DPH staff was allowed to share additional patient locator information obtained from HIV surveillance databases with the Navigators under strict data security precautions. Approval for data sharing was obtained from LACDPH County Counsel and the DPH and clinic institutional review boards (IRBs).

The Navigators met weekly with DHSP and AIDS Project Los Angeles staff at the DHSP offices to coordinate project activities, share patient locator information, and participate in clinical supervision by a trained licensed clinical social worker. The clinical supervision included case review of high acuity clients and guidance on such issues as client mental health, substance use, and professional boundaries. In addition, DHSP staff conducted bimonthly quality control visits during patient–Navigator meetings to ensure intervention fidelity.

### Reengagement Intervention

ARTAS, a strengths-based case management intervention developed by the CDC and collaborators, was found to improve linkage-to-care rates 10% over standard linkage-to-care techniques.<sup>17</sup> ARTAS was designed to address linkage to care for newly diagnosed HIV-infected persons and was modified for the Navigation Program to address the specific linkage needs of previously diagnosed lost HIV clinic patients. Specific modifications included an increase from 5 to 10 sessions, elimination of the incentive, combination of the “linking to resources” and “enhancing strengths” components with the added flexibility of alternating between these 2 activities, addition of a readiness to engage in care assessment tool, and the collection of detailed locator information.

As part of the modified 90-day ARTAS intervention, the program was divided into 4 components: building the relationship, assessment, linking to resources/enhancing strengths, and disengagement. Clients could be linked to medical care at any point during the intervention by the Navigators. Ongoing activities throughout the intervention included telephone, text, or e-mail reminders about upcoming Navigation program intervention visits; follow-up on all referrals; completion of session notes; and scheduling of follow-up visits. Once a client completed the modified ARTAS intervention, they were referred back to either their home clinic or another clinic of their choice. Patients were only referred to Ryan White–funded clinics that had a Medical Care Coordination (MCC) team, an interdisciplinary staff consisting of a nurse, a social worker, and a case worker who was trained to provide the support needed to sustain retention in HIV care for patients with a history of suboptimal engagement.

### Participant Recruitment

Participants were recruited from January 2012 to August 2014 and were required to be 18 years of age or older, a resident of LAC, HIV infected, and a current or past patient at 1 of the 7 study clinics. Lists of potentially eligible persons were initially identified by the clinic. Navigators then worked directly with DHSP staff to verify eligibility using surveillance. Verified eligible persons were determined to be out of care or in intermittent care according to any of the following criteria: (1) no HIV care visits in the previous 6–12 months and last VL was greater than 200 copies per milliliter; (2) no HIV care visits in >12 months; (3) newly diagnosed

and never in care; or (4) recently released from jail, prison, or other institution with no regular HIV medical provider.

Initially, clinic medical record locator information was used to contact participants. If this was unsuccessful, contact information and HIV care status for an individual patient were abstracted from the DHSP HIV surveillance databases that include laboratory data on CD4 counts, genotypes, and VL measures that are reportable by law in California. If there was evidence of sustained HIV care per VL or CD4 reports in the HIV surveillance database over the previous 6 months at another LAC HIV clinic, the information was documented in the patient's record and the Navigator notified the home HIV clinic and closed the case. If the HIV surveillance and/or public inmate locator database searches indicated that a person was incarcerated at the time of inquiry, this was documented and the Navigator attempted to determine the location of incarceration and release date. If there was no evidence in the DHSP databases that an out-of-care clinic patient was receiving HIV care elsewhere, the patient was deemed eligible to participate in the Navigation Program and the Navigator initiated additional investigative activities to contact the patient.

The Navigators used DIS techniques and clinic records, DHSP surveillance and laboratory database locator information to contact patients on behalf of the clinics in the following order: phone, text, e-mail, letter, and an in-person home visit. Each locator technique was attempted no more than 3 times before the next technique was used. If a patient was not at his or her home address, an IRB-approved letter was left at the residence per DIS confidentiality guidelines.

Once the above mentioned techniques were exhausted, additional contact information was used to contact participants from searches in the Ryan White client database, LexisNexis, jail/prison inmate locators (local, state, and federal), people-finder Web sites, and reverse phone number directories. If it was determined that the lost patient had a history of homelessness or substance use, the Navigator would attempt to locate the patient through local shelters and parks. If a lost patient could not be located after using all the above investigative methods, the case was closed.

Once a lost patient was located, the Navigator contacted the patient by phone or in person to describe the demonstration project and offer enrollment. There was a group of individuals ( $n = 56$ ) who required only a phone call from the Navigators for reengagement and who declined to participate in the Navigation Program. For these patients, the Navigators assisted patients with medical appointment scheduling and referred high acuity patients to an MCC team.

Informed consent was administered and HIPAA documentation was completed for each participant. For those participants who were first contacted by phone and agreed to participate, a verbal consent was obtained and an in-person meeting was scheduled at a location selected by the patient.

## Data Collection

After a patient had been successfully contacted and enrolled in the study, a brief initial assessment was administered

to characterize demographics, incarceration history, mental health, drug use, housing, HIV testing and care history, current service needs, barriers to HIV care, stigma, and readiness to engage in care. A similar assessment was conducted at 6, 12, and 18 months after enrollment. Patient VL measurements were also abstracted from the HIV surveillance database for the date closest to project enrollment, at time of linkage to care, and at 12 months after linkage to care.

## Data Analysis

Descriptive baseline demographic characteristics, testing and care history, and barriers to HIV care are presented. In addition, intervention characteristics are shown and include the number and hours of client–Navigator visits and types of service referrals.

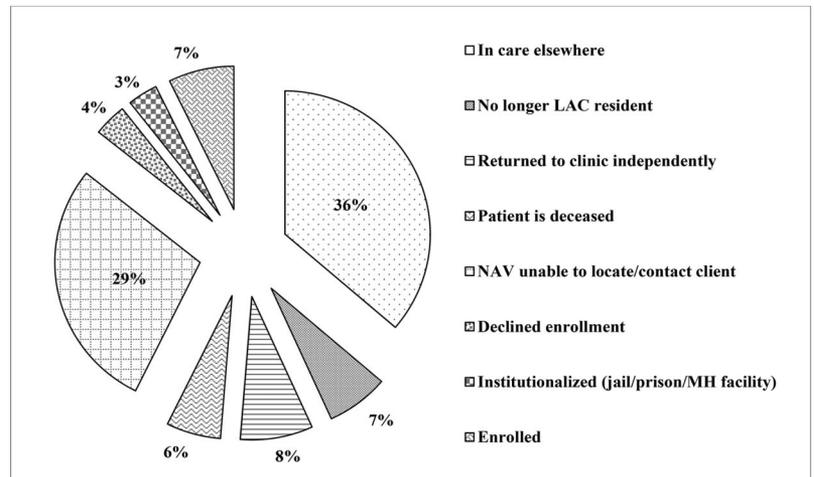
The primary study outcomes included the proportion of previously lost clinic patients enrolled in the intervention who linked to care at 3, 6, and 12 months after intervention enrollment. Linkage to care for purposes of this project was defined as either 2 medical visits or 1 medical and 1 case management visit. Retention in care was defined as a second VL test 3–12 months after linkage to care and is presented as a yes/no variable.

The percentage of participants who were virally suppressed 3–12 months after linkage to care was compared with the percentage virally suppressed preenrollment period and at the time of linkage to care using  $\chi^2$  analyses. The mean and median viral copies were also compared between the linkage-to-care measure and 3–12 months after linkage to care using a paired  $t$  test and sign test, respectively.

## RESULTS

As shown in Figure 1, among the 1139 out-of-care patients identified, 36% were in care elsewhere, 29% could not be located, 8% returned to the clinic independently, 7% were confirmed as no longer residing in LAC, 6% were deceased, 4% declined enrollment, 3% were institutionalized in either a jail, prison, or mental health facility, and 7% ( $n = 78$ ) were located and enrolled in the Navigation Program. Among the 78 enrolled participants, 18% ( $n = 14$ ) had no HIV care visits in the previous 6–12 months and elevated VLs ( $\geq 200$  copies/mL) at their last known care visit; 47% ( $n = 37$ ) had no history of HIV care in the previous 12 months; 3% ( $n = 2$ ) were newly diagnosed and never in care; and 32% ( $n = 25$ ) were determined to have unstable care (recently released from jail, prison, or other institution with no regular HIV medical provider).

Among the 78 enrolled lost clinic patients (Table 1), 42% were 40–49 years of age, 78% were men, 71% were Latino, 18% were African American, 50% self-identified as gay, 39% were born in Mexico, 57% had no health insurance, 64% had annual incomes less than \$10,000, 44% were unemployed, and 25% had a history of noninjection drug use. Although not shown, 47% reported Spanish as their primary spoken language, 9% were currently homeless or homeless in the last 6 months, 24% reported being



**FIGURE 1.** Screening information on 1139 identified lost clinic patients.

\* 306 additional clinic patients were found to be ineligible due to last VL/appointment date within the last 6 months

incarcerated in the past 12 months, and 41% reported a previous diagnosis of depression.

Baseline clinical characteristics and HIV testing and care histories are shown in Table 2. At time of study enrollment, participants had been infected with HIV for an average of 10 years, had a mean VL of 57,606 copies per milliliter, and 51% were virally suppressed. In addition, 48% had had an HIV care visit in the 12 months before enrollment, 81% had been on ART at some point in their lifetimes, and 33% were on ART at time of study enrollment.

Baseline service needs and barriers to HIV care at time of enrollment are shown in Table 3. Common service needs included dental care (60%), benefits assistance (43%), pharmacy/medication services (42%), food/other basic needs (35%), and HIV-related medical services (34%). The primary barrier to HIV care reported at time of study enrollment was other life priorities that included childcare and work (32%), followed by lack of money (11%), and lack of transportation (6%).

Process indicators are shown in Table 4 and demonstrate that on average, patients participated in 4.5 intervention visits for an average of 11.6 hours of Navigator time. On average, 5 referrals were needed for clients at baseline, and the most common referrals were for mental health (24%), housing/transportation (19%), and financial/employment (19%).

Table 5 includes data on the primary program outcomes that included the percent of participants that linked to care within 3 (68%), 6 (85%), and 12 (94%) months of study enrollment. In addition, 82% of clients (n = 73) who linked to care were retained in care, defined as a second medical appointment 3–12 months after linkage.

In addition, 63% of participants were virally suppressed at time of retention (first confirmed VL between 3 and 12 months after enrollment) compared with 51% who were virally suppressed preenrollment ( $\chi^2 = 11.8$ ;  $P < 0.01$ ) and 52% who were virally suppressed at the time of their linkage appointment ( $\chi^2 = 6.1$ ;  $P = 0.01$ ). The mean VL at the time of linkage to care was higher than the mean VL at retention (paired *t* test statistic = 1.9;  $P = 0.07$ ). Also, the median VLs were statistically different when compared between the time

of linkage to care and 3–12 months after linkage to care (sign test statistic = 11.0;  $P < 0.01$ ).

## DISCUSSION

The purpose of this project was to evaluate the effectiveness of combining DIS locator techniques and a modified ARTAS strengths-based case management intervention to locate and reengage HIV-infected clinic patients who have fallen out of care. The gaps in the HIV care continuum for LAC and throughout the US support the overwhelming need to improve efforts to effectively link, reengage, retain, and achieve viral suppression for HIV-infected persons. The results presented herein demonstrate that most (94%) of this group of patients with a history of poor retention in HIV care linked to care within 12 months of intervention enrollment and 82% of the linked clients were still retained in care 12 months after linkage to care. In addition, there was improvement in the percent of patients with suppressed VL between both the preenrollment and linkage time points and the second VL 3–12 months after enrollment. Additionally, a decreasing trend in the median VL over that same period was evident. These data suggest that the Navigation Program model that identifies out-of-care persons using DIS techniques and enrolls them into a modified ARTAS intervention is an effective approach for the reengagement of lost HIV clinic patients.

It should be noted that the Navigation Program was not solely responsible for the long-term care retention of participants who were linked to the aforementioned MCC teams, the staff primarily responsible for keeping patients in care after reengagement by the project Navigators. Nevertheless, the data demonstrate that the combined DIS-ARTAS model was effective for reengagement which in turn was able to help establish a patient with needed and ongoing MCC retention services.

An important study finding was that the use of the one-size-fits-all modified ARTAS intervention strategy was not client centered and in some cases unnecessarily resource intensive. A large percentage of respondents (46%) required

**TABLE 1.** Socio-demographic Characteristics\* for Lost Clinic Patients (n = 78) Enrolled in LAC Navigation Program, 2012–2014

Characteristic	Number	Percent
Age		
18–29	9	12
30–39	18	23
40–49	33	42
50+	18	23
Sex		
Male	61	78
Female	14	18
Transgender	3	4
Race/ethnicity		
White	5	6
African American	14	18
Latino	55	71
Mixed race/other	4	5
Self-reported sexual orientation		
Homosexual, gay/lesbian	39	50
Bisexual	5	6
Heterosexual, straight	34	44
Country of birth		
US	29	37
Mexico	30	39
Other	19	24
Insurance status†		
No insurance	43	57
Public insurance	22	29
Private insurance/other	11	14
Annual income‡		
≤\$10,000	49	64
>\$10,000	28	36
Current employment§		
Employed (full or part time)	22	31
Disabled	17	22
Unemployed	34	44
Education completed*		
Less than high school	16	21
High school graduate/GED	31	40
Any post high school education	29	37
Substance use past 6 months		
Injection drug use	6	8
Noninjection drug use	20	25

\*Based on self-report.

†n = 2 participants did not know or declined to state.

‡n = 1 participant declined to state.

§n = 3 participants declined to state or self-report answer could not be categorized. GED, general education development.

only 1–3 of the possible 10 ARTAS intervention visits. The remaining participants needed either 4 to 6 visits (27%) or 7 to 9 visits (27%). This finding is consistent with the original ARTAS intervention, where participants used an average of 2.6 of 5 possible visits.<sup>17</sup> These data suggest that not all clients were in need of the time-intensive modified ARTAS intervention implemented in this demonstration project and

**TABLE 2.** Baseline HIV Testing and Care History and Clinical Characteristics (n = 78)

Characteristic	Mean (SD)	Median (Range)
Years since HIV diagnosis*	10.1 (6.9)	9 (0–30)
Number of months out of care*†	14.8 (18.0)	11 (0–147)
Last reported VL (copies/mL)*‡	57,606.0 (187,523.6)	139.5 (0–1,250,000.0)
	<b>Number</b>	<b>Percent</b>
Percent virally suppressed (≤200 copies/mL) before enrollment*‡	39	51
Percent with HIV medical visit in previous 12 months†§	37	48
Ever on ART§	63	81
Currently on ART§	26	33

\*Based on HIV surveillance laboratory data and case reports.

†n = 1 missing.

‡n = 2 missing.

§Based on self-reported interview data.

that other less resource-intensive interventions may be sufficient to reengage many lost HIV clinic patients.

Another lesson learned in this linkage and reengagement demonstration project was the strong advantage to using health department versus nonhealth department staff to facilitate access to confidential HIV surveillance data to confirm HIV care status, vital status, residence, and recent VL measures. If access to HIV surveillance and other public health department databases is not an integral part of a linkage, reengagement or retention program, excessive staff hours will be misused trying to locate people who are either in HIV care at another facility, deceased, or have moved out of a jurisdiction. The community-based Navigators who lacked access to HIV surveillance and other public health databases expended excessive staff hours trying to locate over half (52%) of HIV patients who were lost to the clinic according to clinic medical records but in fact were in care at another HIV clinic in LAC (36%), deceased (6%), institutionalized (3%), or had moved out of LAC (7%). These findings are consistent with other reengagement interventions that used local surveillance data to verify eligibility.<sup>23–25</sup> Udeagu et al<sup>25</sup> found that only 51% of 797 previously identified lost-to-care patients in New York City were truly out of care. Similarly, a study in Seattle found that of 753 patients identified as out of care according to clinic records, 79% were later found ineligible according to surveillance records.<sup>23</sup> These findings underscore the utility of surveillance as an effective tool for identifying the eligible target population.

Historically, disease surveillance data have been used by health department staff to locate, verify treatment, and conduct contact tracing for persons with HIV, sexually transmitted infections, and other communicable diseases, however there has been limited use of HIV surveillance data for purposes of reengagement of lost clinic patients in HIV care.<sup>26</sup> In addition, most past efforts to use surveillance data to monitor HIV-infected persons have focused on persons newly diagnosed with HIV rather than lost HIV clinic patients with long-established HIV infections (Bertolli, 2012<sup>30</sup>; Das,

**TABLE 3.** Top 10 Reported Service Needs and Barriers to HIV Care (n = 78)

Service Needs	Number (Percent)	
Dental services	46	(60)
Benefits assistance	33	(43)
Pharmacy/medication services	32	(42)
Food/other basic needs	27	(35)
HIV-related medical services	26	(34)
Housing/shelter	20	(26)
Mental health services	21	(27)
Drug/alcohol treatment	8	(10)
General medical services (not HIV related)	8	(10)
Case management	8	(10)

Barriers to HIV Care	All Reported Barriers* Number (%)	Main Barrier Reported†‡ Number (%)
Other life priorities (eg, childcare, work)	39 (50)	23 (32)
Lack of money	20 (26)	8 (11)
Lack of transportation	13 (17)	4 (6)
Drinking/using drugs	9 (12)	3 (4)
Stigma	8 (10)	3 (4)
Homelessness	8 (10)	2 (3)
Fear someone would find out	8 (10)	2 (3)
Perceived lack of need for HIV care	6 (8)	2 (3)
Living between US and another country	5 (6)	1 (1)
Immigration Status	5 (6)	1 (1)

\*Participants selected all that applied.  
 †Participants selected the greatest barrier to HIV care.  
 ‡n = 72.

2013<sup>31</sup>; Gardner et al<sup>17</sup>). Rules for access to HIV surveillance and other health department databases vary across jurisdictions, although strict security and confidentiality guidelines generally mandate access to only designated health department staff.<sup>5</sup> These, along with other ethical concerns over patient privacy and autonomy, have long prevented Health Departments from using surveillance tools in such a manner; but recent advances in treatment, changing public opinion, and an increased emphasis on treatment-as-prevention efforts are making such surveillance monitoring possible.<sup>27</sup> This is one of the first interventions to show that DIS locator techniques, HIV surveillance data, and a modified ARTAS intervention can also be effectively combined to reengage lost HIV clinic patients.

Other interventions that have shown promise for improving linkage, reengagement, and retention are based on motivational interviewing, patient navigation, enhanced contact methods, and peer support techniques.<sup>28,29</sup> Future programs designed to improve reengagement should adopt a more flexible intervention strategy that offers more options to both staff and participants depending on a client's readiness to engage in care.

**TABLE 4.** Navigation Program Process Indicators and Referrals (n = 69)\*

Process Indicators	Mean (SD)	Median (Range)
Number of navigation visits	4.5 (2.8)	4.0 (1.0–9.0)
Patient hours with navigator	11.6 (9.0)	9.5 (0.8–40.0)
Number of weeks to link to care	10.6 (12.4)	4.0 (1.0–54.0)
Number of patient referrals†	4.8 (2.9)	5.0 (0.0–9.0)

Patient Referrals by Type (n = 282)†	Number	Percent
Mental health	68	24
Housing/transportation	54	19
Financial/employment	53	19
Food/nutrition	31	11
HIV testing/education	30	11
Dental	24	9
Substance abuse	9	3
Family/childcare	5	2
Legal	2	1

\*Data missing for n = 9 participants.  
 †Based on 63 participants who needed referrals.

There are several limitations to the generalizability of these data. A large proportion of individuals (29%) that were considered potentially eligible could not be found despite using expanded locator methods and their eligibility status remains unknown. Finally, for some populations,

**TABLE 5.** Linkage to Care, Retention in Care, and VL Suppression (n = 78)

Linkage and Retention	Number	Percent
Linked to care within 3 months*	53	68
Linked to care within 6 months*	66	85
Linked to care within 12 months*	73	94
Retained in care†‡	60	82

VL	Number	Percent	P
Suppression preenrollment§	39	51	<0.01¶
Suppression at linkage*	38	52	0.01¶
Suppression at retention†	38	63	Referent

VL	Mean (SD)	Test Statistic	P
Linkage VL (copies/mL)*	54,263.5 (168,683.4)	Paired t test = 1.9	0.07
Retention VL (copies/mL)‡	19,279.0 (62,894.0)		

VL	Median (Range)	Test Statistic	P
Linkage VL (copies/mL)*	169.0 (0–1,312,862.0)	Sign test = 11.0	<0.01
Retention VL (copies/mL)‡	49.0 (0–44,1475.0)		

\*Linkage defined as completion of either 2 medical or 1 medical and 1 case management visit.  
 †Based on 73 participants who linked to care.  
 ‡Retention defined as a second VL at least 90 days after VL at time of linkage over 12 months after linkage to care.  
 §Includes last VL measure in HIV surveillance that was 15 months on average before enrollment into the Navigation Program; n = 2 missing.  
 ||Based on 60 participants who were retained in care.  
 ¶χ<sup>2</sup> test statistic = 11.8.

such as the homeless and marginally housed, none of the project databases provided contact information and still required timely field hours to find participants in the community at locations such as parks, shelters, and public areas. Finally, it should be noted that a reengagement program is time consuming and requires the dedication of sufficient resources to be effective.

These results demonstrate, however, that the use of this combined approach is an effective method for identifying and reengaging HIV-infected persons who are not receiving adequate HIV medical care. Enrolled participants showed improvements in VL suppression and median VL. As the focus for HIV prevention in the US and internationally has shifted toward treatment as prevention, the combined approach presented here has widespread utility toward achievement of the National HIV/AIDS Strategy goals to improve linkage, reengagement, retention, VL suppression, and to reduce forward HIV transmission.<sup>30</sup>

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