

Psychological and Behavioral Correlates of Entering Care for HIV Infection: The Antiretroviral Treatment Access Study (ARTAS)

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ABSTRACT

The present study sought to examine psychological and behavioral variables as predictors of attending an HIV medical care provider among persons recently diagnosed with HIV. The study, carried out between 2001 and 2003, was a two-arm randomized intervention trial with participants recruited from public HIV testing centers, sexually transmitted disease (STD) clinics, hospitals, and community-based organizations in Atlanta, Georgia; Baltimore, Maryland; Miami, Florida; and Los Angeles, California. Eighty-six percent of those enrolled (273) had complete baseline and 12-month follow-up data. Measures of number of months since HIV diagnosis, readiness to enter care (based on stages of change), barriers and facilitators to entering care, drug use, and intervention arm (case managed versus simple referral) were examined as predictors of attending an HIV care provider, defined as being in care at least once in each of two consecutive 6-month follow-up periods. In logistic regression, seeing a care provider was significantly more likely among participants diagnosed with HIV within 6 months of enrollment (odds ratio [OR] = 2.52, 95% confidence interval [CI], 1.25, 5.06), those in the preparation versus precontemplation stages at baseline (OR = 2.87, 95% CI, 1.21, 6.81), those who reported at baseline that someone (friend, family member, social worker, other) was helping them get into care (OR = 2.13, 95% CI, 1.02, 4.44), and those who received a case manager intervention (OR = 2.16, 95% CI, 1.23, 3.78). The findings indicate a need to reach HIV-positive persons soon after diagnosis and assist them in getting into medical care. Knowing a person's stages of readiness to enter care and their support networks can help case managers formulate optimal client plans.

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INTRODUCTION

OF THE ESTIMATED 1,040,000 persons in the United States living with HIV/AIDS, approximately 75% or 780,000 adults are aware of their diagnosis, and roughly one third of the 780,000 are not receiving medical care for their HIV infection.^{1,2} Barriers and delays in accessing care jeopardize the health of infected persons and may contribute to transmission of HIV through sexual or drug-use activities.³ Accordingly, the Centers for Disease Control and Prevention (CDC) have called for stronger efforts to increase the proportion of HIV-infected people in the United States who are linked to appropriate care, prevention services, and treatment soon after testing HIV positive.⁴

The Antiretroviral Treatment Access Study (ARTAS) was a randomized controlled trial examining whether case management (versus simple referral) would more durably link to medical care persons recently diagnosed with HIV. ARTAS case management was modeled on a strengths-based approach, rooted in theories of empowerment and self-efficacy,^{5,6} which encourages clients to use their own internal strengths and assets to obtain needed resources.⁷⁻⁹ The trial, which enrolled HIV-positive persons who were not already in care, found that a significantly larger proportion of case-managed individuals than individuals who received simple referrals (i.e., received a list of HIV clinics in their area and driving instructions) attended an HIV care provider at least twice in 12 months after enrollment.¹⁰

ARTAS demonstrated the value of a strengths-based case-management intervention in facilitating entry into medical care among HIV-positive persons, but less is known about the psychological and behavioral factors that may facilitate or deter early adoption of such care. To the extent that case managers, counselors, and social workers who work with HIV-positive persons are informed of these factors, they will be better prepared to help infected persons obtain medical and prevention services.

According to the transtheoretical model (TTM),¹¹ people progress through a series of cognitive stages in their readiness to enact or change health-related behaviors. This has been

demonstrated in the context of cigarette smoking, dietary habits, and medical decision making.^{12,13} In the precontemplation stage, people are not thinking about the behavior or problem, some may be unaware of the need to address it, and other people may recognize they need to change a behavior but are unmotivated or even resistant to change. In the contemplation stage, people have identified the issue and may be weighing the benefits and consequences of taking action but have not made a commitment to change their behavior. People have entered the preparation stage when they decide there is a need to take action and begin to formulate plans for addressing the issue. They may also begin to take small steps to enact their plan. In the action stage, people are implementing their plans and fully addressing the issue in a direct manner. In a recent review of health care utilization by HIV-infected patients, there has been very little research on these cognitive factors or behavioral variables.¹⁴

We applied this conceptualization in examining attendance at an HIV care provider among HIV-positive persons enrolled in ARTAS. Specifically, we were interested in knowing whether a person's stage of readiness to enter care at the time of enrollment predicted the likelihood of being in care 12 months later. Thus, at baseline, enrollees were classified as being in the precontemplation, contemplation, preparation, or action stages and then followed for 12 months. We anticipated that the percentage of persons attending an HIV care provider would vary significantly across these four subgroups of persons.

We also examined attendance in relation to length of time since testing HIV positive. None of the participants in ARTAS were in care at the time of enrollment, yet some had known about their HIV diagnosis for more than 6 months. This delay may be explained by readiness to enter care or other variables. It is also possible that this initial delay may itself promote further delay. Indeed, past behavior is one of the best predictors of future behavior.¹⁵ We examined whether participants in ARTAS who had known about their diagnosis for several months before enrolling in the study were less likely than participants diagnosed more re-

cently to be under care 12 months later. We also examined whether this effect was independent of readiness to enter care and other variables.

Finally, we examined situational and behavioral factors that may deter entering care. Those who report at baseline that they have experienced barriers to entering care (e.g., financial, employment-related, attitudinal), have not received assistance from others (friends, family members, social worker, case manager) in obtaining care, or are involved in use of injection drugs or crack cocaine, may be least likely to be under care in the future. Further, these variables may account partially for the effect of readiness to enter care and time since testing HIV positive. Using longitudinal data from ARTAS, we examined HIV-positive persons' readiness to enter HIV medical care, length of time since they were diagnosed with HIV, and situational/behavioral factors as predictors of being in HIV medical care in the future.

MATERIALS AND METHODS

ARTAS was conducted from March 2001 to August 2003 in Atlanta, Georgia; Baltimore, Maryland; Los Angeles, California; and Miami, Florida. ARTAS participants were recruited from health department HIV testing centers, sexually transmitted disease (STD) clinics, hospitals and community based organizations.¹⁰ The study received approval from the Institutional Review Boards at the CDC and the local study sites. Eligibility criteria for enrollment included having been diagnosed with HIV, not under the care of an HIV medical provider, not having previously visited an HIV care provider more than once, not currently taking HIV antiretroviral medications, 18 years of age or older, and able to provide informed consent.

Measures

Questionnaire data were collected from participants at enrollment (baseline), and again at approximately 6 and 12 months after the baseline assessment. The data were collected with an Audio-Computer Assisted Self Interview (ACASI); the ACASI system displayed each question on a computer monitor while simultaneously playing an audio recording of the

question through headphones. The questions were available in both English and Spanish and gave reproducible answers in a pilot test.¹⁶

The dependent variable was self-reported attendance at an HIV primary care provider. Being "in care" was defined as having attended an HIV care provider at least once in each of two consecutive 6-month follow-up periods. The following variables measured at baseline (before the ARTAS intervention) were examined as predictors of the dependent variable:

- Demographics (age, gender, race/ethnicity, education, study site).
- Length of time since HIV diagnosis (i.e., number of months between HIV diagnosis and ARTAS baseline assessment). This variable was dichotomized for analysis (<6 months, >6 months).
- Readiness to enter HIV care. The stages of change categories assessing readiness to enter medical care for HIV are listed in Table 1. For analysis, participants were classified as being in the action, preparation, contemplation, or precontemplation stages. Precontemplation served as the referent in the analysis.
- Behavioral and situational variables: (1) Self-report at baseline of barriers to making or keeping medical appointments. These barriers (yes/no) were: "I didn't want to deal with it"; "I couldn't take time off work"; "I had a transportation problem"; "I had no way to get there"; "It was too far to go"; "I didn't know where to go"; "Care costs too much"; "I didn't have insurance"; "I didn't know what kind of doctor to see"; "I don't like doctors or clinics". (2) Whether anyone (family member, friend, social worker, case manager, other professional) had been helping the participant get into HIV care before enrolling in ARTAS (yes, no). (3) Use of crack cocaine or injected drugs in the past 30 days (yes, no). (4) Use of any of the following other drugs (marijuana, oral barbiturates or amphetamines, ecstasy, GHB, Special K) in the past 30 days (yes, no).
- Randomization status in ARTAS. The intervention arm to which participants were randomly assigned (case management arm versus simple referral) was included as a variable in the analysis.

TABLE 1. ITEMS ON BASELINE SURVEY USED TO ASSESS READINESS TO ENTER MEDICAL CARE FOR HIV

Readiness level	<i>"Since testing HIV positive, which of the following best describes your current feelings?" Participants selected one response.</i>
Precontemplation	"I am not thinking about HIV medical care at this time."
Precontemplation	"HIV medical care is important to me but I am not ready to start care yet."
Contemplation	"I have thought about starting HIV medical care but I have not yet tried to find a doctor or clinic."
Contemplation	"I have found a doctor or clinic for HIV medical care but have not yet tried to make an appointment."
Preparation	"I have tried to obtain HIV care from a doctor or clinic but have not been successful yet."
Preparation	"I have an appointment for HIV care with a doctor or clinic but have not been there yet."
Action	"I have already gone to a doctor or clinic for HIV care once."

Verification by medical records

All participants completing 6- and 12-month interviews signed releases permitting medical records of clinic attendance to be abstracted. These data were used to assess the validity of self-report of health care utilization.

Statistical analysis

Preliminary analyses revealed no significant differences by intervention arm in any of the independent variables in the analysis. Multivariate logistic regression analyses examined associations with the dependent variable. Variables with a significance of $p > 0.40$ in an initial screening step were not included in the first model (gender, other drugs, and study site were dropped). The first model (model 1) included randomization status, demographic variables, readiness to enter care, and time since HIV diagnosis. The variables from the first model and the three behavioral/situational variables were included in a second model, the purpose of which was to examine the independent effects of the behavioral/situational variables and how their presence in the equation affected the findings for readiness to enter care and time since HIV diagnosis. The analyses were performed with SAS Proc GENMOD (SAS version 9.0, SAS Inc., Cary, NC).

RESULTS

A total of 316 participants were enrolled and completed the baseline assessment; 273 (86%) of these participants had complete outcome data on the 12-month follow up and are the fo-

cus of the analysis. One hundred seventy-seven of the 273 participants reported attendance at an HIV medical care provider. Of the 177, 93% at 6 months and 86% at 12 months could be confirmed with medical records evidence of a clinic visit with a physician, nurse practitioner or physician assistant.

Seventy-four percent of participants had not visited an HIV care provider before enrolling; 26% had one prior visit. Twenty-three percent had been diagnosed with HIV more than 6 months before enrollment. At baseline a nearly equal percentage of participants were in each of the four categories of readiness to enter medical care (Table 2). Twenty-six percent used crack cocaine or injected drugs in the past 30 days, 44% reported one or more barriers to HIV care, and 81% reported that no one had been helping them get into care before enrollment.

Table 2 shows the multivariable results. Model 1 in this table shows that being in care at 12 months was more likely among those who had known about their HIV diagnosis 6 months or less, among those in the preparation or action categories at baseline, among Hispanics (versus non-Hispanic blacks), among older participants ($p < 0.10$), and among those who received the case-manager intervention.

Model 2 added the three situational/behavior variables to the equation. Being in care at 12 months was significantly associated with reports that someone (friend, family, social worker, case manager) had been helping participants obtain care prior to enrolling in the study. Participants who reported using crack cocaine or injecting drugs 30 days before enrolling were less likely to be in care ($p < 0.10$). But reporting barriers to HIV care at baseline

TABLE 2. ADJUSTED ODDS OF BEING IN CARE^a FOR HIV 12 MONTHS AFTER ENROLLING IN THE ARTAS STUDY, UNITED STATES 2001–2003

<i>Variables measured at baseline</i>	<i>Univariate counts and percentages</i>	<i>n/N and (%) in HIV care 12 months after enrollment</i>	<i>Model 1: AOR^c and 95% CI (without behavioral variables in equation)</i>	<i>Model 2: AOR^c and 95% CI (with behavioral variables in equation)</i>
Age				
40 and older	101 (37)	60/101 (59)	2.43* (0.97, 6.06)	2.92** (1.14, 7.48)
26–39	141 (52)	78/141 (55)	1.56 (0.66, 3.70)	1.70 (0.70, 4.08)
18–25	31 (11)	16/31 (52)	Ref	Ref
Education				
Some college	66 (24)	42/66 (64)	1.95 (0.82, 4.62)	2.06 (0.85, 5.02)
Some high school	147 (54)	80/147 (54)	1.90 (0.90, 4.04)	2.08 (0.96, 4.53)
8 th grade	60 (22)	32/60 (53)	Ref	Ref
Race-ethnicity				
Hispanic	80 (29)	62/80 (78)	5.12*** (2.45, 10.69)	4.62*** (2.15, 9.91)
Other race	18 (7)	7/18 (39)	1.22 (0.39, 3.81)	1.15 (0.36, 3.65)
NH White	19 (7)	12/19 (63)	1.54 (0.53, 4.50)	1.65 (0.54, 5.05)
NH Black	156 (57)	73/156 (47)	Ref	Ref
Randomization				
Case managed	136 (50)	87/136 (64)	2.11** (1.22, 3.63)	2.16*** (1.23, 3.78)
Simple referral	137 (50)	67/137 (49)	Ref	Ref
Readiness to enter HIV care				
Action	70 (26)	47/70 (67)	2.44** (1.06, 5.61)	2.17* (0.91, 5.18)
Preparation	73 (27)	45/73 (62)	3.07*** (1.32, 7.13)	2.87** (1.21, 6.81)
Contemplation	75 (27)	39/75 (52)	1.94 (0.86, 4.40)	1.95 (0.84, 4.52)
Pre-contemplation	55 (20)	23/55 (42)	Ref	Ref
Time since HIV diagnosis				
6 months	210 (77)	132/210 (63)	2.77*** (1.41, 5.48)	2.52*** (1.25, 5.06)
>6 months	63 (23)	22/63 (35)	Ref	Ref
Barriers to HIV care				
Barriers	154 (56)	92/154 (60)		0.89 (0.49, 1.60)
1 or more barriers	119 (44)	62/119 (52)		Ref
Used injection drugs or crack cocaine in past 30 days				
No	202 (74)	128/202 (63)		1.85* (0.95, 3.59)
Yes	71 (26)	26/71 (37)		Ref
Someone had tried to help them get into care before enrollment ^b				
Yes	53 (19)	38/53 (72)		2.13** (1.02, 4.44)
No	220 (81)	116/220 (53)		Ref

^aDefined as being in care for HIV at least once in each of two consecutive 6-month follow-up periods.

^bHelpers could be a family member, friend, social worker, counselor, or other professional.

^cAdjusted odds ratio.

* $p < 0.10$; ** $p \leq 0.05$; *** $p < 0.01$.

did not significantly predict whether participants were in care at 12 months. Importantly, both time since HIV diagnosis and readiness to enter care (specifically, those in the preparation stage) remained significantly associated with being in care in model 2.

DISCUSSION

Delayed presentation for HIV care is an understudied problem for HIV prevention.^{17–20}

Earlier engagement with medical care may reduce the spread of HIV infection, both through the use of antiretroviral therapy and through the efforts of caregivers to provide prevention messages to patients irrespective of whether they are receiving antiretrovirals.^{21,22} Our analysis adds to the literature by identifying several variables that significantly predicted attendance at an HIV medical care provider.

Our findings must be interpreted within the methodological context of the ARTAS intervention trial. The study was conducted among

persons with HIV who were not under the care of an HIV provider at the time they enrolled in the trial. Participants were randomized to receive strengths-based case management or simple referral to services and followed for 12 months to identify those who attended an HIV care provider in consecutive 6-month periods. All of our statistical analyses adjusted for the intervention arm to which participants were randomly assigned. The precise amounts and types of support participants received were unique to this study. But even in the real world, apart from an intervention trial, some recently diagnosed HIV-infected persons will be receiving some degree of support or assistance in obtaining care. Thus, the associations we observed may have wide applicability.

Those who knew they were HIV-positive for more than 6 months before enrolling in ARTAS (i.e., an "initial" delay prior to the start of the study) were less likely than their counterparts to be in care later. This association was not explained by lack of readiness to enter care because the association was independent of the significant effects of readiness. The association was also independent of the situational/behavior and demographic variables we measured. Although other unmeasured variables such as attitudes about HIV infection and its treatment and motivational states may account for the effect of time since HIV diagnosis, our data indicate that initial delay in getting into care is an independent risk factor for not entering care in the future.

While researchers have provided few clues about the attitudes and motivations that most often lead to an initial delay, empirical studies such as our intervention that provided a standard linkage protocol did prevent many participants from further delays in entering care.¹⁰ A previous study found that counseling at the time of first positive HIV test was a significant deterrent to delayed presentation for care.²³ Advice that has not often enough been acted upon by health authorities is to examine the nature and quality of posttest counseling that is provided with HIV testing.²⁴ In addition, Samet et al.¹⁸ reported in 1998 that although posttest counseling and linkage is recommended, the execution and content of counseling is variable, and no formal mecha-

nism is required for linking individuals to care.

Of the situational and behavioral variables, experiencing barriers to entering care at baseline was not a significant deterrent to receiving care in the future. This is encouraging given that the barriers reflected attitudes (e.g., "didn't want to deal with it," "don't like doctors or clinics") as well as structural factors (e.g., cost too much, no insurance, no transportation). Assistance from friends, family, and other persons was a more important predictor of entering care. But those who used crack cocaine or injected drugs were less likely than their non-drug-using counterparts to be in care in the future. Although this effect was only marginally significant, it was independent of the measure of barriers. A recent review of types of substance abuse and HIV-related health care found more reports of reduced utilization and missed appointments for crack cocaine use than for other types of substance use.²⁵

We did not examine whether pregnancy was associated with receipt of care. This was due to the very small number (6) of women who were pregnant, or were pregnant in the past year, at the time of the baseline interview. Had we observed more reports of pregnancy in our sample, it would have been of real interest to determine whether pregnant women fared better with respect to care outcomes. In the past several years several states (e.g., Florida, Louisiana, Connecticut) have improved their coverage of HIV screening for pregnant women and created systems designed to link the screened women to HIV medical services.²⁶

For HIV case management professionals, our findings indicate that cognitive state of readiness, time since HIV diagnosis, substance use, and interpersonal helping relationships are all important to assess when working with people with HIV. Most of these variables are susceptible to intervention. The data also indicate a need to reach HIV positive persons soon after they learn they are infected and assist them in getting into care. Furthermore, assessing the person's readiness to enter care is an important first step in establishing a client plan. Clients who are low on measures of readiness should receive more attention, and strategies should be developed to help increase their readiness.

Clients who are assessed as low on readiness should be asked questions to elicit underlying attitudes and motivational states, as well as knowledge about HIV and its treatment that may influence their state of readiness. This information can be turned into an action plan. Similarly, some of the behaviors that deter getting into care can be intervened on if case managers are available. Substance users can be enrolled in drug treatment, and family or friends can be enlisted to assist clients in obtaining care. These things can be facilitated by simply providing brief strengths-based case management to persons recently diagnosed with HIV. These are tangible, positive steps that will move clients toward engaging in medical care and ought to be available at public health departments and community organizations involved with HIV prevention and care of infected persons.

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REFERENCES

1. Glynn M, Rhodes P. Estimated HIV prevalence in the United States at the end of 2003 [Abstract T1-B1101]. 2005 National HIV Prevention Conference. Atlanta, GA: June 12-15, 2005, abstract book, p. 85.
2. Fleming P, Byers RH, Sweeney PA, Daniels D, Karon JM, Janssen RS. HIV Prevalence in the United States, 2000 [Abstract 11]. Program and Abstracts of the 9th Conference on Retroviruses and Opportunistic Infections, 2002, p. 56.
3. Kalichman SC, Rompa D, Luke W, Austin J. HIV transmission risk behaviors among HIV-positive persons in serodiscordant relationships. *Int J STD AIDS* 2002;13:677-682.
4. Centers for Disease Control. HIV Prevention Strategic Plan through 2005. <www.cdc.gov/hiv/pubs/prev-strat-plan.pdf> (Last accessed September 25, 2006).
5. Zimmerman MA. Psychological empowerment: Issues and illustrations. *Am J Community Psychol* 1995;23:581-599.
6. Bandura A: *Social Foundations of Thought and Action*. Englewood Cliffs, NJ; Prentice-Hall, Inc., 1986.
7. Saleebey D. *The Strengths Perspective in Social Work Practice*, 2nd ed. New York: Longman Publishers, 1977.
8. Rapp RC, Siegal HA, Li L, Saha P. Predicting post-primary treatment services and drug use outcomes: A multivariate analysis. *Am J Drug Alcohol Abuse* 1998;24:603-615.
9. Rapp CA, Wintersteen R. The strengths model of case management: Results from twelve demonstrations. *Psychosoc Rehabil J* 1989;13:2332.
10. Gardner LI, Metsch L, Anderson-Mahoney P, et al. Efficacy of a brief case management intervention to link recently diagnosed HIV-infected persons to care. *AIDS* 2005;19:423-431.
11. Prochaska JO, Redding CA, Evers KE. The transtheoretical model and stages of change. In: Glanz K, Rimer BK, Lewis FM, eds. *Health Behavior and Health Education. Theory, Research and Practice*, 3rd ed. San Francisco: Jossey-Bass, Inc., 2002:99-120.
12. Arora NK, Ayanian JZ, Guadagnoli E. Examining the relationship of patients' attitudes and beliefs with their self-reported level of participation in medical decision-making. *Med Care* 2005;43:865-872.
13. DiClemente CC and Prochaska JO. Self change and therapy change of smoking behavior: a comparison of processes of change in cessation and maintenance. *Addiction Behavior* 1982; 7:133-142.
14. Uphold C, Mkanta W. Use of health care services among persons living with HIV infection: State of the

- science and future directions. *AIDS Patient Care STDs* 2005;19:473–485.
15. Fishbein M, Azjen I. *Belief, Attitude, Intention and Behavior*. Reading, MA: Addison-Wesley, Inc., 1975.
 16. Krawczyk C, Wang J, Loughlin A, et al. Test-retest reliability of a complex human immunodeficiency virus research questionnaire administered by an Audio Computer-assisted Self-Interviewing system. *Med Care* 2003;41:853–858.
 17. Samet JH, Freedberg KA, Savetsky JB, Sullivan LM, Stein MD. Understanding delay to medical care for HIV infection: The long-term non-presenter. *AIDS* 2001;15:77–85.
 18. Samet JH, Freedberg KA, Stein MD, et al. Trillion virion delay. *Arch Intern Med* 1998;158:734–740.
 19. Turner BJ, Cunningham WE, Andersen RM, et al. Delayed medical care after diagnosis in a US national probability sample of persons infected with human immunodeficiency virus. *Arch Intern Med* 2000;160:2614–2622.
 20. Valdiserri RO, Holtgrave DR, West GR. Promoting early diagnosis and entry into care. *AIDS* 1999;13:2317–2330.
 21. Centers for Disease Control. Incorporating HIV Prevention into the Medical Care of Persons Living with HIV. *MMWR Recomm Rep* 2003;52:1–23.
 22. Richardson JL, Milam J, McCutchan A, et al. Effect of brief safer-sex counseling by medical care providers to HIV-1 seropositive patients: A multi-clinic assessment. *AIDS* 2004;18:1–8.
 23. Girardi E, Aloisi MS, Arici C, et al. Delayed presentation and late testing for HIV: Demographic and behavioral risk factors in a multicenter study in Italy. *J Acquir Immune Defic Syndr* 2004;36:951–959.
 24. Ickovics J, Forsyth B, Ethier K, Haris P, Rodin J. Delayed entry into health care for women with HIV disease. *AIDS Patient Care STDs* 1996;10:21–24.
 25. Cunningham C, Sohler N, Berg K, Shapiro S, Heller D. Type of substance use and access to HIV-related health care. *AIDS Patient Care STDs* 2006;20:399–407.
 26. Clark J, Sansom S, Simpson B, et al. Promising strategies for preventing perinatal HIV transmission: Model programs from three states. *Matern Child Health J* 2006;10:367–373.

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