



VOLUME 1, NUMBER 3

Linkage and Retention in HIV Medical Care



In this Issue...

The concept of human immunodeficiency virus (HIV) treatment adherence has expanded beyond antiretroviral therapy to incorporate adherence to medical care, which includes initial linkage and subsequent retention in HIV care. In recent years, the value of adherence to care for maximizing sustained HIV suppression with respect to both individual and public health has garnered increased national attention. The scientific evaluation of linkage and retention is relatively nascent, however, with few existing evidence-based interventions and emerging literature that describes issues related to methodology and measurement.

In this issue, we review six recent manuscripts highlighting themes that are germane to the study of linkage and retention in HIV medical care—a rapidly evolving scientific field with relevance to HIV care providers, researchers, public health officials, and policymakers.

Program Information

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Length of Activity

1.0 hour Physicians

Release Date

August 21, 2012

Expiration Date

August 20, 2014

LEARNING OBJECTIVES

After completing this activity, the participant will demonstrate the ability to:

- Review the goals of the National HIV/AIDS Strategy as they relate to linkage and retention in HIV care
- Identify the pros and cons of using different data sources for gauging linkage and retention in HIV care
- Recognize common terms and methodology for measuring engagement in HIV care, as well as the optimal data sources for calculating each

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- Three central ideas emerged from our needs assessment. In order to provide optimal treatment to patients with HIV
- Clinicians caring for patients with HIV need current information about: appropriate treatment and maintenance of care...guidance for treating comorbidities...and information about emerging findings for treating HIV-associated neurocognitive disorders (HAND)
 - The need for more information on HIV topics including updated guidelines for HIV, treating older patients with HIV, managing patients with comorbidities and coinfections, treatment and sequencing strategies for maximizing future therapeutic options, and new and emerging agents for HIV
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Program Directors

Richard Moore, MD, MHS

Professor of Medicine
Director, Moore Clinic for HIV Care
Divisions of Infectious Diseases and
Clinical Pharmacology
The Johns Hopkins University School of
Medicine
Baltimore, Maryland

Michael Melia, MD

Associate Professor of Medicine
Associate Fellowship Program Director

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Division of Infectious Diseases
The Johns Hopkins University School of Medicine
Baltimore, Maryland

GUEST AUTHORS OF THE MONTH



Commentary & Reviews:
Michael Mugavero, MD, MHSc

Associate Professor of Medicine
Division of Infectious Diseases
Department of Medicine
Director, University of Alabama at Birmingham
Center for AIDS Research (CFAR) Clinical Core
Birmingham, Alabama

Anne Zinski, PhD

Research Program Manager
University of Alabama at Birmingham 1917 Clinic Cohort
Birmingham, Alabama

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COMMENTARY

In 2010, the White House Office of National AIDS Policy released the National HIV/AIDS Strategy (NHAS), which lists goals for improving care access, reducing disparities and inequities, and improving health outcomes among persons who are HIV-positive.¹ HIV serostatus awareness goals for the NHAS list an increase in the proportion of persons who are aware of their infection, from 80% to 90% nationwide by 2015. The NHAS also enumerates the following goals: (1) increasing the proportion of individuals with newly diagnosed HIV who are linked to clinical care within three months from 65% to 85% and (2) increasing the proportion of Ryan White HIV/AIDS Program clients who are in continuous care, according to the Health Resources and Services Administration HIV/AIDS Bureau (HRSA HAB) performance measure (≥ 2 HIV primary care visits in 12 months that are ≥ 3 months apart), from 73% to 80% by 2015.

The first "critical step" toward achieving these milestones is to "establish a seamless system to immediately link people to continuous and coordinated quality care when they are diagnosed with HIV."¹ As targeted and routine HIV testing initiatives continue screening for HIV across primary care, emergency care, and community and public health settings, there is an intensified need for structured linkage and retention strategies.

Moreover, recent landmark studies² and mounting enthusiasm for HIV treatment as prevention initiatives³⁻⁵ have heightened awareness of the critical roles played by linkage and retention in HIV medical care for both individual and public health benefits.

The articles included in this review were selected to provide a snapshot of the current state of the science for HIV linkage and retention in care research. Although this scientific field is only recently receiving heightened attention,⁶⁻⁸ a number of data systems, methods, and measures have been used for documenting adherence to HIV care. Generally speaking, most studies have used either public health surveillance systems, with publicly reported CD4 cell counts and viral loads serving as proxies for medical visits, or clinic-based cohorts, in which medical care visits are measured directly.

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As noted in the studies by Tripathi and colleagues and Hall and associates (reviewed in this issue), surveillance data can provide a relatively comprehensive overview of HIV care use for all persons infected with HIV persons in a particular jurisdiction. These systems typically do not capture medication prescribing and detailed health outcomes data, however, and visits are subject to misclassification if CD4 cell counts and viral load measures are obtained in nonprimary HIV care settings (e.g., inpatient hospitalization). Self-reports and cohort-based data, as discussed in this issue in the papers by Hightow-Weidman and coworkers and Yehia and collaborators, respectively, can provide detailed information based on actual clinic visits. Clinic-based data are not sensitive for measuring initial linkage to care or for determining whether persons not retained in a given clinical setting have received HIV care elsewhere, however, and are restricted to studying persons who have accessed care. Therefore, there is no clear consensus on the best data systems to use for documenting linkage and retention. A recent report from the Institute of Medicine describes numerous surveillance- and cohort-based data systems that may be used to measure core indicators, highlighting challenges and barriers.⁹

Similarly, a number of approaches have evolved for measuring linkage and retention in care. Because linkage may be documented in a variety of ways, from patient self-reports to public reporting of initial CD4 cell counts and viral load laboratory values to clinic reporting of an attended care visit, measuring whether an individual has been adequately "linked" to care can be arduous.^{10,11} In the same way, measuring retention in HIV care can be equally complex.¹² Yehia and colleagues compared three common retention measures that are calculated based on completed HIV care visits. Other measures in the retention literature rely on clinic appointment data that capture visit dispositions, including missed ("no-show") visits, which cannot be calculated when using surveillance data systems.

Beyond highlighting methodological and measurement considerations, the articles reviewed herein provide insights regarding prevalence and groups at risk for poor linkage and retention in care, as well as implications for health outcomes. According to Hall and associates, approximately two-thirds (63.6%) of persons with HIV had ≥ 2 care visits in the year following HIV diagnosis, and poor early retention in care, observed in upwards of 50% of persons, was associated with worse CD4 cell counts and viral load responses, in addition to increased mortality (discussed in the study by Tripathi and coworkers). As indicated in the 2011 *Morbidity and Mortality Weekly Report (MMWR)* of the US Centers for Disease Control and Prevention (CDC) reviewed in this issue, at a national level, poor linkage and retention are important contributors to the finding that only 28% of persons infected with HIV in the United States have achieved viral suppression. The reviews in this issue all provide valuable lessons for clinical and public health stakeholders, with recently published guidelines (discussed by Thompson and associates herein) offering an evidence-based synthesis of the published literature, recommendations for monitoring and efficacious interventions for care linkage and retention, and topic areas for future research.

In summary, although long recognized as clinically important, the science of studying linkage and retention in HIV care is relatively new. A dynamic body of literature is emerging, with knowledge being generated at a rapid pace. Although intervention research is currently limited, studies are ongoing, and it is clear that the increasing arsenal of evidence-based approaches to improving linkage and retention in care will be paramount to achieving the three overarching goals of the NHAS¹: (1) improving care access, (2) reducing disparities and inequities, and (3) improving health outcomes among persons who are positive for HIV.

Commentary References

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PREVENTION OF HIV THROUGH CARE AND TREATMENT

Centers for Disease Control and Prevention. **Vital signs: HIV prevention through care and treatment – United States.** *MMWR Morb Mortal Wkly Rep*. 2011;60(47):1618-1623

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In November 2011, the CDC's *MMWR* published a snapshot of the HIV treatment cascade in the United States, based on the National HIV Surveillance System (using data from 40 states), Behavioral Risk Factor Surveillance System (BRFSS), and Medical Monitoring Project (MMP) data. The analyses used a combination of these three surveillance datasets through June 2010, with the aim of obtaining a current description of HIV testing, HIV prevalence, and HIV care. Authors of the study provided national estimates of each step in the HIV treatment cascade,¹ which includes HIV testing and diagnosis, linkage and subsequent retention in HIV medical care, receipt of antiretroviral therapy (ART), and plasma viral load suppression.

According to the findings of the study, 9.6% of 18- to 64-year-olds reported having been tested for HIV; however, this number varied greatly by state, with as few as 4.9% of interviewees in one state and as many as 29.8% in another. Rates of infection by state were also unevenly distributed across regions, with HIV prevalence among 18- to 64-year-olds ranging from 40.1 to 3365.2 per 100,000 persons, according to state surveillance reports. It is encouraging, however, that states with the highest HIV prevalence rates also demonstrated higher reports of HIV testing.

According to this report, a relatively large proportion of HIV-infected persons have been tested and linked to HIV care. The CDC estimates that 20% of the 1.2 million people who are currently living with HIV nationwide are unaware of their infection. For those who test positive, more than three-quarters (77%) of individuals are linked to HIV care within three to four months, and 89% of those who initiate care are prescribed ART. Effective and uninterrupted ART is essential for controlling a patient's viral load, and a suppressed viral load is associated with improved health outcomes and a lower risk for disease transmission. Yet overall, it is estimated that only 35% of persons who have been diagnosed with HIV are virally suppressed, and only 28% of all persons infected with HIV in the United States, including the undiagnosed, are virally suppressed. This is due largely to poor retention in care. The *MMWR* indicates that only half (51%) of all HIV-infected persons in the United States were retained in care—an important barrier to sustained ART receipt.

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Notably, differences in ART prescribing and viral suppression were observed across age and racial/ethnic demographics. Variations in prescription of ART, which ranged from 76% among patients who were 18 to 24 years of age to 92% for those > 55 years of age, were observed. In addition, viral suppression was lowest among 25- to 34-year-olds compared with other age groups who were prescribed ART. With respect to ART prescription and viral suppression across racial/ethnic groups, 92% of white persons were prescribed ART, with suppression in 84%; 89% of Hispanic/Latino persons were prescribed ART, with suppression in 79%; and 86% of black/African American individuals were prescribed ART, with suppression in 70%. Additionally, 79% of males achieved viral suppression, compared with 71% of females.

In summary, it is striking that only 28% of all persons with HIV infection in the United States have suppressed viral loads. Undiagnosed HIV infection (20%), inadequate linkage to care (23%), and poor retention in care (49%) represent the most formidable obstacles to improving this figure. Additionally, racial/ethnic, age, and regional differences in HIV testing, linkage, and retention in care are observed nationwide.

Reference

1. Gardner EM, McLees MP, Steiner JF, Del Rio C, Burman WJ. [The spectrum of engagement in HIV care and its relevance to test-and-treat strategies for prevention of HIV infection.](#) *Clin Infect Dis.* 2011;52(6):793-800.

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GUIDELINES FOR IMPROVING ENTRY INTO AND RETENTION IN HIV CARE

Thompson MA, Mugavero MJ, Amico KR, et al. **Guidelines for improving entry into and retention in care and antiretroviral adherence for persons with HIV: evidence-based recommendations from an International Association of Physicians in AIDS Care Panel.** *Ann Intern Med.* 2012 Mar 5. [Epub ahead of print].

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In March 2012, with support from the International Association of Physicians in AIDS Care (IAPAC) and the National Institutes of Health, a panel of experts on HIV treatment issued evidence-based guidelines for improving entry into and retention in HIV medical care and ART adherence. This publication is based on a systematic review of 325 randomized, controlled trials and observational studies with a comparator arm that evaluated the impact of a wide range of intervention approaches on behavioral (adherence to care or ART) and/or biological (viral load) outcomes. These studies were reviewed and scored independently by two individuals according to standardized criteria. Panel members used this evidence to draft recommendations that were graded according to the quality of the body of evidence (I to IV), with the strength of the recommendation related to the target population (A to C= almost all patients to not recommended routinely). Among 37 evidence-based recommendations, the first five are specific to linkage and retention in care.

The first recommendation is for "Systematic monitoring of successful entry into HIV care (II A)." For all persons who receive a diagnosis of HIV, the panel emphasizes that it is the collective duty of testing providers, public health organizations, and medical clinics to facilitate initial linkage to HIV care. By using a combination of surveillance and medical records data, we will be better equipped to monitor effective linkage practices for persons with a new diagnosis of HIV.

Second, the panel recommends "Systematic monitoring of retention in HIV care (II A)." The literature shows that once a person has been linked to medical care services, sustained retention in care is associated with improved biological and clinical outcomes. Retention in care can be assessed using a number of measures and data systems. Therefore, although methodology for measuring retention in care varies by facility and jurisdiction, this panel advocates for the integration of surveillance, administrative, and medical records data so that HIV care can be most effectively monitored.



The third recommendation is for "Brief, strengths-based case management for individuals with a new HIV diagnosis (II B)." The panel cites the Antiretroviral Treatment and Access Study as evidence to support this linkage case-management recommendation in the guidelines.^{1,2} Trained social workers and community care staff can help new patients identify their strengths as a strategy for managing early HIV care in order to become successfully linked to outpatient medical care.

The fourth panel recommendation states that "Intensive outreach for individuals not engaged in medical care within six months of a new HIV diagnosis may be considered (III C)." This recommendation is based on the US Special Projects of National Significance (SPNS) Outreach Initiative, which uses a concentrated approach to targeted outreach for linking underserved persons to HIV care.^{3,4} This demonstration project revealed significant improvements in HIV viral load control in the first year after linkage to care for this population.

The fifth recommendation is that "Use of peer or paraprofessional patient navigators may be considered (III C)." This recommendation was supported by evidence from the SPNS initiative from four studies that evaluated patient-navigation approaches.⁵ Patient navigation is described as a model of care coordination that often uses peers, persons living with HIV infection, or near-peers who share common cultural backgrounds with the clients they serve. Improved retention in care and viral load suppression were observed with the use of patient navigation among individuals with prior inconsistent care engagement.

These guidelines, in combination with the treatment-based recommendations,⁶ include guidance for special populations, advocate for collaborative, patient-centered approaches for both public health and clinical personnel to improve linkage and retention in HIV care.

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INCREASED RATES OF RETENTION IN EARLY HIV CARE AND IMPROVED VIRO-IMMUNOLOGIC OUTCOMES

Tripathi A, Youmans E, Gibson JJ, Duffus WA. **The impact of retention in early HIV medical care on viro-immunological parameters and survival: a statewide study.** *AIDS Res Hum Retroviruses.* 2011;27(7):751-758.

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This retrospective, surveillance-based investigation documented early retention in care using the South Carolina enhanced HIV/AIDS Reporting System for persons who received a diagnosis of HIV and enrolled in HIV care from 2004 to 2007. Because studies have shown that patients with HIV have patterns of cycling in and out of care, often accessing multiple providers, the aim of this study was to document all care visits for individuals in this population using laboratory-based surveillance data. For this investigation, the retention measure used was a visit constancy-based assessment,¹ which was defined as ≥ 1 visit in each of four six-month periods over two years, with mandatorily reported CD4 cell counts and viral load surveillance laboratory values representing clinical visits. After excluding 719 persons who received a diagnosis of HIV in the time period but were not linked to care, the final study cohort included 2197 individuals.

The majority of this sample was male (66%), black/African American (72%) and lived in urban areas (71%); the average patient age was 37 ± 12 years. Overall, 100% of the sample had a first CD4 cell count and 97% had an initial viral load value; more than half of the subjects had an initial CD4 cell count of ≤ 350 cells/mm³. Thirty-six percent of the patients reported a men having sex with men (MSM) risk factor, and one-third (36%) had acquired immunodeficiency syndrome (AIDS). The sample was characterized according to four categories of retention: optimal, suboptimal, sporadic, and dropout. Optimal retention was defined as a visit in each of four six-month intervals over two years, which represented nearly half of the sample (49.7%). Suboptimal retention was identified in 18.5% of the sample and was defined as visits in three of the four intervals. Overall, 22% of the population exhibited sporadic retention, or one to two visits in four intervals. Dropouts, or zero visits across intervals, were observed in 9.7% of the cohort.

Findings of this study demonstrated that suboptimal retention was more likely in men and urban residents, compared with women and rural dwellers, respectively. Suboptimal retention was less likely among persons of older age, MSMs, and those with AIDS. Sporadic retention was more likely among men, individuals of nonwhite race, and those whose initial linkage to care occurred > 3 months after diagnosis (delayed linkage). In contrast, sporadic retention was found to be less likely in persons of older age and in those with concurrent AIDS. Dropout from care was more likely in men, those of nonwhite race/ethnicity, and those with delays in linkage to care of > 3 months. Not surprisingly, the mean increase in baseline CD4 cell counts was greater in the optimal retention group (170 cells/mm³) compared with the suboptimal (108 cells/mm³) and sporadic (2 cells/mm³) groups. Similarly, mean decrease in viral load was also greater in the optimal care group vs. the suboptimal and sporadic groups. Finally, a dose-response relationship was observed between early retention in care and subsequent mortality, with an increased risk for death observed across decreasing categories of retention and highest in the dropout group (adjusted hazard ratio = 4.0 vs. optimal retention; 95% confidence interval = 1.50 to 10.65)

In summary, only 50% of this cohort exhibited optimal retention over the first two years after HIV diagnosis, with nearly 10% dropping out of care completely. Sociodemographic and clinical factors were significant predictors of lower retention or dropout, including male gender, younger age, and nonwhite race/ethnicity. Additionally, a delay from diagnosis to linkage of > 3 months was also associated with poorer retention in care. Finally, poor early retention in care was associated with worse CD4 cell counts and viral load responses, as well as increased risk for mortality

Reference

1. Mugavero MJ, Davila JA, Nevin CR, Giordano TP. [From access to engagement: measuring retention in outpatient HIV clinical care](#). *AIDS Patient Care STDS*. 2010;24(10):607-613.

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EARLY LINKAGE AND RETENTION IN CARE AMONG YOUNG MSMS OF COLOR

Hightow-Weidman LB, Jones K, Wohl AR, et al. **Early linkage and retention in care: findings from the outreach, linkage, and retention in care initiative among young men of color who have sex with men.** *AIDS Patient Care STDS*. 2011;25(suppl 1):S31-S38.

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In 2003, in an effort to improve HIV outcomes using targeted, population-specific linkage and retention services, the HRSA HAB issued funding for an SPNS geared toward racial/ethnic minority young MSMs. This eight-site initiative aimed to use innovative strategies for improving linkage and retention among those whose HIV was newly diagnosed (within three to six months), were new to HIV care, or were out of care (i.e., intermittent or no care for six months). Investigators were charged with finding, linking, and retaining young MSMs of color in HIV care. Clinical and quarterly interview data were used to evaluate outcomes for this study.

Consented participants were 13- to 24-year-old Latino or nonwhite, self-reported young MSMs who were born male. Variables of interest included linkage, retention in care, social support, and critical needs. Linkage was defined as the interval between a participant's HIV diagnosis date and the first medical provider visit according to participant self-report. For this study, retention indicated ≥ 3 completed HIV care visits within the first year after enrollment, with ≥ 1 visit during the first six months and ≥ 1 visit during the second six months of follow-up. Scoring for social support was based on a 10-item Likert-type scale, whereas critical needs scoring reflected participant endorsement of unstable housing, problems with drugs or alcohol use/abuse, or a high score on the Center for Epidemiologic Studies Depression Scale.

Common intervention approaches included youth-focused support groups or programming, HIV providers who were experienced with young patients, appointment reminders, transportation assistance, and case-finding for youth who were out of care. Over time, participants reported increases in the use of insurance and of ART, as well as decreases in reported hospital and emergency visits, and fewer reports of running out of money or borrowing money.

Of the 363 study participants, two-thirds had not been in care previously; this population was younger, African American, and less likely to be receiving ART than were the one-third of participants who reported prior care. Analysis indicated that 72% of the sample was linked to care within the first 30 days of diagnosis, and 87% of the sample was linked to care within 90 days. Participants whose HIV testing personnel assisted with referrals or making initial medical care appointments (active referral) were linked to care earlier. Of the 221 participants with 12 months of follow up, 82% were retained at one year, with Latino participants demonstrating significantly higher retention than African Americans. Participants with better retention were less likely to have a last CD4 cell count of < 200 cells/mm³.

According to findings from this initiative, prompt engagement in care, population-specific programming, positive interactions with providers, and ongoing communication (e.g., phone, text) may increase retention in HIV medical care among young MSMs of color.

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RETENTION IN CARE AMONG ADULTS AND ADOLESCENTS WITH HIV

Hall HI, Gray KM, Tang T, Li J, Shouse L, Mermin J. **Retention in care of adults and adolescents living with HIV in 13 US areas.** *J Acquir Immune Defic Syndr.* 2012;60(1):77-82.

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The US Department of Health and Human Services Panel on Antiretroviral Guidelines for Adults and Adolescents lists recommended testing standards for CD4 cell counts and viral loads in persons with HIV at three- to four-month intervals and six-month intervals for clinically stable patients.¹ However, approximately half (54%) of all HIV-positive persons in the United States had ≥ 2 clinical visits in the last year, according to a recent meta-analysis.² As missed medical care visits, including initial linkage visits, contribute to the risk for premature mortality and worse HIV outcomes, this study assessed the number and percentage of individuals who were linked and retained in HIV care from 2008 to 2010, using data from 13 US jurisdictions that have mandatory laboratory reporting of CD4 cell counts and viral load tests.

In 2009, a total of 100,375 persons who received a diagnosis of HIV through 2008 (12% of the US population with HIV infection) were living in the designated study jurisdictions. More than half of these individuals (58.6%) had undergone ≥ 1 CD4 cell count or viral load test in 2009, and 44.8% of the sample had a minimum of two HIV care visits (as indicated by a CD4 cell count or viral load reported to surveillance) that were ≥ 3 months apart (HRSA HAB retention measure). The percentage of individuals who were receiving care (as indicated by ≥ 1 CD4 cell count or viral load value) varied by race and risk group: lower percentages of black/African Americans and Hispanic/Latino persons (54.9% and 49.3%, respectively) were receiving care, compared with whites (64.2%). More females who reported heterosexual exposure were receiving care compared with other risk groups of males or females, and a lower percentage of persons >65 years of age (50.9%) were receiving care, compared with 13- to 24-year-olds (62.1%). Of the 100,375 persons with HIV infection who were living in the study jurisdictions, 48,074 (47.9%) had ≥ 1 care visit each year in 2008 and 2009, with 76.9% of these visits revealing a suppressed viral load and approximately half (53.0%) having ≥ 1 suppressed viral load in each of these years.

With respect to linkage to care, among persons with newly diagnosed HIV infection in 2008, nearly two-thirds (63.6%) had ≥ 2 care visits that were ≥ 3 months apart in the year after diagnosis. Linkage indicators also varied according to demographic characteristics, with three-quarters of whites (74.7%) achieving this metric in the first year, compared with 54.3% of African Americans and 69.4% of Hispanic/Latino individuals. Additionally, lower percentages of black/African American MSMs established care (54.5%) or remained in continual care (41.4%) than did Hispanic/Latino and white MSMs.

In summary, this surveillance-based study, which used CD4 cell counts and viral load laboratory values reported to surveillance as indicators of HIV care visits, demonstrated that fewer than half of all persons (44.8%) were retained in care based on the HRSA HAB measure³—the assessment used in the NHAS.⁴ Moreover, among those with new diagnoses, only 63.6% had ≥ 2 visits in the subsequent year. In addition, this study found disparities with respect to race and risk group for linkage and continuous care utilization, with fewer Hispanic/Latino and black/African American persons in care than whites, and lower rates of utilization among intravenous drug users and heterosexual males vs. heterosexual females.

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A COMPARISON OF VARIOUS MEASURES OF RETENTION IN OUTPATIENT HIV CARE

Yehia BR, Fleishman JA, Metlay JP, et al; for the HIV Research Network. **Comparing different measures of retention in outpatient HIV care.** *AIDS.* 2012 Feb 29. [Epub ahead of print].

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In an effort to gauge retention in HIV care, a number of different measures have been used to assess care use patterns in persons with the infection.¹ These measures are rarely used in tandem, however, and studies of HIV care are seldom comparable because of differences in the measures selected. To better understand the relationships among these measures, this study compared three widely used measures of retention that were calculated based on completed HIV primary care visits. The measures compared included (1) visit constancy, (2) gaps in care, and (3) the HRSA HAB measure. As defined in the literature, visit constancy is the proportion of time intervals (range, three to six months in various studies) with ≥ 1 completed visit during an observation period; gaps in care assess the time interval between sequential completed outpatient visits (range, four to 12 months across studies); and the HRSA HAB measure describes whether a patient had ≥ 2 completed visits in a 12-month period that were separated by ≥ 3 months.¹

Using cohort data from 12 sites in the HIV Research Network (HIVRN) consortium of clinics, this study used medical records data from 17,425 adult patients enrolled at an HIVRN site between 2001 and 2008 who had ≥ 1 HIV primary care outpatient visit in any of these years. This sample was mostly male (71.9%), of minority race/ethnicity (72.1%), and uninsured or receiving Medicaid (66.4%). This study defined each person's "outpatient time" as the period from the date of the first to the last recorded outpatient visit. Average outpatient time was 43.2 months (15.9 to 64.3 months). Patients with post-outpatient time of ≥ 12 months were considered lost to follow-up, so that retention would remain the focus.

In this study, 41.6% of the sample never experienced an interval between sequential outpatient visits of > 6 months (gap), and more than one-quarter (27.7%) of the participants had a gap of > 12 months. Overall, patients spent a mean of 29.5% of total outpatient time in a gap > 6 months. With respect to visit constancy, patients had ≥ 1 visit in 72% of quarters in outpatient time (three-month constancy). Visit constancy increased over time, from 69.0% of quarters with a visit for those who entered care in 2001, compared with 83.3% of quarters with a visit for those who entered care in 2008—for an average of 73% overall. The HRSA HAB measure was applied to multiple years for this study, revealing that patients had ≥ 2 completed visits that were ≥ 3 months apart in 74.6% of years during outpatient time.

When compared, these retention measures demonstrated statistically significant associations with each other. In addition, all of the measures showed similar associations with sociodemographic and clinical variables. Specifically, across measures, the likelihood of retention was lower among younger persons, men, black/African Americans, persons with high initial CD4 cell counts, and non-MSMs. In addition, persons with Medicare or dual eligibility, but not Medicaid or no insurance, exhibited greater retention. In summary, these results reflect retention values of 70% to 75% overall, with significant associations between measures and differences in retention among sociodemographic groups.

Reference

1. Mugavero MJ, Davila JA, Nevin CR, Giordano TP. [From access to engagement: measuring retention in outpatient HIV clinical care.](#) *AIDS Patient Care STDS.* 2010;24(10):607-613.

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