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J. A. Cook

J. K. Burke-Miller

D. D. Grey

J. Cocohoba

C. L. Liu

See next page for additional authors

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Do HIV-Positive Women Receive Depression Treatment that Meets Best Practice Guidelines?

Judith A. Cook, Ph.D.[*], **Jane K. Burke-Miller, Ph.D.**[**], **Dennis D. Grey, B.A.**[*], **Jennifer Cocohoba, Pharm.D.**[***], **Chenlong Liu, Ph.D.**[****], **Rebecca Schwartz, Ph.D.**[*****], **Elizabeth T. Golub, Ph.D.**[******], **Kathryn Anastos, Ph.D.**[*******], **Pamela J. Steigman, M.A.**[*], and **Mardge H. Cohen, M.D.**[**]

[*]University of Illinois at Chicago, Department of Psychiatry, Chicago, IL

[**]Hektoen Institute of Medicine, Chicago, IL

[***]University of California San Francisco, San Francisco, CA

[****]Georgetown University, Washington, DC

[*****]Hofstra University North Shore, Great Neck, NY

[******]Johns Hopkins University, Washington, DC

[*******]Montefiore Medical Center, Bronx, NY

Abstract

This study addressed whether psychopharmacologic and psychotherapeutic treatment of depressed HIV+ women met standards defined in the best practice literature, and tested hypothesized predictors of standard-concordant care. 1,352 HIV-positive women in the multi-center Women's Interagency HIV Study were queried about depressive symptoms and mental health service utilization using standards published by the American Psychiatric Association and the Agency for Healthcare Quality and Research to define adequate depression treatment. We identified those who: 1) reported clinically significant depressive symptoms (CSDS) using Centers for Epidemiological Studies – Depression Scale (CES-D) scores of ≥ 16; or 2) had lifetime diagnoses of major depressive disorder (MDD) assessed by World Mental Health Composite International Diagnostic Interviews plus concurrent elevated depressive symptoms in the past 12 months. Adequate treatment prevalence was 46.2% (n=84) for MDD and 37.9% (n=211) for CSDS. Multivariable logistic regression analysis found that adequate treatment was more likely among women who saw the same primary care provider consistently, who had poorer role functioning, who paid out-of-pocket for healthcare, and who were not African American or Hispanic/Latina. This suggests that adequate depression treatment may be increased by promoting healthcare provider continuity, outreaching individuals with lower levels of role impairment, and addressing the specific needs and concerns of African American and Hispanic/Latina women.

Corresponding author: Dr. Judith A. Cook, University of Illinois at Chicago, Department of Psychiatry, 1601 West Taylor Street, 4th Floor, M/C 912, Chicago, IL 60612 USA, Telephone +1 312 355 1696, Fax +1 312 355 4189; cook@ripco.com.

Keywords

Women and HIV; Depression Treatment; Psychopharmacology; Psychotherapy

Introduction

Recent research has confirmed the severity of depressive symptoms among HIV-positive women, and its association with more rapid disease progression, higher AIDS-related mortality, and lesser likelihood of using and adhering to highly active antiretroviral therapy (HAART). [1–3] These findings underscore the importance of the quality of depression treatment these women receive and whether it meets practice guidelines of organizations such as the Agency for Healthcare Research and Quality (AHRQ) [4] and the American Psychiatric Association (APA). [5] This is the first study to examine the quality of psychopharmacology and psychotherapy reported by a large cohort of depressed HIV+ women and to identify correlates of adequate depression treatment.

Prior research suggests that HIV-positive women may not receive depression treatment meeting best practice standards. One reason is the low incidence of adequate treatment among depressed individuals in the general population. Several studies have found low proportions of individuals receiving treatment for depression that meets adequate treatment guidelines. A nationally representative survey of U.S. households found that only 21.4% of respondents with major depressive disorder (MDD) reported receiving treatment meeting standards defined by the APA. [6] In another U.S. national sample, only 25.3% of those diagnosed with depression received treatment meeting AHRQ standards. [7] A third nationally representative survey found that only 16.9% of those with MDD received guideline-concordant care. [8]

Previous research has also found fairly low proportions receiving any kind of treatment for depression in HIV-positive populations. Among HIV-positive New Jersey Medicaid recipients with depression, 57.8% were treated with antidepressants. [9] A national probability survey of HIV-positive medical care recipients found that 45.3% of those diagnosed with a mood or anxiety disorder were treated with antidepressants while 39.2% received individual or group psychotherapy. [10] A study of HIV-positive adults seen in Denver healthcare settings found that only 46% of those with a diagnosis of depression received antidepressants. [11]

African American women and Latinas are disproportionately affected by the HIV epidemic [12] and thus are also impacted by the low depression treatment prevalence among racial/ethnic minority group patients in the general population. For example, a study using nationally representative data [13] found that among those with 12-month MDD or dysthymia, depression treatment meeting APA standards was received by only 12.1% of African Americans, 13.1% of Asian Americans, and 22.3% of Hispanic/Latinos, compared to 33.0% of Caucasians. Another national study of individuals in the general population with high levels of depressive symptoms [14] found that proportions receiving prior medication and/or counseling were significantly lower among Asian Americans (28.0%), Hispanics (39.9%), and African Americans (42.1%) compared to Caucasians (54.8%) and Native

Americans (57.4%). In this study, minority group members were less likely to endorse the belief that depression was biologically based or that antidepressants were effective, and more likely to endorse beliefs that antidepressants could be addictive and that prayer could heal depression.

The literature on predictors of receiving any depression treatment identifies important correlates of care, including: being older [7,10]; having more years of formal education [8,10]; reporting greater physical role impairment [6,13]; not being African American [10,13] or Hispanic/Latino [8]; having health insurance coverage [7–8,15]; experiencing healthcare provider continuity [16–17]; and not paying out-of-pocket for healthcare costs. [18–19]

Our theoretical framework for understanding depression treatment is Andersen's behavioral model of health services utilization [20] proposing that use is affected by variables representing: 1) characteristics predisposing individuals to seek care; 2) factors that impede or enable service use, and 3) the individual's need for care. Others have shown that this model works well for explaining use of antiretroviral therapy and other health services by HIV-positive individuals. [21–22] Following Scheppersa and colleagues' application of Andersen's framework to minority health service utilization, [23] we also focus on barriers to care at the patient, provider, and system levels. Thus, our model includes individual predisposing factors such as *demographics* (being older), *social structural influences such as formal schooling and racial disparities* (higher education, not being African American or Latina), and *health beliefs* (endorsement of Western medical beliefs as evidenced by taking HAART). *Enabling* factors include having health insurance coverage, and healthcare provider continuity, while *impeding* factors include paying out-of-pocket for healthcare. *Need* is defined as level of self-assessed functional impairment. Thus, barriers at the patient level are conceptualized as lack of formal education, being younger, being African American or Hispanic/Latina, and distrust of Western bio-medical treatment; at the provider level as lack of care provider continuity and having to pay out of pocket for medical expenses; and at the system level as lack of health insurance coverage.

Drawing on this model, our study tested two hypotheses. First, the proportion of depressed women in the cohort receiving adequate depression treatment was expected to be lower than that found in the general population. Second, the likelihood of depression treatment meeting best practice standards of care was expected to be associated with the previously-described model variables.

Method

Participants

The Women's Interagency HIV Study (WIHS) is a multi-site cohort study of HIV disease progression occurring at 6 U.S. sites: Brooklyn, Bronx, Chicago, Los Angeles, San Francisco/Bay Area, and Washington, DC. Eligibility criteria include being 13 years of age or older and ability to give informed consent. Women participate in bi-annual study visits that include physical and gynecological exams, serologic and salivary samples, and administration of an extensive battery of measures regarding health, psychosocial status,

service utilization, and demographic features. Further details of the WIHS study are available elsewhere. [24] Data for this analysis come from 1,352 HIV-positive women who responded to depression treatment questions from September 2005 through March 2006 *and* had depression symptom data available from a visit 12 months prior. They constituted 93% of the active HIV-positive cohort (n=1,449). Written informed consent was obtained from all participants using procedures approved by the University of Illinois at Chicago (UIC) Institutional Review Board (IRB), and the IRBs at each study site.

Measures

Adequate Depression Treatment—To identify adequate depression treatment, we used definitions from prior epidemiologic cohort studies, [6,13,15]. These definitions followed practice guidelines of the APA and AHRQ that were based on treatment efficacy research [4–5]. Adequate treatment was defined as receiving either: 1) four or more outpatient visits with any type of doctor for pharmacotherapy that included use of any antidepressant or mood stabilizer for no less than 30 days; or 2) eight or more psychotherapy sessions lasting at least thirty minutes with a professional in the specialty mental health sector including psychiatrists, psychologists, social workers, counselors, or other mental health professionals. The standard of four pharmacotherapy visits came from evidence-based treatment guidelines stating that no fewer than four follow-up visits for medication monitoring were needed during the acute and continuation phases of depression treatment [4–5]. The requirement of eight psychotherapy visits was related to clinical trials studies of time-limited depression treatment interventions finding that at least eight sessions were needed to achieve efficacy [4–5]. Cases of low-dose antidepressants prescribed solely to treat neuropathy were excluded from the analysis.

Center for Epidemiologic Studies Depression Scale (CES-D)—The CES-D [25] was used to measure clinically significant symptoms of depression at 6-month intervals. Developed for use with community populations, components include depressed mood, feelings of worthlessness, sense of hopelessness, sleep disturbance, loss of appetite, and concentration difficulties. Subjects rate 20 items on a 4-point scale from 0 to 3 on the basis of the past week where 0=rarely or none of the time and 3=most or all of the time. Commonly used in studies of HIV+ populations including women, [2–3,26] validity and reliability of the CES-D is well-established, [27] including with racial/ethnic minority populations. [28] Sensitivity of 80%–88% and specificity of 71%–73% for MDD have been reported. [29–30]. We used the standard clinical cutoff of ≥16 [25] to indicate cases of clinically significant depressive symptoms (CSDS) at 12–18 months prior to interview.

World Mental Health Composite International Diagnostic Interview (WMH-CIDI)—The WMH-CIDI [31] was used along with CES-D scores to retrospectively assess MDD. Administered by trained non-clinician researchers via laptop, it assesses *DSM-IV* [32] mental disorders in the past 30 days, 12-months, and lifetime, and is designed for large-scale psychiatric epidemiology research. [33] Concordance of WMH-CIDI diagnoses with reappraisals conducted by clinicians using *DSM-IV* criteria found that the area under the ROC curve (a measure of classification accuracy that is not influenced by disorder prevalence) was 0.75 for the dichotomous classification of having a lifetime *DSM-IV* major

depressive disorder. [34] The WMH-CIDI is being administered to the WIHS cohort in an ongoing study of psychiatric epidemiology and is available for 58% (n=780) of those interviewed earlier about depression treatment. For our analysis, MDD was defined as a WMH-CIDI lifetime diagnosis of MDD plus presence of elevated symptoms (CES-D ≥ 16) during the 12 months prior to interview.

Model Variables

Our model included age in years at time of interview, education defined as high school graduate (vs. not), any health insurance coverage (vs. none) at 1-year pre-interview, seeing the same healthcare provider 50% of the time or more during the year prior to interview (vs. not), any out-of-pocket payments for healthcare visits or medications during the year prior (vs. not), and being African American (vs. other), or Latina (vs. other). HAART was defined as combination antiretroviral therapy meeting 1998 US Department of Health and Human Services guidelines. [35] Participants were considered to be receiving HAART if they reported its use at any point during the year prior to interview. Poor role functioning was assessed using the SF-12 Medical Outcomes Study Short Form Health Survey [36] Physical Role Functioning subscale which demonstrates good reliability in persons with HIV infection. [37] It consists of two items asking about role limitations and impairment due to physical health, with Cronbach's alpha = .95 in our population. Scores were transformed as recommended by the scale developers (http://gim.med.ucla.edu/FacultyPages/Hays/util.htm) using standard algorithms which result in a possible score from 0 to 100 where 0 represented no role impairment and 100 represented complete impairment. CES-D scores for the prior 6-month period were substituted for any missed assessments, which occurred in approximately 4% of all cases.

Analysis

Frequencies and descriptive statistics were computed to determine point prevalence of any depression treatment, best practice treatment, and use of HAART. Tests for multi-colinearity among model variables revealed only mild correlations ($r < .30$). Chi-square and analysis of variance tests compared background characteristics and model variables of non-depressed women versus those with MDD, and versus those with CSDS. Finally, multivariable logistic regression analysis [38] was used to determine associations between the likelihood of adequate treatment and model variables, using indicator variables to control for study site with Chicago serving as the contrast site.

Results

Characteristics of the study sample are shown in Table 1. In the total sample of 1,352, two-fifths (41.2%, n=557) met the CES-D cutoff for clinically significant depressive symptoms (CSDS) at 12 months prior to interview. Among the 780 respondents who completed the WMH-CIDI, 23.3% (n=182) had lifetime diagnoses of major depressive disorder (MDD) with concurrent CSDS. Compared to the 795 respondents who did not screen positive for depression, the MDD group had significantly greater functional impairment and were more likely to have paid out of pocket for healthcare. Compared to the non-depressed group, the CSDS group had a significantly higher proportion of Latinas, lower proportion of

Caucasians, lower proportion of high school graduates, and higher degree of self-rated role impairment. There were no significant differences between the non-depressed, MDD, and CSDS groups in the proportion of African Americans, having a consistent healthcare provider, age, having health insurance, or taking HAART regimens (Table 1).

Likelihood of Any Depression Treatment

Use of any antidepressants for depression was significantly higher ($p<.001$) in the MDD (45.1%) and CSDS (35.2%) groups than the non-depressed group (15.8%) (Table 1). Most commonly reported antidepressant medications included selective serotonin reuptake inhibitors (citalopram, escitalopram, fluoxetine, sertraline); serotonin–norepinephrine reuptake inhibitors (venlafaxine); norepinephrine-dopamine inhibitors (bupropion); tricyclics (elavil); and mood stabilizers (depakote). The mean number of antidepressants per woman reporting them was 1.8 (s.d.=1.0; median=2; mode=1). The proportion reporting any psychotherapy for depression was significantly higher ($p<.001$) in the MDD (56.0%) and CSDS (46.0%) groups than the non-depressed group (22.5%). Finally, the likelihood of receiving any treatment for depression regardless of type or standard-concordance was significantly higher ($p<.001$) for the MDD (57.7%), and CSDS (47.8%) groups than the non-depressed group (23.7%).

Likelihood of Treatment Meeting Practice Standards

The first depression treatment standard (i.e., four or more outpatient visits with any type of doctor for pharmacotherapy including use of antidepressants or mood stabilizers for no less than 30 days) was met among 35.2% of those with MDD and 26.9% of those with CSDS (Table 1). The second treatment standard (i.e., eight or more therapy sessions of at least thirty minutes with a mental health professional for psychotherapy) was met among 38.5% of the MDD and 26.2% of the CSDS group. Thus, adequate treatment for depression was reported by over two-fifths of the MDD group (46.2%) which compares quite favorably with standard-concordant treatment prevalence for people with MDD in the general population at 16.9%, [6] 21.4%, [7] and 25.3%. [8]

Predictors of Depression Treatment

Multivariable logistic regression analysis (Table 2) found that, among those with MDD, those who saw the same healthcare provider consistently were over three times as likely to be receiving adequate depression treatment compared to those without provider consistency. Those with lower self-rated role functioning were significantly more likely to receive adequate depression treatment than their higher functioning counterparts. African American women were one-fifth as likely to be receiving adequate treatment. The same pattern was evident among women with CSDS while, in addition, Latinas were half as likely to be receiving adequate treatment, those who paid out-of-pocket for healthcare were one-and-one-half times as likely, and older women were more likely than younger ones to receive standard-concordant depression care.

Using the same model to predict *any* depression treatment, results largely mirrored those for adequate treatment, with significant predictors for the MDD group including health provider consistency and self-rated role impairment. Among the CSDS group, these results also

included significant associations indicating lower likelihood of any depression treatment for African Americans and Latinas.

Discussion

In this large national cohort of HIV+ women, around half of depressed women received some type of treatment consisting of medications and/or therapy for depression. When the standard was raised to include only guideline-concordant depression care, treatment prevalence ranged from 37.9% to 46.2%, exceeding that reported for the general population at 16.9% to 25.3%, [6–8] and contrary to our first hypothesis. In one or both models, multivariable analysis found that adequate treatment was significantly more likely for women who saw the same healthcare provider on a regular basis, those with greater functional impairment, those who paid money out-of-pocket for healthcare, and those who were not African American or Latina. These results confirm some but not all of our predictions based on the behavioral model of healthcare utilization. [20]

The WIHS cohort compares favorably with the general population on adequate depression treatment prevalence. Why might this be? One possibility is that healthcare provider consistency may offer opportunities for physicians to detect depressive symptoms and prescribe anti-depressants according to care standards, and/or support patients' use of guideline-concordant psychotherapy. This was the case in one study which found that healthcare provider continuity increased the likelihood that patients with MDD remained on antidepressants for clinically optimal time intervals. [17] Over three-quarters of the WIHS cohort saw the same providers fifty percent of the time or more, and we found that women reporting provider consistency were over 3 times as likely to be receiving guideline-concordant care as those lacking continuity.

Another potential reason why treatment prevalence in the WIHS exceeded the national average is related to the link between functional impairment and likelihood of depression care [39]. Compared to non-depressed respondents, both MDD and CSDS groups rated their functional impairment as significantly worse. The association of depression treatment likelihood with health and disability status is well-established. [6] Studies of individuals with MDD show that treatment-seeking is associated with higher self-perceived functional impairment [39] and dissatisfaction with disruption in role functioning. [40] This suggests that treatment motivation may stem, in part, from the negative impact of depression on performance of adult roles and resulting poor quality of life. Thus, women dealing with the effects of *both* depression and HIV on their role functioning may have been more predisposed to see depression treatment than members of the general U.S. population.

Another possible reason for the higher than average adequate treatment prevalence is the fact that WIHS study participants were offered a variety of on-site social and behavioral health services at most study locations, [41] including social work, case management, psychotherapy, and psychopharmacology, while referral to mental health treatment was available at all sites. Recognizing that depression is an issue faced by a number of cohort members, efforts have been launched at WIHS sites to sensitively educate women about depression and, with their permission, screen and refer them into treatment. [42]

A number of study limitations bear mention. One caveat relates to our use of a cohort rather than a nationally-representative sample, which limits the generalizability of our results. Another limitation is use of self-report for key study variables such as the different types of depression therapies, since these may be subject to recall bias or distortion. Another caveat concerns our retrospective use of lifetime WMH-CIDI diagnostic criteria with concordant high levels of depressive symptoms to identify 12-month MDD, along with the fact that WMH-CIDI assessments were not available for the entire cohort. Related to this is the fact that we were unable to examine the co-occurrence of depression with other psychiatric and/or substance use disorders and its impact on the likelihood of receiving adequate treatment. Similarly, we were unable to control for the length of depressive episodes and its potential influence on receiving standard-concordant care. An additional limitation was our inability to adjust the analysis for clustering by primary care provider, which may have introduced unidentified confounds. A final concern is our finding that a small proportion of women characterized as “not depressed” did indeed report receiving guideline-concordant depression treatment. While some of these women may have been undergoing treatment for mild and/or transitory depressive symptoms, others may have been mis-classified and, instead, actually met *DSM-IV* diagnostic criteria for MDD but had controlled symptoms due to successful treatment.

While a sizable proportion of the WIHS cohort received guideline-concordant care, the fact remains that this was true for less than half of those with depression. Moreover, as with other chronically ill populations, [43] the proportion receiving adequate depression treatment was lower than the proportion receiving best practice HIV therapy (i.e., HAART) which ranged from 64% to 69% in our cohort. This disparity raises questions about why the two conditions have such divergent rates of treatment. One answer may be the myriad challenges of successful referral to psychiatric care. A six-country study of adults screening positive for depression found that, even when their primary care physicians were informed of the results, proportions entering treatment remained low (≤ 40%) in each country. [17] Lack of professional consensus on how to approach and treat psychiatric disorders in HIV+ populations has also hindered coordination of depression and HIV care. [44] Service integration in primary care settings is hindered by State Medicaid limitations on payments for same-day billing of physical and mental health services. [45] Other barriers include reluctance of minority populations to seek treatment for depression [14] and lack of access to treatment because of direct costs (i.e., co-pays) and indirect costs (i.e., transportation, time off from work). [17] Thus, there are “many points of potential failure” [18] between physician recognition of patients’ depressive symptoms and patients’ receipt of guideline-concordant care.

Many of these obstacles could be addressed through application of evidence-based models of collaborative care designed to integrate physical and mental health treatment. [46] These approaches involve organizational and educational strategies based on a disease management approach with structured interdisciplinary collaboration in the primary care setting of case managers or nurse practitioners, primary care providers, and mental health specialists. [47] A recent meta-analysis of controlled trials of collaborative care for depression in primary care settings found long-term benefit in depression outcomes

beginning at 6-months and lasting for up to 5 years. [48] Application of these models in behavioral health is a relatively new phenomenon, but it offers great promise in the HIV/AIDS field. [49] This is especially the case in the WIHS cohort given the strong association we observed between continuity of care and standard-concordant depression treatment.

Our results also support the need to involve healthcare providers in culturally sensitive, voluntary screening of HIV-positive women for depression and other mental disorders. Once identified, assertive linkage is needed, especially by depressed women with low self-rated role impairment, to ensure that culturally competent and effective treatment is initiated. [50] Because women from diverse cultures experience and express depressive symptoms and related role impairment differently, [13,51–52] screening and treatment must be sensitive to African American, Hispanic/Latina and other cultures [17,53–54] and to the intersection of depression, drug use, and trauma in the lives of many HIV-positive women. [55] Research shows that low-income minority women, including those with substance use disorders, benefit from depression treatment when it is paired with intensive outreach including transportation, child care, and investment of considerable time to establish patient-provider trust. [56–57] Also needed is involvement of women's families and significant others in encouraging and supporting treatment, especially given negative attitudes toward antidepressants, [14] financial costs, [17] and stigma associated with receiving psychiatric care in minority communities. [58] Despite many challenges, successful models exist for screening and treatment retention of low-income minority women when attention is paid to financial and other incentives, ongoing updates of contact and other information, and appropriately selected, trained and supervised treatment and support staff. [59]

The importance of delivering adequate depression treatment to HIV+ women is not confined to psychiatric outcomes. Prior research on women with chronic depressive symptoms in the WIHS cohort showed that receiving mental health treatment was associated with reduced AIDS-related mortality even controlling for HAART use and adherence [60]. Other studies indicate that collaborative depression treatment is associated with lower healthcare costs among HIV-positive patients with medical co-morbidities. [61–62] In one study, antidepressant treatment for HIV-positive individuals was associated with a 24% reduction in monthly total healthcare costs even controlling for socioeconomic and clinical characteristics. [9] Depression treatment's association with lower medical costs, greater HAART use and adherence, curtailed HIV disease progression, and lower AIDS-related mortality provide compelling support for collaborative HIV and depression care as an integral part of our nation's public health strategy.

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Table 1

Characteristics of HIV+ women by depression status, N=1,352 (April 2004 – March 2005).

Variables	Met criteria for major depressive disorder (CIDI lifetime diagnosis + 12-mo CES-D≥16)	Met criteria for clinically significant depressive symptoms (12-mo CES-D≥16)	Did not meet criteria for depression (CES-D<16 +/or no CIDI lifetime diagnosis)
	n=182	n=557	n=795
African American, no. (%)	111 (61.0)	298 (53.5)	397 (54.4)
Hispanic/Latina, no. (%)	41(22.5)	180 (32.3)*	198 (27.1)
Caucasian, no. (%)	21 (11.5)	61 (11.0)**	118 (16.2)
High school graduate, no. (%)	113 (62.4)	293 (52.7)***	469 (64.2)
Consistent healthcare provider, no. (%)	151 (83.0)	436 (78.3)	586 (80.3)
Functional impairment, SF-12 MOS role function scale, 0–100, mean (SD)	33.3 (28.9)***	30.1 (31.0) ***	13.5 (23.9)
Age, y, mean (SD)	42.2 (7.8)	43.4 (8.6)	43.4 (8.7)
Any health insurance, no. (%)	160 (87.9)	477 (85.6)	641 (87.8)
Out-of-pocket medical care payments, no. (%)	57 (31.3)*	132 (23.7)	183 (25.1)
On HAART past 6 or 12 months, no. (%)	117 (64.3)	360 (64.6)	501 (68.6)
Antidepressants for depression, no. (%)	82 (45.1)***	196 (35.2)***	115 (15.8)
Psychotherapy for depression, no (%)	102 (56.0)***	256 (46.0)***	164 (22.5)
Met criteria 1 for adequate tx., no. (%)	64 (35.2)***	150 (26.9)***	83 (11.4)
Met criteria 2 for adequate tx., no. (%)	70 (38.5)***	146 (26.2)***	89 (12.2)
Met criteria 1 or 2 for adequate tx., no. (%)	84 (46.2)***	211 (37.9)***	127 (17.4)
Any depression treatment inclu antidepressants and/or psychotherapy, no. (%)	105 (57.7)***	266 (47.8)***	173 (23.7)

Abbreviations: CIDI - Composite International Diagnostic Interview; SF-12-MOS - Medical Outcomes Study Short Form Health Survey; Criteria 1- four or more outpatient visits with any type of doctor for pharmacotherapy with an antidepressant or mood stabilizer; Criteria 2- eight or more therapy sessions of at least thirty minutes with a mental health professional for psychotherapy; HAART - highly active antiretroviral therapy

* p<.05,

** p<.01,

*** p<.001 chi-square/ANOVA for MDD vs. not depressed; CSD vs. not depressed (Source: Women's Interagency HIV Study 2004–2005)

Table 2

Multivariable logistic regression analysis of likelihood of adequate depression treatment and any depression treatment among HIV+ women, controlling for study site (N=1,352)

Model Variable	Received Treatment Meeting Guidelines		Received Any Depression Treatment	
	Major depressive disorder n=182	Clinically significant depressive symptoms n=557	Major depressive disorder n=182	Clinically significant depressive symptoms n=557
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
African American	0.21 (0.07–0.66)	0.36 (0.20–0.66)	0.54 (0.19–1.59)	0.33 (0.18–0.62)
Hispanic/Latina	0.44 (0.12–1.56)	0.48 (0.24–0.93)	0.90 (0.26–3.13)	0.35 (0.18–0.70)
High school graduate	0.97 (0.44–2.13)	0.95 (0.63–1.44)	0.64 (0.30–1.38)	0.98 (0.66–1.46)
Any health insurance	0.52 (0.14–1.89)	0.73 (0.38–1.40)	0.99 (0.29–3.40)	0.92 (0.50–1.71)
Out-of-pocket payments for medical care	0.66 (0.28–1.54)	1.71 (1.05–2.77)	1.08 (0.48–2.43)	1.20 (0.75–1.91)
Consistent primary care provider	3.79 (1.18–12.14)	3.08 (1.69–5.62)	4.21 (1.52–11.60)	2.50 (1.48–4.23)
Functional impairment, SF-12 MOS role function scale	1.03 (1.01–1.04)	1.01 (1.00–1.02)	1.02 (1.00–1.03)	1.01 (1.00–1.02)
Age in years	1.02 (0.97–1.07)	1.02 (1.00–1.05)	1.04 (0.99–1.09)	1.02 (0.99–1.04)
HAART in past year	1.00 (0.42–2.37)	1.02 (0.64–1.63)	1.43 (0.61–3.34)	0.93 (0.60–1.45)

OR - odds ratio; CI - confidence interval; SF-12 MOS - Medical Outcomes Study Short-Form Health Survey; HAART - highly active antiretroviral therapy (Source: Women's Interagency HIV Study 2004–2005)