

## **Engagement in Care Literature Review**

### Resource Inventory: **Engagement in Care**

This is an optional resource for program development. The library is not exhaustive, and the programs and interventions described are not necessarily endorsed by HPS. The articles are offered only as a resource; applicants do not have to limit themselves to the models and approaches described in these articles.

All articles are available by request as a zip file from Betty Chan Lew. If you only wish one article, please reference the first author and title when making your request.

(415) 554-9492

Betty.Lew@sfdph.org

HIV Prevention Section

San Francisco Department of Public Health

Ste. 500, 25 Van Ness Ave.

SF. CA., 94102

## Engagement in Care Literature Review

<b>Engagement in Care Articles</b>		
<b>First Author</b>	<b>Title</b>	<b>Page</b>
Behforouz HL	From directly observed therapy to accompagnateurs: enhancing AIDS treatment outcomes in Haiti and in Boston.	p. 1
Craw, Jason A	Brief Strengths-Based Case Management Promotes Entry Into HIV Medical Care: Results of the Antiretroviral Treatment Access Study-II	p.2
Gardner LI	Demographic, psychological, and behavioral modifiers of the Antiretroviral Treatment Access Study (ARTAS) intervention.	p.3
Gardner LI	Efficacy of a brief case management intervention to link recently diagnosed HIV-infected persons to care.	p.4
Giordano TP	Patients referred to an urban HIV clinic frequently fail to establish care: factors predicting failure.	p.5
Giordano TP	Retention in care: a challenge to survival with HIV infection.	p.6
Horstmann E	Retaining HIV-infected patients in care: Where are we? Where do we go from here?	p.7
Kushel M.B	Case Management Is Associated with Improved Antiretroviral Adherence and CD4+ Cell Counts in Homeless and Marginally Housed Individuals with HIV Infection	p.8
Metsch LR	HIV transmission risk behaviors among HIV-infected persons who are successfully linked to care.	p. 9
Mugavero MJ	Failure to establish HIV care: characterizing the "no show" phenomenon.	p. 10
Mugavero MJ	Improving engagement in HIV care: what can we do?	p. 11
Mugavero MJ	Racial disparities in HIV virologic failure: do missed visits matter?	p. 12
Mugavero MJ	Missed visits and mortality among patients establishing initial outpatient HIV treatment.	p. 13
Naar-King S	Retention in care of persons newly diagnosed with HIV: outcomes of the Outreach Initiative.	p. 14

## Engagement in Care Literature Review

<b>First Author</b>	<b>Title</b>	<b>Page</b>
Rajabiun S	"Getting me back on track": the role of outreach interventions in engaging and retaining people living with HIV/AIDS in medical care.	p. 15
Reed JB	HIV testing factors associated with delayed entry into HIV medical care among HIV-infected persons from eighteen states, United States, 2000-2004.	p. 16
Samet JH	Understanding delay to medical care for HIV infection: the long-term non-presenter.	p. 17
Tobias C	Making the connection: the importance of engagement and retention in HIV medical care.	p. 18
Lucia V. Torian	Risk Factors for Delayed Initiation of Medical Care After Diagnosis of Human Immunodeficiency Virus	p. 19
Ulett KB	The therapeutic implications of timely linkage and early retention in HIV care.	p.20

## Engagement in Care Literature Review

**Clin Infect Dis. 2004 Jun 1;38 Suppl 5:S429-36.**

**From directly observed therapy to accompagnateurs: enhancing AIDS treatment outcomes in Haiti and in Boston.**

**Behforouz HL**, Farmer PE, Mukherjee JS.

Partners In Health and Harvard Medical School, Boston, Massachusetts 02120, USA.

[hbehforouz@partners.org](mailto:hbehforouz@partners.org)

### **Abstract**

Like tuberculosis, human immunodeficiency virus (HIV) disease is associated with poverty and social inequalities, conditions that hamper the delivery of care. Like tuberculosis, treatment of HIV infection requires multidrug regimens, and the causative agent acquires drug resistance, which can be transmitted to others. A pilot project in rural Haiti introduced DOT-HAART (directly observed therapy with highly active antiretroviral therapy) for the care of patients with advanced acquired immune deficiency syndrome. A similar DOT-HAART effort was launched in Boston for patients with drug-resistant HIV disease who had experienced failure of unsupervised therapy. In both settings, community health promoters or accompagnateurs provide more than DOT: they offer psychosocial support and link patients to clinical staff and available resources. DOT-HAART in these 2 settings presents both challenges and opportunities. These models of care can be applied to other poverty-stricken populations in resource-poor settings.

## Engagement in Care Literature Review

JAIDS Journal of Acquired Immune Deficiency Syndromes:  
15 April 2008 - Volume 47 - Issue 5 - pp 597-606  
doi: 10.1097/QAI.0b013e3181684c51  
Epidemiology and Social Science

### **Brief Strengths-Based Case Management Promotes Entry Into HIV Medical Care: Results of the Antiretroviral Treatment Access Study-II**

**Craw, Jason A MPH\*†**; Gardner, Lytt I PhD\*; Marks, Gary PhD\*; Rapp, Richard C MSW‡; Bosshart, Jeff MSW, MPH\*; Duffus, Wayne A MD, PhD§||; Rossman, Amber LMSW¶; Coughlin, Susan L MPH#; Gruber, DeAnn PhD\*\*; Safford, Laretta A MSW††; Overton, Jon MSW‡‡; Schmitt, Karla PhD, ARNP, MPH§§

#### **Abstract**

**Objective:** The Antiretroviral Treatment Access Study-II (ARTAS-II) evaluated a brief case management intervention delivered in health departments and community-based organizations (CBOs) to link recently diagnosed HIV-infected persons to medical care rapidly.

**Methods:** Recently diagnosed HIV-infected persons were recruited from 10 study sites across the United States during 2005 to 2006. The intervention consisted of up to 5 sessions with an ARTAS linkage case manager over a 90-day period. The outcome measure was whether or not the participant had seen an HIV medical care provider at least once within 6 months of enrollment. Multivariate logistic regression was used to identify significant predictors of receiving HIV medical care.

**Results:** Seventy-nine percent (497 of 626) of participants visited an HIV clinician at least once within the first 6 months. Participants who were older than 25 years of age, Hispanic, and stably housed; had not recently used noninjection drugs; had attended 2 or more sessions with the case manager; and were recruited at a study site that had HIV medical care colocated on its premises were all significantly more likely to have received HIV care.

**Conclusions:** The ARTAS linkage case management intervention provides a model that health departments and CBOs can use to ensure that recently diagnosed HIV-infected persons attend an initial HIV care encounter.

## Engagement in Care Literature Review

**AIDS Patient Care STDS. 2009 Sep;23(9):735-42.**

### **Demographic, psychological, and behavioral modifiers of the Antiretroviral Treatment Access Study (ARTAS) intervention.**

**Gardner LI**, Marks G, Craw J, MetschL, StrathdeeS, Anderson-Mahoney P, del Rio C; Antiretroviral Treatment Access Study Group.

Collaborators (43)Gardner LI, Holmberg SD, KrawczykCS, del Rio C, Green S, BarraganB, DuffusW, Leonard L, O'DanielsC, Abrams C, Berry F, Hunter V, Pope H, StrathdeeS, LoughlinA, HuettnerS, Woolf M, Burt O, Reaves J, Anderson-Mahoney P, KerndtP, GatsonB, Schmidt B, Perez N, Chan A, Fernandez L Jr, KotlermanJ, Rudy E, Gutierrez S, MetschL, McCoy C, Dickinson G, Brewer T, ValverdeE, Wohler-Torres B, Gooden L, Zhao W, YeomansF, Camacho YD, Siegel HA, Rapp RC, Rust TL, Wang J.

Centers for Disease Control and Prevention, 1600 Clifton Road, Atlanta, GA 30333, USA.

[lig0@cdc.gov](mailto:lig0@cdc.gov)

#### **Abstract**

The present study sought to identify demographic, structural, behavioral, and psychological subgroups for which the Antiretroviral Treatment Access Study (ARTAS) intervention had stronger or weaker effects in linking recently diagnosed HIV-positive persons to medical care. The study, carried out from 2001 to 2003, randomized 316 participants to receive either passive referral or a strengths-based linkage intervention to facilitate entry into HIV primary care. The outcome was attending at least one HIV primary care visit in each of two consecutive 6-month periods. Participants (71% male; 29% Hispanic; 57% black non-Hispanic), were recruited from sexually transmitted disease clinics, hospitals and community-based organizations in four U.S. cities. Thirteen effect modifier variables measured at baseline were examined. Subgroup differences were formally tested with interaction terms in unadjusted and adjusted log-linear regression models. Eighty-six percent (273/316) of participants had complete 12-month follow-up data. The intervention significantly improved linkage to care in 12 of 26 subgroups. In multivariate analysis of effect modification, the intervention was significantly ( $p < 0.05$ ) stronger among Hispanics than other racial/ethnic groups combined, stronger among those with unstable than stable housing, and stronger among those who were not experiencing depressive symptoms compared to those who were. The ARTAS linkage intervention was successful in many but not all subgroups of persons recently diagnosed with HIV infection. For three variables, the intervention effect was significantly stronger in one subgroup compared to the counterpart subgroup. To increase its scope, the intervention may need to be tailored to the specific needs of groups that did not respond well to the intervention.

PMID: 19645619 [PubMed-indexed for MEDLINE]

## Engagement in Care Literature Review

**AIDS. 2005 Mar 4;19(4):423-31.**

**Efficacy of a brief case management intervention to link recently diagnosed HIV-infected persons to care.**

**Gardner LI**, Metsch LR, Anderson-Mahoney P, Loughlin AM, del Rio C, Strathdee S, Sansom SL, Siegal HA, Greenberg AE, Holmberg SD; Antiretroviral Treatment and Access Study Study Group.

Division of HIV/AIDS Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia 30333, USA. lig0@cdc.gov

### **Abstract**

**OBJECTIVE:** The Antiretroviral Treatment Access Study (ARTAS) assessed a case management intervention to improve linkage to care for persons recently receiving an HIV diagnosis.

**METHODS:** Participants were recently diagnosed HIV-infected persons in Atlanta, Baltimore, Los Angeles and Miami. They were randomized to either standard of care (SOC) passive referral or case management (CM) for linkage to nearby HIV clinics. The SOC arm received information about HIV and local care resources; the CM intervention arm included up to five contacts with a case manager over a 90-day period. The outcome measure was self-reported attendance at an HIV care clinic at least twice over a 12-month period.

**RESULTS:** A higher proportion of the 136 case-managed participants than the 137 SOC participants visited an HIV clinician at least once within 6 months [78 versus 60%; adjusted relative risk (RR(adj)), 1.36; P = 0.0005] and at least twice within 12 months (64 versus 49%; RR(adj), 1.41; P = 0.006). Individuals older than 40 years, Hispanic participants, individuals enrolled within 6 months of an HIV-seropositive test result and participants without recent crack cocaine use were all significantly more likely to have made two visits to an HIV care provider. We estimate the cost of such case management to be 600-1200 US dollars per client.

**CONCLUSION:** A brief intervention by a case manager was associated with a significantly higher rate of successful linkage to HIV care. Brief case management is an affordable and effective resource that can be offered to HIV-infected clients soon after their HIV diagnosis.

PMID: 15750396 [PubMed - indexed for MEDLINE]

## Engagement in Care Literature Review

**AIDS Care. 2005 Aug;17(6):773-83.**

**Patients referred to an urban HIV clinic frequently fail to establish care: factors predicting failure.**

**Giordano TP**, Visnegarwala F, White AC Jr, Troisi CL, Frankowski RF, Hartman CM, Grimes RM.

Baylor College of Medicine, Texas, USA. tpg@bcm.tmc.edu

### **Abstract**

To measure the success with which patients newly entering outpatient care establish regular care, and assess whether race/ethnicity was a predictive factor, we conducted a medical record review of new patients seen 20 April 1998 to 31 December 1998 at The Thomas Street Clinic, a county clinic for uninsured persons. Patients were considered 'not established' if they never saw a physician in the 6 months after intake (the 'initial period'), 'poorly established' if seen but a > 6-month gap in care began in the initial period, and 'established' if there were no such gaps. Of 404 patients, 11% were 'not established', 37% 'poorly established', and 53% 'established'. Injection drug use as HIV risk factor (IDU), admitted current alcohol and drug use, age < 35 years, and CD4 count > or = 200 cells/mm<sup>3</sup> were most common in the 'not established' group and least common in the 'established' group. In multivariate ordinal logistic regression, difficulty establishing care was associated with IDU, admitted current alcohol use, and admitted former drug use. Age > 35 years was protective. Half the indigent patients entering care in this single-site study fail to establish regular care. Substance use and younger age are predictors of failure to establish care.

PMID: 16036264 [PubMed - indexed for MEDLINE]



## Engagement in Care Literature Review

**Clin Infect Dis. 2007 Jun 1;44(11):1493-9. Epub 2007 Apr 23.**

**Retention in care: a challenge to survival with HIV infection.**

**Giordano TP**, Gifford AL, White AC Jr, Suarez-Almazor ME, Rabeneck L, Hartman C, Backus LI, Mole LA, Morgan RO.

Baylor College of Medicine, Houston, Texas, USA. tpg@bcm.tmc.edu

Comment in: Clin Infect Dis. 2007 Sep 15;45(6):803. Clin Infect Dis. 2007 Jun 1;44(11):1500-2.

Clin Infect Dis. 2007 Dec 1;45(11):1527.

### Abstract

**BACKGROUND:** Patients with human immunodeficiency virus (HIV) infection need lifelong medical care, but many do not remain in care. The effect of poor retention in care on survival is not known, and we sought to quantify that relationship.

**METHODS:** We conducted a retrospective cohort study involving persons newly identified as having HIV infection during 1997-1998 at any United States Department of Veterans Affairs hospital or clinic who started antiretroviral therapy after 1 January 1997. To be included in the study, patients had to have seen a clinician at least once after receiving their first antiretroviral prescription and to have survived for at least 1 year. Patients were divided into 4 groups on the basis of the number of quarters in that year during which they had at least 1 HIV primary care visit. Survival was measured through 2002. Because data were available for only a small number of women, female patients were excluded from the study.

**RESULTS:** A total of 2619 men were followed up for a mean of >4 years each. The median baseline CD4(+) cell count and median log(10) plasma HIV concentration were 228x10(6) cells/L and 4.58 copies/mL, respectively. Thirty-six percent of the patients had visits in <4 quarters, and 16% died during follow-up. In Cox multivariate regression analysis, compared with persons with visits in all 4 quarters during the first year, the adjusted hazard ratio of death was 1.42 (95% confidence interval, 1.11-1.83; P<.01), 1.67 (95% confidence interval, 1.24-2.25; P<.001), and 1.95 (95% confidence interval, 1.37-2.78; P<.001) for persons with visits in 3 quarters, 2 quarters, and 1 quarter, respectively.

**CONCLUSIONS:** Even in a system with few financial barriers to care, a substantial portion of HIV-infected patients have poor retention in care. Poor retention in care predicts poorer survival with HIV infection. Retaining persons in care may improve survival, and optimal methods to retain patients need to be defined.

PMID: 17479948 [PubMed - indexed for MEDLINE]

## Engagement in Care Literature Review

**Clin Infect Dis. 2010 Mar 1;50(5):752-61.**

**Retaining HIV-infected patients in care: Where are we? Where do we go from here?**

**Horstmann E, Brown J, Islam F, Buck J, Agins BD.**

Harvard Medical School, Boston, Massachusetts, USA.

Comment in:

Clin Infect Dis. 2010 Oct 1;51(7):868-9.

### **Abstract**

Retaining human immunodeficiency virus (HIV)-infected patients in medical care at regular intervals has been shown to be linked to positive health outcomes. This article examines the available literature and research on retention and engagement in care of HIV-infected patients. We identify the extent of the problem of keeping patients engaged in care, as well as analyze which groups of patients are likely to be lost to follow-up. A review of different ways to measure patient retention is considered, as well as some preliminary data that suggest successful ways to re-engage patients in care. The need to ensure that HIV-infected patients are retained in care is a pressing public health issue and one that affects multiple populations. Further research and exchange of information are needed to keep patients in continuous care and to ensure that all patients are provided with regular, high-quality care that achieves both desired patient and population health outcomes.

## Engagement in Care Literature Review

CID 2006:43 (15 July) • HIV/AIDS

### Case Management Is Associated with Improved Antiretroviral Adherence and CD4+ Cell Counts in Homeless and Marginally Housed Individuals with HIV Infection

M. B. Kushel,<sup>1</sup> G. Colfax,<sup>4</sup> K. Ragland,<sup>2</sup> A. Heineman,<sup>2</sup> H. Palacio,<sup>5</sup> and D. R. Bangsberg<sup>3</sup>

<sup>1</sup>Division of General Internal Medicine, <sup>2</sup>Department of Epidemiology and Biostatistics, and <sup>3</sup>Epidemiology and Prevention Interventions Center, Division of Infectious Diseases and The Positive Health Program, San Francisco General Hospital Medical Center, University of California, San Francisco, and <sup>4</sup>Epidemiology and Intervention Research Section, AIDS Office, San Francisco Department of Public Health, San Francisco, California; and <sup>5</sup>Harris Public Health and Environmental Services, Houston, Texas

**Background.** Case management (CM) coordinates care for persons with complex health care needs. It is not known whether CM is effective at improving biological outcomes among homeless and marginally housed persons with human immunodeficiency virus (HIV) infection. Our goal was to determine whether CM is associated with reduced acute medical care use and improved biological outcomes in homeless and marginally housed persons with HIV infection.

**Methods.** We conducted a prospective observational cohort study in a probability-based community sample of HIV-infected homeless and marginally housed adults in San Francisco, California. The primary independent variable was CM, defined as none or rare (any CM in  $\leq 25\%$  of quarters in the study), moderate (125% but  $\leq 75\%$ ), or consistent (175%). The dependent variables were 3 self-reported health service use measures (receipt of primary care, emergency department visits and hospitalizations, and antiretroviral therapy adherence) and 2 biological measures (increase in CD4+ cell count of  $\geq 50\%$  and geometric mean HIV load of  $\leq 400$  copies/mL).

**Results.** In multivariate models, CM was not associated with increased primary care, emergency department use, or hospitalization. Moderate CM, compared with no or rare CM, was associated with an adjusted b coefficient of 0.13 (95% confidence interval [CI], 0.02–0.25) for improved antiretroviral adherence. Consistent CM (adjusted odds ratio [AOR], 10.7; 95% CI, 2.3–49.6) and moderate CM (AOR, 6.5; 95% CI, 1.3–33.0) were both associated with  $\geq 50\%$  improvements in CD4+ cell count. CM was not associated with geometric HIV load  $\leq 400$  copies/mL when antiretroviral therapy adherence was included in the model. Study limitations include a lack of randomization.

**Conclusion.** CM may be a successful method to improve adherence

## Engagement in Care Literature Review

**Clin Infect Dis. 2008 Aug 15;47(4):577-84.**

**HIV transmission risk behaviors among HIV-infected persons who are successfully linked to care.**

**Metsch LR**, Pereyra M, Messinger S, Del Rio C, Strathdee SA, Anderson-Mahoney P, Rudy E, Marks G, Gardner L; Antiretroviral Treatment and Access Study (ARTAS) Study Group.

Collaborators (44) Gardner LI, Holmberg SD, Greenberg A, Krawczyk CS, del Rio C, Green S, Barragan M, Duffus W, Leonard M, O'Daniels C, Abrams C, Berry F, Hunter V, Pope H, Strathdee S, Loughlin A, Huettner S, Woolf M, Burt O, Reaves J, Anderson-Mahoney P, Kerndt P, Gatson B, Schmidt B, Perez N, Chan A, Fernandez L Jr, Kotlerman J, Rudy E, Gutierrez S, Metsch L, McCoy C, Dickinson G, Brewer T, Valverde E, Wohler-Torres B, Gooden L, Zhao W, Yeomans F, Camacho YD, Siegel HA, Rapp RC, Rust TL, Wang J.

Miller School of Medicine, University of Miami, Miami, Florida, USA.

### **Abstract**

**OBJECTIVES:** We examined the relationship between receipt of medical care for human immunodeficiency virus (HIV) infection and HIV transmission risk behavior among persons who had received a recent diagnosis of HIV infection.

**METHODS:** We enrolled 316 participants from 4 US cities and prospectively followed up participants for 1 year. Generalized estimating equations were used to examine whether having at least 3 medical care visits in a 6-month period was associated with unprotected vaginal or anal intercourse with an HIV-negative partner or partner with unknown HIV status.

**RESULTS:** A total of 27.5% of the participants (84 of 305) self-reported having unprotected sex with an HIV-negative or unknown status partner at enrollment, decreasing to 12% (31 of 258) and 14.2% (36 of 254) at 6-month and 12-month follow-ups, respectively. At follow-up, people who had received medical care for HIV infection at least 3 times had reduced odds of engaging in risk behavior, compared with those with fewer visits. Other factors associated with reduced risk behavior were being >30 years of age, male sex, not having depressive symptoms, and not using crack cocaine.

**CONCLUSIONS:** Being in HIV care is associated with a reduced prevalence of sexual risk behavior among persons living with HIV infection. Persons linked to care can benefit from prevention services available in primary care settings.

PMID: 18624629 [PubMed - indexed for MEDLINE]

## Engagement in Care Literature Review

**Clin Infect Dis. 2007 Jul 1;45(1):127-30. Epub 2007 May 23.**

**Failure to establish HIV care: characterizing the "no show" phenomenon.**

**Mugavero MJ**, Lin HY, Allison JJ, Willig JH, Chang PW, Marler M, Raper JL, Schumacher JE, Pisu M, Saag MS.

Division of Infectious Diseases and International Health, Department of Medicine, University of Alabama at Birmingham, USA. mmugavero@uab.edu

### **Abstract**

It is estimated that up to one-third of persons with known human immunodeficiency virus (HIV) infection in the United States are not engaged in care. We evaluated factors associated with patients' failure to establish outpatient HIV care at our clinic and found that females, racial minorities, and patients lacking private health insurance were more likely to be "no shows." At the clinic level, longer waiting time from the call to schedule a new patient visit to the appointment date was associated with failure to establish care. Because increased numbers of patients will be in need of outpatient HIV care as a result of recent Centers for Disease Control and Prevention guidelines advocating routine HIV testing, it is imperative that strategies to improve access are developed to overcome the "no show" phenomenon.

PMID: 17554713 [PubMed - indexed for MEDLINE]

## **Engagement in Care Literature Review**

**Top HIV Med. 2008 Dec;16(5):156-61.**

**Improving engagement in HIV care: what can we do?**

**Mugavero MJ.**

University of Alabama at Birmingham, Birmingham, AL, USA.

### **Abstract**

Engagement in HIV care needs to be improved. Important factors to be considered in attempts to improve engagement in care include the following: (1) initial linkage and subsequent retention are distinct processes; (2) engagement in care is vital for HIV treatment success at both the individual and population levels; (3) missed clinic visits can identify patients at high risk for poor health outcomes; (4) engagement in care is worse in groups bearing a disproportionate burden of the domestic HIV epidemic; and (5) ancillary services play a crucial role in improving linkage to and retention in care.

PMID: 19106431 [PubMed - indexed for MEDLINE]

## Engagement in Care Literature Review

**J Acquir Immune Defic Syndr. 2009 Jan 1;50(1):100-8.**

### **Racial disparities in HIV virologic failure: do missed visits matter?**

**Mugavero MJ**, Lin HY, Allison JJ, Giordano TP, Willig JH, Raper JL, Wray NP, Cole SR, Schumacher JE, Davies S, Saag MS.

Division of Infectious Diseases, University of Alabama at Birmingham, Birmingham, AL, USA.  
mmugavero@uab.edu

#### **Abstract**

**BACKGROUND:** Racial/ethnic health care disparities are well described in people living with HIV/AIDS, although the processes underlying observed disparities are not well elucidated.

**METHODS:** A retrospective analysis nested in the University of Alabama at Birmingham 1917 Clinic Cohort observational HIV study evaluated patients between August 2004 and January 2007. Factors associated with appointment nonadherence, a proportion of missed outpatient visits, were evaluated. Next, the role of appointment nonadherence in explaining the relationship between African American race and virologic failure (plasma HIV RNA >50 copies/mL) was examined using a staged multivariable modeling approach.

**RESULTS:** Among 1221 participants, a broad distribution of appointment nonadherence was observed, with 40% of patients missing at least 1 in every 4 scheduled visits. The adjusted odds of appointment nonadherence were 1.85 times higher in African American patients compared with whites [95% confidence interval (CI) = 1.61 to 2.14]. Appointment nonadherence was associated with virologic failure (odds ratio = 1.78, 95% CI = 1.48 to 2.13) and partially mediated the relationship between African American race and virologic failure. African Americans had 1.56 times the adjusted odds of virologic failure (95% CI = 1.19 to 2.05), which declined to 1.30 (95% CI = 0.98 to 1.72) when controlling for appointment nonadherence, a hypothesized mediator.

**CONCLUSIONS:** Appointment nonadherence was more common in African American patients, associated with virologic failure, and seemed to explain part of observed racial disparities in virologic failure.

PMID: 19295340 [PubMed - indexed for MEDLINE]PMCID: PMC2766510

## Engagement in Care Literature Review

**Clin Infect Dis. 2009 Jan 15;48(2):248-56.**

**Missed visits and mortality among patients establishing initial outpatient HIV treatment.**

**Mugavero MJ**, Lin HY, Willig JH, Westfall AO, Ulett KB, Routman JS, Abrams S, Raper JL, Saag MS, Allison JJ.

Division of Infectious Diseases, Department of Medicine, University of Alabama at Birmingham, 908 20th St. South, Birmingham, AL 35294-2050, USA. mmugavero@uab.edu

### **Abstract**

**BACKGROUND:** Dramatic increases in the number of patients requiring linkage to treatment for human immunodeficiency virus (HIV) infection are anticipated in response to updated Centers for Disease Control and Prevention HIV testing recommendations that advocate routine, opt-out HIV testing.

**METHODS:** A retrospective analysis nested within a prospective HIV clinical cohort study evaluated patients who established initial outpatient treatment for HIV infection at the University of Alabama at Birmingham 1917 HIV/AIDS Clinic from 1 January 2000 through 31 December 2005. Survival methods were used to evaluate the impact of missed visits during the first year of care on subsequent mortality in the context of other baseline sociodemographic, psychosocial, and clinical factors. Mortality was ascertained by query of the Social Security Death Index as of 1 August 2007.

**RESULTS:** Among 543 study participants initiating outpatient care for HIV infection, 60% missed a visit within the first year. The mortality rate was 2.3 deaths per 100 person-years for patients who missed visits, compared with 1.0 deaths per 100 person-years for those who attended all scheduled appointments during the first year after establishing outpatient treatment ( $P = .02$ ). In Cox proportional hazards analysis, higher hazards of death were independently associated with missed visits (hazard ratio, 2.90; 95% confidence interval, 1.28-6.56), older age (hazard ratio, 1.58 per 10 years of age; 95% confidence interval, 1.12-2.22), and baseline CD4+ cell count < 200 cells/mm<sup>3</sup> (hazard ratio, 2.70; 95% confidence interval, 1.00-7.30).

**CONCLUSIONS:** Patients who missed visits within the first year after initiating outpatient treatment for HIV infection had more than twice the rate of long-term mortality, compared with those patients who attended all scheduled appointments. We posit that early missed visits are not causally responsible for the higher observed mortality but, rather, identify those patients who are more likely to exhibit health behaviors that portend increased subsequent mortality.

PMID: 19072715 [PubMed - indexed for MEDLINE]PMCID: PMC2737584



## Engagement in Care Literature Review

**AIDS Patient Care STDS. 2007;21 Suppl 1:S40-8.**

### **Retention in care of persons newly diagnosed with HIV: outcomes of the Outreach Initiative.**

**Naar-King S**, Bradford J, Coleman S, Green-Jones M, Cabral H, Tobias C.

Carman and Ann Adams Department of Pediatrics, Wayne State University, Detroit, Michigan 48201, USA. snaarkin@med.wayne.edu

#### **Abstract**

The purpose of this study was to contribute to the limited literature on newly diagnosed persons living with HIV/AIDS (PLWHA) by describing their retention in HIV primary care and changes in barriers to care over 12 months of follow-up subsequent to enrolling in outreach interventions. Medical chart review and interview data were collected from 104 newly diagnosed PLWHA at baseline, 6-month, and 12-month follow-up. Almost all newly diagnosed PLWHA (92%) had an HIV care appointment in the 6 months post-enrollment. Newly diagnosed persons were more likely to have undetectable viral loads at 6 and 12-month follow-up compared to baseline with 45% undetectable by 12 months. Adequate retention in care (at least one appointment in each 6-month window) was significantly associated with reductions in substance use and improvements in insurance coverage. Improvements in mental health status and the elimination of stigma as a barrier were not associated with retention, but those who reported stigma as a barrier at baseline and continued to report stigma at 6 months had less than adequate retention. These results suggest the need for early and intensive outreach interventions for newly diagnosed persons. Future directions include testing outreach interventions in a randomized clinical trial, and evaluating programs that integrate early HIV identification and intensive outreach to enroll and retain persons newly infected with HIV in care.

PMID: 17563289 [PubMed - indexed for MEDLINE]

## Engagement in Care Literature Review

**AIDS Patient Care STDS. 2007;21 Suppl 1:S20-9.**

**"Getting me back on track": the role of outreach interventions in engaging and retaining people living with HIV/AIDS in medical care.**

**Rajabiun S, Mallinson RK, McCoy K, Coleman S, Drainoni ML, Rebholz C, Holbert T.**

Health and Disability Working Group, Boston University School of Public Health, Boston, Massachusetts 02210, USA. rajabiun@bu.edu

### **Abstract**

This qualitative study investigated the process of engagement in HIV medical care from the perspective of people living with HIV/AIDS (PLWHA). In-depth interviews were conducted with 76 participants in six cities. All participants were considered underserved because of histories of substance use, mental illness, incarceration, homelessness, or cultural barriers to the traditional health care system. A semistructured interview guide elicited narratives related to health care and the role of program interventions in facilitating access to care. Data analysis revealed that participants cycled in and out of care, a process that was influenced by (1) their level of acceptance of being diagnosed with HIV, (2) their ability to cope with substance use, mental illness, and stigma, (3) their health care provider relationships, (4) the presence of external support systems, and (5) their ability to overcome practical barriers to care. Outreach interventions played a role in connecting participants to care by dispelling myths and improving knowledge about HIV, facilitating access to HIV care and treatment, providing support, and reducing the barriers to care. The findings suggest that outreach programs can interrupt this cyclical process and foster sustained, regular HIV care for underserved PLWHA by conducting client-centered risk assessments to identify and reduce sources of instability and improve the quality of provider relationships; implementing strategies that promote healthy practices; creating a network of support services in the community; and supporting adherence through frequent follow-ups for medication and appointment keeping.

PMID: 17563286 [PubMed - indexed for MEDLINE]

## Engagement in Care Literature Review

**AIDS Patient Care STDS. 2009 Sep;23(9):765-73.**

**HIV testing factors associated with delayed entry into HIV medical care among HIV-infected persons from eighteen states, United States, 2000-2004.**

**Reed JB, Hanson D, McNaghten AD, Bertolli J, Teshale E, Gardner L, Sullivan P.**

Division of HIV/AIDS Prevention, Centers for Disease Control and Prevention, 1600 Clifton Road NE, Atlanta, GA 30333, USA. eso7@cdc.gov

### **Abstract**

Despite the importance of timely entry into care after HIV diagnosis, the timing of care entry has not been described recently in a large, diverse population of persons with HIV. Dates of HIV diagnosis and entry into HIV care were obtained by interview of HIV-infected adults, most of whom had entered care for HIV, in 18 U.S. states from 2000 through 2004. Time to care entry was analyzed as a dichotomous variable; delayed care entry was defined as care entry greater than 3 months after HIV diagnosis. Multivariable logistic regression models were used to describe HIV testing-related factors associated with delayed care entry. Among 3942 respondents, 28% had delayed care entry. Diagnostic testing-related characteristics associated with delayed care entry included anonymous and first-time HIV testing. Providers of HIV testing should be aware that those who test positive anonymously and those whose first HIV test is positive may have increased risk for delayed HIV care entry. Developing programs that reinforce timely linkage to HIV care, targeted at those at increased risk for delaying care entry, should be a public health priority.

PMID: 19694550 [PubMed - indexed for MEDLINE]

## Engagement in Care Literature Review

**AIDS. 2001 Jan 5;15(1):77-85.**

**Understanding delay to medical care for HIV infection: the long-term non-presenter.**

**Samet JH**, Freedberg KA, Savetsky JB, Sullivan LM, Stein MD.

Department of Medicine, Boston University School of Medicine and Public Health, MA, USA.  
jsamet@bu.edu

### **Abstract**

**OBJECTIVE:** To examine delayed presentation for HIV testing and primary care in the second decade of the AIDS epidemic.

**DESIGN:** Cohort study in two urban hospitals in the USA between February 1994 and April 1996.

**METHODS:** A total of 203 consecutive outpatients on initial HIV primary care presentation were interviewed about sociodemographic characteristics, alcohol and drug use, social support, sexual practices, HIV testing, awareness of possible HIV infection, and CD4 cell count. Main outcome measure: Duration of delay to medical presentation in years based on CD4 cell count, factors independently associated with low CD4 cell counts, frequency of awareness of HIV risk before testing.

**RESULTS:** The estimated mean duration between acquiring HIV infection and initial presentation to primary care was 8.1 years (95% CI 7.5, 8.6) based on our cohort's median initial CD4 cell count of 280/microl. Male sex, older age, and no jail time were associated with lower CD4 cell counts; 34% reported not being aware that they were at risk of HIV before testing. Heterosexual intercourse as a risk behavior for HIV was the most statistically significant factor for personal unawareness of HIV risk. Of those who acknowledged awareness, the mean time between awareness of HIV risk and testing was 2.5 years (median 1.0 year).

**CONCLUSION:** In the pre-highly active antiretroviral therapy era, HIV-infected patients frequently initiated primary medical care years after initial infection, at a time of advanced immunosuppression. Over one-third of HIV-infected patients were not cognisant of their HIV risk before testing, a condition significantly associated with heterosexual intercourse as the only HIV risk behavior.

PMID: 11192871 [PubMed - indexed for MEDLINE]

## **Engagement in Care Literature Review**

**AIDS Patient Care STDS. 2007;21 Suppl 1:S3-8.**

**Making the connection: the importance of engagement and retention in HIV medical care.**

**Tobias C, Cunningham WE, Cunningham CO, Pounds MB.**

Health and Disability Working Group, Boston University School of Public Health, Boston, Massachusetts 02210, USA. tcarol@bu.edu

### **Abstract**

Despite the availability and proven efficacy of medical treatment, many individuals living with HIV in the United States today are not engaged in regular HIV medical care or receiving antiretroviral medications. This journal supplement highlights results of a national 5-year multisite Outreach Initiative, funded by the Health Resources and Services Administration (HRSA) in 2001 to "engage people in HIV care, turn sporadic users of care into regular users, and promote retention in care." The introductory paper for the supplement provides background information on the characteristics of individuals who are not engaged in regular HIV care, the barriers they face, intervention options, and the public policy implications of this issue. Interventions to engage and retain underserved populations living with HIV in medical care are essential to ensure access to medical care and to reduce disparities in health outcomes.

PMID: 17563287 [PubMed - indexed for MEDLINE]

## Engagement in Care Literature Review

*Arch Intern Med.* 2008;168(11):1181-1187.

### **Risk Factors for Delayed Initiation of Medical Care After Diagnosis of Human Immunodeficiency Virus**

**Lucia V. Torian**, PhD; Ellen W. Wiewel, MHS; Kai-Lih Liu, PhD; Judith E. Sackoff, PhD; Thomas R. Frieden, MD, MPH

**Background** The full benefit of timely diagnosis of human immunodeficiency virus (HIV) infection is realized only if there is timely initiation of medical care. We used routine surveillance data to measure time to initiation of care in New York City residents diagnosed as having HIV by positive Western blot test in 2003. **Methods** The time between the first positive Western blot test and the first reported viral load and/or CD4 cell count or percentage was used to indicate the interval from initial diagnosis of HIV (non-AIDS) to first HIV-related medical care visit. Using Cox proportional hazards regression, we identified variables associated with delayed initiation of care and calculated their hazard ratios (HRs).

**Results** Of 1928 patients, 1228 (63.7%) initiated care within 3 months of diagnosis, 369 (19.1%) initiated care later than 3 months, and 331 (17.2%) never initiated care. Predictors of delayed care were as follows: diagnosis at a community testing site (HR, 1.9; 95% confidence interval [CI], 1.5-2.3), the city correctional system (HR, 1.6; 95% CI, 1.2-2.0), or Department of Health sexually transmitted diseases or tuberculosis clinics (HR, 1.3; 95% CI, 1.1-1.6) vs a site with colocated primary medical care; nonwhite race/ethnicity (HR, 1.8; 95% CI, 1.5-2.0); injection drug use (HR, 1.3; 95% CI, 1.1-1.5); and location of birth outside the United States (HR, 1.1; 95% CI, 1.0-1.2).

**Conclusions** A total of 1597 persons (82.8%) diagnosed as having HIV in 2003 ever initiated care, most within 3 months of diagnosis. Initiation of care was most timely when diagnosis occurred at a testing site that offered colocated medical care. Improving referrals by nonmedical sites is critical. However, because most diagnoses occur in medical sites, improving linkage in these sites will have the greatest effect on timely initiation of care.

**Author Affiliations:** The New York City Department of Health and Mental Hygiene, New York, New York.

## Engagement in Care Literature Review

**AIDS Patient Care STDS. 2009 Jan;23(1):41-9.**

**The therapeutic implications of timely linkage and early retention in HIV care.**

**Ulett KB, Willig JH, Lin HY, Routman JS, Abroms S, Allison J, Chatham A, Raper JL, Saag MS, Mugavero MJ.**

University of Alabama School of Medicine, Birmingham, Alabama, USA.

### **Abstract**

Following HIV diagnosis, linkage to outpatient treatment, antiretroviral initiation, and longitudinal retention in care represent the foundation for successful treatment. While prior studies have evaluated these processes in isolation, a systematic evaluation of successive steps in the same cohort of patients has not yet been performed. To ensure optimal long-term outcomes, a better understanding of the interplay of these processes is needed. Therefore, a retrospective cohort study of patients initiating outpatient care at the University of Alabama at Birmingham 1917 HIV=AIDS Clinic between January 2000 and December 2005 was undertaken.

Multivariable models determined factors associated with: late diagnosis=linkage to care (initial CD4 < 350 cells/mm<sup>3</sup>), timely antiretroviral initiation, and retention across the first two years of care. Delayed linkage was observed in two-thirds of the overall sample (n = 567) and was associated with older age (odds ratio [OR] = 1.31 per 10 years; 95% confidence interval [CI] = 1.06-1.62) and African American race (OR = 2.45; 95% CI = 1.60-3.74). Attending all clinic visits (hazard ratio [HR] = 6.45; 95% CI = 4.47-9.31) and lower initial CD4 counts led to earlier antiretroviral initiation. Worse retention in the first 2 years was associated with younger age (OR = 0.68 per 10 years; 95% CI = 0.56-0.83), higher baseline CD4 count, and substance abuse (OR = 1.78; 95% CI = 1.16-2.73). Interventions to improve timely HIV diagnosis and linkage to care should focus on older patients and African Americans while efforts to improve retention should address younger patients, those with higher baseline CD4 counts, and substance abuse. Missed clinic visits represent an important obstacle to the timely initiation of antiretroviral therapy. These data inform development of interventions to improve linkage and retention in HIV care, an emerging area of growing importance.

PMID: 19055408 [PubMed - indexed for MEDLINE]PMCID: PMC2733237