

# Adherence to Mental Health Treatment in a Primary Care Clinic

Jodi Gonzalez, PhD, John W. Williams Jr., MD, MHSc, Polly Hitchcock Noël, PhD, and Shuko Lee, MS

**Background:** Patient nonadherence is common for the standard mental health treatments in primary care: antidepressants and referrals to specialty mental health treatment. This is one of few studies to prospectively identify predictors of nonadherence.

**Methods:** We observed 95 veterans attending an internal medicine clinic prescribed antidepressant medication or referred to mental health treatment. We collected information on sociodemographic factors, health beliefs, preferences about treatment, past experiences, and treatment knowledge.

**Results:** At 1 month, medication adherence was greater when patients experienced previous pharmacy trouble and traveled for less than 30 minutes to reach the clinic. Appointment attendance improved when patients were ready for treatment, perceived benefits, and saw their physician as collaborative. At 6 months, medication adherence was greater when patients reported a preference for medicine treatment, traveled for less than 30 minutes, and perceived greater benefits. Fewer negative effects from previous mental health treatment improved adherence to appointments. In multivariate analyses examining adherence to all treatments, greater readiness for treatment predicted 1-month adherence, whereas being unmarried and seeing the physician as more collaborative improved 6-month adherence.

**Conclusions:** Adherence to antidepressant medications and to mental health referrals should be examined separately. A brief initial assessment for nonadherence risk factors may identify persons for targeted adherence promoting interventions. (J Am Board Fam Pract 2005;18:87–96.)

Primary care physicians provide the majority of mental health treatment in the United States. The standard of treatment is psychiatric medication or referrals for specialty mental health treatment. Inadequate treatment follow-through is common. Between 55% and 60% of primary care patients do not take psychiatric medication as prescribed<sup>1–3</sup> and fail to follow-up with the referred mental health provider.<sup>4–8</sup> Nonadherence to mental health treatment is related to poor outcomes in any treatment setting.<sup>9–11</sup>

A common reason for medication nonadherence in primary care settings is medication side effects.<sup>3,12–14</sup> Negative attitudes toward medication,<sup>15</sup> marked improvement in symptoms, insufficient response to the medication,<sup>13</sup> and poor quality of doctor-patient communication<sup>1</sup> also contribute to nonadherence.

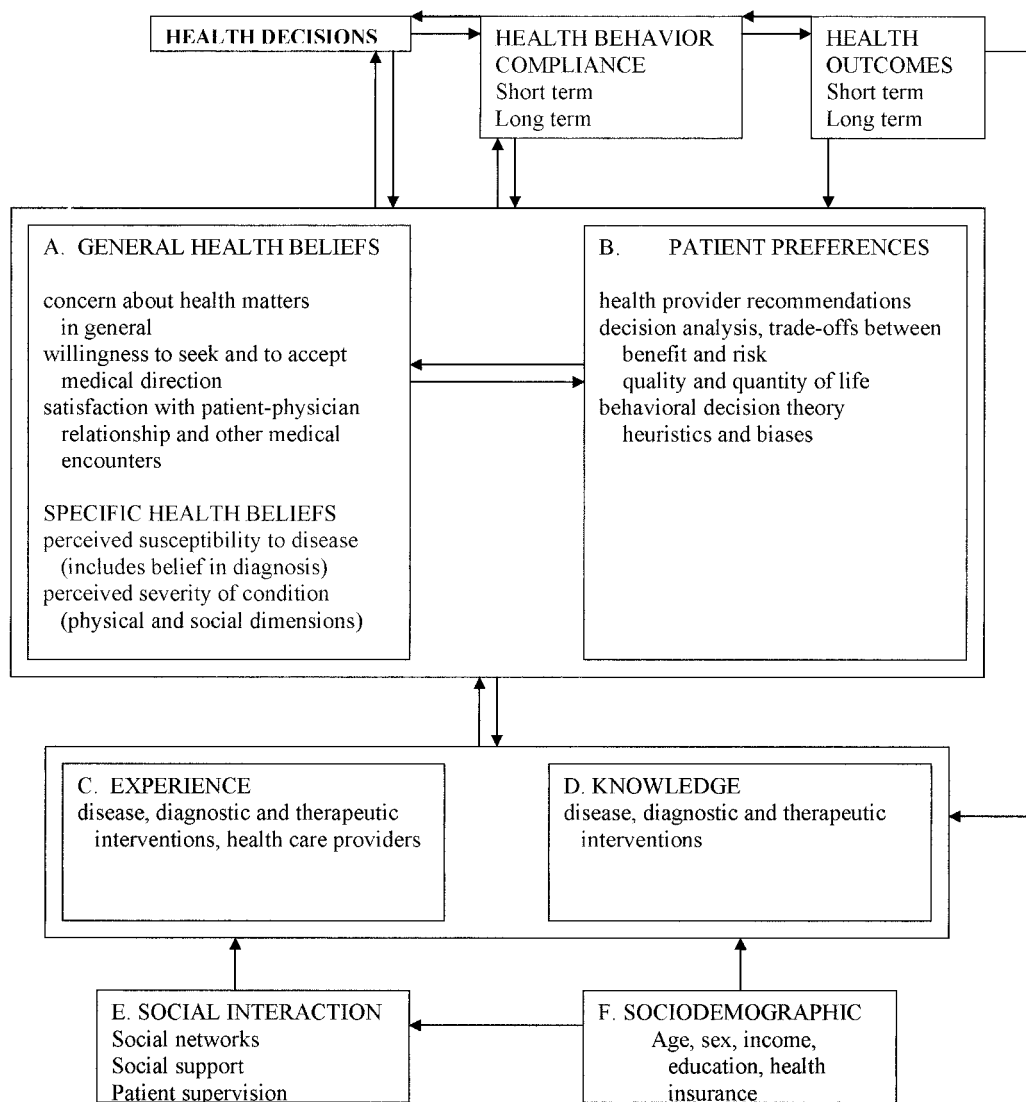
Risk factors differ for nonadherence to mental health referrals. Patients are more nonadherent if they are unmarried, young adult, male, without a contact telephone number, occupy a lower socioeconomic strata, and have a history of nonadherence.<sup>8,16,17</sup> Adherence is less likely when patients perceive they do not need psychiatric care or their problems are minor<sup>4,18</sup> and if they view the problem as more physical than psychological.<sup>17</sup> Other factors that reduce adherence are an uncertain diagnosis, ambiguous symptoms,<sup>18</sup> and disagreement with the referral or reluctance to see a mental health professional.<sup>4,19–22</sup> Long delays between the referral and referral appointment also decrease the likelihood of adherence.<sup>4,6,8,19</sup>

A revised version of the Health Belief Model, the Health Decision Model (HDM),<sup>23</sup> provides an

Submitted, revised, 22 November 2004.

VERDICT Center of Excellence (PHN, SL), South Texas Veterans Health Care System (JG), University of Texas Health Science Center at San Antonio; and Center for Health Services Research in Primary Care, Durham Veterans Affairs Medical Center and Duke University School of Medicine, Durham, NC (JWW). Address correspondence to Jodi Gonzalez, Dept. of Psychiatry, University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, San Antonio, TX 78229-3900 (e-mail: gonzalezjm1@uthscsa.edu).

The research reported here was supported in part by the Department of Veterans Affairs, Veterans Health Administration, Health Services Research and Development Service (HBU 01-154). The views expressed in this article are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs.



**Figure 1. The health decision model, combining the health belief model and patient preferences, including decision analysis and behavioral decision therapy. [Reprinted from Eraker SA, Kirscht JP, Becker MH. Understanding and improving patient compliance. *Ann Intern Med* 1984;100:258–68. Copyright © 1984 by the American College of Physicians. Used with permission.]**

understanding of these various predictors of adherence. The HDM incorporates effects of sociodemographic factors, social interactions, health beliefs, preferences about treatment, and past experiences and knowledge, and emphasizes short- and long-term adherence as different outcomes (see Figure 1). In this study, our aim was to identify predictors of nonadherence to mental health treatment in a primary care setting, using the HDM as a framework for hypotheses. Few published studies have prospectively examined factors associated with adherence to antidepressant medication prescrip-

tions and mental health referrals. Although women outnumber men in most studies of depression, men seem to be less adherent than women to mental health treatment. The Veterans Health Administration (VHA) provides an opportunity to study predictors of adherence in a mostly male primary care patient population. We sought to determine predictors of short-term and intermediate adherence to depression treatments. We also were interested in determining whether predictors of adherence were similar for medication and mental health referrals.

## Methods

### *Design and Setting*

We used a prospective cohort study to track treatment adherence for patients whose primary care providers initiated antidepressant medication or a mental health referral. Participants were outpatients recruited from an internal medicine clinic at a Department of Veterans Affairs Medical Center. Practitioners were attending physicians, resident physicians, and nurse practitioners. The Institutional Review Board approved the study.

### *Inclusion Criteria*

We used electronic medical records from February 2001 to February 2002 to identify all patients who were newly prescribed an antidepressant medication or who were newly referred to a mental health specialty clinic by their primary care provider. Patients were eligible for participation in the study if they were (1) prescribed an antidepressant medication, with or without a concomitant referral to mental health (medication group), or (2) only referred to a mental health specialty clinic (referral group).

To be included in the medication group, patients could not have filled a psychiatric medicine prescription (including antianxiety, antipsychotic, and mood-stabilizing medicines) for psychiatric indications (as indicated by chart review) in the previous 6 months. We determined justification for treatment by reading the written chart note on the day of medication or referral. Psychiatric indications included depression, anxiety, a specified DSM IV disorder, relational issues, or any combination. Nonpsychiatric indications were sleep disturbance and chronic pain without psychiatric symptoms.

To be included in the referral group, patients could not have had any mental health treatment visits or referrals to mental health specialists in the preceding 6 months. Mental health clinics were psychiatry, psychology, post-traumatic stress disorder, or social work. We reviewed reasons for referral; nonpsychiatric and nonpsychological referrals were excluded (eg, neuropsychological evaluations, social work services). We also excluded patients with primarily psychotic symptoms or with no clear indication for the prescription or referral.

### *Data Collection*

Using a modified Dillman method,<sup>24</sup> we surveyed patients by mail within 5 to 15 days of the primary

care visit. We made a reminder phone call to those who did not respond within 2 weeks. Missing questionnaire data were solicited by telephone when possible. Participants who returned the survey received a \$5 check for participating. One- and 6-month adherence outcomes were extracted from the electronic medical record.

### *Measures*

We used 2 questionnaire versions: one for the medication group and one for the referral group. Ninety percent of the questions were used on both versions. Exceptions were references to the treatment (medication versus referral), medication-related questions in the medication group (described below), and a question in the referral group regarding the patient's understanding of the reason for referral. Questionnaires assessed sociodemographic characteristics, health status, patient-doctor interactions, clinic characteristics, attitudes about mental health treatment, previous experience with mental health treatment, treatment preferences (treatment type and provider), and treatment concerns (eg, side effects, benefits, risks).

### *Demographic and Clinic Information*

Information obtained included ethnicity/race, education level, marital status, and information relating to patients' experience with services at the primary care clinic (eg, length of time in treatment with the doctor, travel distance from the patient's home to the clinic, satisfaction with care, any difficulties experienced at the clinic).

### *Health Status*

Patients were asked 2 questions about their health, taken from the Short Form 36 (SF-36)<sup>25</sup>: general health, and how much emotional or physical problems interfered with activities. Questions were rated on a Likert scale of 1 to 5, with a higher score indicating worse health or functioning. We also administered the Mental Health Inventory,<sup>26</sup> adapted from the SF-36 to assess general mental health. The scale was summed, with higher scores indicating worse overall mental health.

### *Patient-Doctor Interaction*

We assessed 2 aspects of the patient-doctor interaction: the participatory decision-making style,<sup>27</sup> and whether the clinician presented specific medication-related information. The participatory deci-

sion making style is a 3-item instrument that characterizes the propensity of physicians to involve patients in treatment decisions, and is measured as the aggregate of the 3 items. Each item was rated on a 5-point scale from *never* to *very often*. The raw score was standardized to a 0- to 100-point scale; higher scores indicate a more participatory style. Using questions from a previous study, we assessed the process of care during the medication visit.<sup>2</sup> These medication-related questions asked about information the physician provided when the antidepressant was prescribed, such as how to take the medication, length of time before the patient might see improvement, possible side effects, previous experiences with similar medications, and behavioral suggestions, such as planning pleasurable activities.

### Attitudes

To assess attitudes such as knowledge, beliefs, and expectations about mental health treatment, the investigators developed items based on attitudinal variables that previously had been found to correlate with adherence to treatment.<sup>3,4,12-14,17-22</sup> After 4 investigators agreed on content and format, 27 items were included in the questionnaire. Each item was rated on a 5-point scale from “strongly agree” to “strongly disagree.” Questions were examined in a principal component exploratory factor analysis with oblique rotation. We eliminated items with communality <0.2 or loadings <0.4 in the factor analysis. A 3-factor model provided a good fit to the data: benefits of treatment, risks of treatment, and readiness for treatment (Table 1). The subscales and overall attitude score were summed across items and standardized to a 0- to 100-point scale; higher numbers indicate more negative attitudes.

### Outcomes

#### Adherence

For this study, we defined short-term adherence as 1 month of taking medication or attending the initial mental health referral appointment. Short-term adherence is commonly operationalized as 1 month on the adequate dosage<sup>28,29</sup> or 1 month after obtaining the prescription.<sup>2,30,31</sup> Six-month adherence has been operationalized as intermediate<sup>31-33</sup> and long-term<sup>30,34-36</sup>; we chose intermediate because antidepressant therapy is typically indicated

**Table 1. Factor Items for Three Scales Measuring Attitudes toward Mental Health Treatment (N = 95)**

Factors (Chronbach's Coefficient $\alpha$ )	
Benefits of treatment (0.79)	The doctor expressed confidence about the <i>psychiatric medicine/referral*</i> to me. <i>Psychiatric medicine/mental health treatment</i> will fix my particular problems. I understand why <i>psychiatric medicine was prescribed to me/I was referred for mental health treatment</i> . My doctor told me that the <i>medicine/referral</i> was important to my treatment.
Risks of treatment (0.74)	I am concerned about possible side effects from psychiatric medicine. I am concerned about becoming addicted to psychiatric medicine. I would be uncomfortable or embarrassed if others knew I was taking <i>psychiatric medicine/in psychotherapy</i> . I have a good understanding of how <i>medicine/psychotherapy</i> is supposed to improve psychiatric problems. I have heard that <i>psychiatric medicine/psychotherapy</i> is helpful.
Readiness for treatment (0.58)	Do you agree with your doctor that you need <i>medicine/mental health treatment</i> for these problems? I do not have a mental health problem. I feel poorly, but am not motivated to start treatment right now. I feel ready to take medication or begin psychotherapy.
Overall attitudes score (3 factors)	Chronbach's Coefficient $\alpha = 0.76$

\* Italics indicate that the wording of the question differed based on treatment group.

for at least 6 months, and psychotherapy depression trials have a median duration of 4 months.<sup>37</sup>

We extracted outcome variables from administrative and medical records. To determine short-term medication adherence, we reviewed pharmacy records to determine whether patients picked up their first refill within 7 days of expiration of the initial 30-day prescription. Adherence was coded as yes/no. To determine short-term referral adherence, we reviewed chart notes to ascertain whether patients attended their first scheduled appointment. If patients cancelled but rescheduled and attended that appointment, they were considered adherent. Adherence was coded as yes/no.

For intermediate medication adherence, patients who had medication for 135 days or more (75%) were classified as adherent. The medication possession ratio was calculated by dividing the number of days' supply of antidepressant medication received during the 6-month period by 180 days.<sup>38</sup> This calculation included changes in dosage and brand of medication. To determine intermediate referral adherence, we reviewed charts at 6 months after the

date of the initial referral. Patients who attended at least 75% of their appointments were classified as adherent. The number of scheduled appointments during 6 months was divided by the number of attended appointments to calculate the percentage of appointments attended. This method allowed us to characterize adherence to treatment beyond the initial intake appointment, recognizing that recommended length of treatment (ie, the number of follow-up appointments) would vary across subjects.

### Statistical Analysis

Descriptive statistics using means and standard deviations were calculated for continuous variables, and proportions were calculated for categorical variables. Respondents and nonrespondents were compared by age, gender, and ethnicity/race to explore possible biases in the sample of participants. We first assessed predictions of short-term and intermediate adherence with all participants. For discrete variables, we conducted  $\chi^2$  tests, using Fisher's Exact test when there were fewer than 5 people in a particular cell/category. For continuous variables, we conducted logistic regressions. Variables with a significance level of  $<.20$  in a univariate analysis were included in a multiple logistic regression. Only those questions answered by the entire sample were included in this stage of analyses. Finally, we assessed predictors of adherence separately for the 2 treatment types in univariate analyses.

## Results

### Sample Characteristics

During 12 months, we sent questionnaires to 200 eligible persons; 102 returned the survey, for a 51% response rate. Of the 102 returned questionnaires, 2 forms were not usable and 5 had missing outcome data. Our sample group was 95 participants: 47 in the medication group and 48 in the referral group. Nonrespondents ( $N = 98$ ) did not differ significantly from respondents when compared for age, gender, and ethnicity/race. Table 2 provides a demographic description of the 95 respondents.

For patients who were prescribed an antidepressant medication, 68% refilled their prescription at 1 month, and 57% were adherent at 6 months. For patients referred to mental health treatment, 71% attended their first scheduled appointment and 52% were adherent at 6 months. The average

**Table 2. Respondent Demographics from a Veterans Health Administration Internal Medicine Clinic (N = 95)**

Demographic Characteristics	Frequency (%)
Gender	
Male	88 (92.6)
Ethnicity/Race	
African American	10 (10.5)
Caucasian	47 (49.5)
Hispanic	32 (33.7)
Other	6 (6.3)
Age	
25 to 34	2 (2.1)
35 to 44	10 (10.5)
45 to 54	39 (41.1)
55 to 64	23 (24.2)
65 to 74	10 (10.5)
75-up	11 (11.6)
Marital Status	
Single/divorced/separated/widowed	47 (49.5)
Married	48 (50.5)
Education	
High school or GED	35 (36.8)
Some college	38 (40.0)
Associates degree and above	22 (23.2)
Prior mental health treatment	
Yes	45 (47.4)

length of time to the initial mental health appointment was 56.5 days. Eighty-five percent of the antidepressant prescriptions were for an indication of depression, whereas the remaining 15% were for depression with comorbidity (eg, anxiety, grief, interpersonal problems) or anxiety. In contrast, 47% of the referrals were for depression, whereas the remaining 53% were for depression with comorbidity or anxiety. Thus, subjects referred to mental health treatment were less likely to have uncomplicated depression compared with those receiving medication.

Patients had been assigned a single primary care provider. The majority of providers were internal medicine residents (60%), 19% were staff physicians and 21% were nurse practitioners. There was not a significant difference between the type of provider and their choice to prescribe a medication or refer to mental health. Of the respondents, 51% reported having the same provider for at least 2 years; 77% were somewhat or very satisfied with their care in the internal medicine clinic.

Respondents were asked about treatment preferences. Table 3 depicts the preferences, including treatment modality, provider specialty, gender, ethnicity/race, and location of treatment. When asked about treatment modality preferences, 43%

**Table 3. Mental Health Treatment Preferences (N = 95)**

Preference Category	Frequency (%)
<b>Preferred Treatment</b>	
Medicine only	10 (10.5)
Counseling/psychotherapy	4 (4.2)
Medicine & psychotherapy	19 (20.0)
Prefer none	10 (10.5)
Don't know enough to say	41 (43.2)
Don't have a preference	11 (11.6)
<b>Preferred Provider</b>	
Psychiatrist	18 (19.8)
Psychologist	8 (8.8)
Primary care provider	18 (19.8)
Social worker	6 (6.5)
No preference	38 (41.8)
Other	3 (3.3)
<b>Preferred Provider Characteristics*</b> % Endorsing Preference	
At internal medicine clinic	24 (25.3)
At mental health clinic	4 (4.2)
Male	16 (16.8)
Female	14 (14.7)
Own ethnicity/race	8 (8.4)
Other ethnicity/race	2 (2.1)
None of the preferences endorsed	47 (49.5)

\* More than one characteristic could be endorsed

reported that they did not know enough about their options to say. Only 4% of patients preferred to receive mental health treatment at a specialty clinic.

### **Adherence to Mental Health Treatment**

We examined short-term and intermediate adherence to any mental health treatment for all 95 respondents. We conducted  $\chi^2$  analyses and univariate logistic regressions to determine variables to be included in the multivariate logistic regression. Variables included were: satisfaction with care in the internal medicine clinic, travel time to get to the internal medicine clinic, participatory decision making style, overall attitudes, readiness for treatment, and benefits of treatment. In a backward elimination logistic regression, the only variable that remained significant in the model to predict short-term adherence was readiness to engage in mental health treatment ( $P = .03$ ). That is, those respondents who said they felt ready to take medication or begin psychotherapy were more likely to be adherent to a prescription or referral at 1 month.

At 6 months, 55% ( $n = 52$ ) of subjects were adherent to treatment (ie,  $\geq 75\%$  adherence). Variables included in the multivariate regression were: marital status, interference with activities because of health problems, travel time to the internal medicine clinic,

treatment preference, participatory decision making style, overall attitudes, readiness for treatment, and benefits of treatment. Using backward elimination logistic regression, 2 variables remained significant. Being unmarried ( $P = <.05$ ) and having a provider with a participatory decision making style ( $P = .03$ ) increased the likelihood of adherence.

### **Adherence to Antidepressant Medication**

We then examined adherence to antidepressants using univariate analyses. Of the 47 patients who took antidepressants, those with a travel time of less than 30 minutes were more likely to be adherent at 1 month ( $P = .04$ ; Table 4). For the medication group, a counterintuitive finding was that persons reporting trouble with the pharmacy were more likely to be adherent ( $P = .04$ ).

For intermediate adherence, subjects who preferred medicine treatment (with or without a preference for additional counseling/psychotherapy) compared with those with other preferences (counseling/psychotherapy only or no treatment at all) or no preference were more likely to be adherent ( $P = .004$ ). Travel time of less than 30 minutes continued to predict adherence at 6 months ( $P = .01$ ). Those persons perceiving greater benefits from treatment were more likely to be adherent to medication at 6 months ( $P = .04$ ; Table 4). Demographic variables such as age, education, and ethnicity/race, medication-related questions, provider type (ie, resident physician, attending physician, or nurse practitioner) and general mental health were not related to adherence to antidepressant medication.

### **Adherence to a Mental Health Referral**

We then examined adherence to a mental health referral. Of the 48 referred subjects, those with more positive overall attitudes toward mental health treatment ( $P = .03$ ) were more likely to make their initial referral appointment. This was particularly true of patients reporting greater readiness for mental health treatment ( $P = .05$ ) and for patients perceiving more benefits of mental health treatment ( $P = .01$ ). Subjects who reported that their doctor had more characteristics of a participatory decision-making style were more likely to attend the initial appointment ( $P = .04$ ; Table 5).

At 6 months, persons reporting no or mild negative effects from previous mental health treatment had greater adherence than those who reported moderate or severe negative effects ( $P = .04$ ). De-

**Table 4. Short-Term and Intermediate Adherence to an Antidepressant Prescription (n = 47) among Veterans**

Variable	Short-Term [No. (%) or Mean (±SD)]		P	Intermediate [No. (%) or Mean (±SD)]		P
	Adherent	Nonadherent		Adherent	Nonadherent	
Treatment preference			.17			.004*
Medicine	14 (82)	3 (18)		15 (88)	2 (12)	
Preference for no medicine	4 (80)	1 (20)		2 (40)	3 (60)	
No preference specified	14 (56)	11 (44)		10 (40)	15 (60)	
Pharmacy			.04*			.44
Trouble getting through by phone	8 (100)	0 (0)		6 (75)	2 (25)	
No trouble getting through	24 (62)	15 (38)		21 (54)	18 (46)	
Travel			.04*			.01*
<30 minutes	22 (79)	6 (21)		20 (71)	8 (29)	
>30 minutes	9 (50)	9 (50)		6 (33)	12 (67)	
Medication Questions						
Advised to take daily	23 (61)	15 (39)	.14	19 (50)	19 (50)	.21
Advised 2 to 4 weeks for effect	22 (71)	9 (29)	.71	18 (58)	13 (42)	.00
Advised to continue even if better	21 (68)	10 (32)	.46	16 (52)	15 (48)	.22
Advised don't stop without calling	12 (57)	9 (43)	.14	10 (48)	11 (52)	.16
Asked about prior experience w/meds	14 (78)	4 (22)	.43	11 (61)	7 (39)	.47
Advised to schedule pleasant activities	6 (46)	7 (54)	.08	6 (46)	7 (54)	.59
Benefits of Treatment	38 (±20)	39 (±14)	.86	33 (±15)	45 (±19)	.04**
Mental Health Inventory	16 (±4)	15 (±4)	.53	16 (±4)	15 (±4)	.27

\*P < .01, \*\* P < .05;  $\chi^2$  analysis used for categorical variables, logistic regression for continuous variables.

mographic variables, provider type, and mental health score were not related to adherence to a mental health referral.

### Discussion

Few studies have prospectively examined variables that influence a patient's adherence to mental health treatment in primary care. This study found support for the Health Decision Model, which suggests that short- and long-term adherence are determined by patient experiences, beliefs, knowledge, and preferences, including attitudes regarding the benefits and risks of engaging in treatment.

Greater readiness to engage in mental health treatment improved short-term adherence. A state of readiness may be more salient in the initial stages of treatment, whereas longer term adherence to a treatment regimen may involve a different set of attitudes. Thus, in initial visits, a focus on one's acceptance of and readiness for treatment may improve adherence. A note: this finding should be interpreted with caution given the lower internal consistency of items in this factor.

In the longer term, unmarried patients were more likely to be adherent. This finding is inconsistent with a previous report that unmarried patients were less likely to be adherent to a mental

**Table 5. Term and Intermediate Adherence to a Mental Health Referral (n = 48) among Veterans**

Variable	Short-Term [No. (%) or Mean (SD)]		P	Intermediate [No. (%) or Mean (SD)]		P
	Adherent	Nonadherent		Adherent	Nonadherent	
Negative effects from prior mental health treatment			.14			.04*
None or mild	16 (84)	3 (16)		12 (63)	7 (37)	
Moderate or severe	5 (56)	4 (44)		2 (22)	7 (78)	
Overall Attitudes	40 (±12)	51 (±19)	.03*	40 (±12)	46 (±18)	.16
Readiness for Treatment	39 (±14)	50 (±23)	.05	39 (±14)	45 (±20)	.20
Benefits of Treatment	36 (±17)	54 (±24)	.01*	38 (±17)	44 (±24)	.32
Participatory decision-making style	62 (±25)	43 (±30)	.04*	62 (±27)	50 (±27)	.14
Mental Health Inventory	17 (±5)	17 (±4)	.92	16 (±4)	18 (±4)	.34

\* P < .05;  $\chi^2$  analysis used for categorical variables, logistic regression for continuous variables.

health referral.<sup>17</sup> One important difference from the previous study was in gender. In the study by Olfson,<sup>17</sup> those referred were primarily female, whereas our sample was more than 90% male. Marital status may differentially affect adherence in women and men. It may be that a lack of marital/social support in men produces a greater need for the social support that professional treatment provides. This finding also may be a result of multiple statistical comparisons.

Almost half of respondents did not know enough about mental health treatment options to identify a preference. This lack of information about preferences is important, in that patients reporting a preference for a specific treatment were more likely to be adherent. Participatory decision-making style of the physician guiding the treatment also was a significant predictor of intermediate adherence. Collaborative decision-making, in which the patient is provided choices, control, and responsibility in decisions about their mental health treatment, has been shown to be a consistent predictor of health outcomes.<sup>27,39,40</sup> Primary care practice guidelines include patient preference as a factor to be considered in formulating a treatment plan.<sup>41</sup> Our findings provide empirical support for this recommendation.

There were differences in factors predicting medication adherence versus mental health referral adherence. Clinic-related variables were more salient for medication adherence, and adherence improved in both groups when patients understood the potential benefits of treatment. For medication, maintaining the daily regimen probably requires belief in the potential benefits to be gained despite the inconvenience, side effects, and gradual improvement that may occur. To maintain adherence, reminders about treatment benefits are warranted in follow-up visits. For referrals, the significant initial step of attending a mental health referral probably requires a strong belief in the benefits to be gained, and potential benefits should be emphasized at the primary care appointment when a referral is discussed. As for attending mental health appointments, people are less likely to be adherent when they have had prior negative treatment experiences. This group may be more difficult to treat, a cycle that results in nonadherence. Future studies replicating these predictors would be beneficial. It is important to examine separately the attitudes toward specialty treatment and general medical

treatment. In addition, a study in which referrals to psychiatric management are compared with psychotherapy may identify additional adherence predictors.

Given the relatively small sample size, the study may have lacked sufficient power to identify all relevant predictors. Although our definitions of adherence have been previously used in the literature, their limitations also must be acknowledged. We recorded only the incidence of medication refills, without a confirmatory assessment such as self-report or pill counts. We also do not have information about adherence to goals for psychosocial treatments. This naturalistic study did not formally assess psychiatric indications, but rather relied on medical record notes. Despite these limits, this study is the first to prospectively study short-term and intermediate adherence to antidepressants and medication adherence simultaneously. Although our sample of veterans may not be representative of all men seeking mental health treatment in primary care, this predominantly male sample provided an important opportunity to explore these issues in an at-risk population, because men tend to be more nonadherent to mental health treatments than women.

Nonadherence to mental health treatments in primary care is of significant concern. In this study, short-term adherence rates were 68% and intermediate adherence rates were 55%, consistent with other studies but still far less than satisfactory in any setting. Early identification of patients likely to be nonadherent to mental health treatment is arguably one of the most pressing issues facing the future of mental health.

---

We gratefully acknowledge the support patients, resources, and the use of facilities within the South Texas Veterans Health Care System. We thank William Spears, PhD, Virginia Seguin Mika, MPH, and Christina Perez Stellato for their assistance with the project.

## References

1. Johnson DA. Depression: treatment compliance in general practice. *Acta Psychiatr Scand Suppl* 1981; 290:447-53.
2. Lin EH, Von Korff M, Katon W, et al. The role of the primary care physician in patients' adherence to antidepressant therapy. *Med Care* 1995;33:67-74.
3. Maidment R, Livingston G, Katona C. Just keep taking the tablets: adherence to antidepressant treat-



- ment in older people in primary care. *Int J Geriatr Psychiatry* 2002;17:752–7.
4. Grunebaum M, Lubner P, Callahan M, Leon AC, Olfson M, Portera L. Predictors of missed appointments for psychiatric consultations in a primary care clinic. *Psychiatr Serv* 1996;47:848–52.
  5. Matas M, Staley D, Griffin W. A profile of the noncompliant patient: a thirty-month review of outpatient psychiatry referrals. *Gen Hosp Psychiatry* 1992;14:124–30.
  6. Peeters FP, Bayer H. ‘No-show’ for initial screening at a community mental health centre: rate, reasons and further help-seeking. *Soc Psychiatry Psychiatr Epidemiol* 1999;34:323–7.
  7. Killaspy H, Banerjee S, King M, Lloyd M. Non-attendance at psychiatric outpatient clinics: communication and implications for primary care. *Br J Gen Pract* 1999;49:880–3.
  8. Livianos-Aldana L, Vila-Gomez M, Rojo-Moreno L, Luengo-Lopez MA. Patients who miss initial appointments in community psychiatry? A Spanish community analysis. *Int J Soc Psychiatry* 1999;45:198–206.
  9. Melfi CA, Chawla AJ, Croghan TW, Hanna MP, Kennedy S, Sredl K. The effects of adherence to antidepressant treatment guidelines on relapse and recurrence of depression. *Arch Gen Psychiatry* 1998;55:1128–32.
  10. Schumann C, Lenz G, Berghofer A, Muller-Oerlinghausen B. Non-adherence with long-term prophylaxis: a 6-year naturalistic follow-up study of affectively ill patients. *Psychiatry Res* 1999;89:247–57.
  11. Simon GE, VonKorff M, Wagner EH, Barlow W. Patterns of antidepressant use in community practice. *Gen Hosp Psychiatry* 1993;15:399–408.
  12. Dietrich AJ, Oxman TE, Burns MR, Winchell CW, Chin T. Application of a depression management office system in community practice: a demonstration. *J Am Board Fam Pract* 2003;16:107–14.
  13. Linden M, Gothe H, Dittmann RW, Schaaf B. Early termination of antidepressant drug treatment. *J Clin Psychopharmacol* 2000;20:523–30.
  14. Sleath B, Wurst K, Lowery T. Drug information sources and antidepressant adherence. *Community Ment Health J* 2003;39:359–68.
  15. Basco M, Rush J. Compliance with pharmacotherapy in mood disorders. *Psychiatric Annals* 1995;25:269–79.
  16. Farid B, Alapont E. Patients who fail to attend their first psychiatric outpatient appointment: Non attendance or inappropriate referral? *J Mental Health* 1993;2:81–3.
  17. Olfson M. Primary care patients who refuse specialized mental health services. *Arch Intern Med* 1991;151:129–32.
  18. Neeleman J, Mikhail W. A case control study of GP and patient-related variables associated with non-attendance at new psychiatric outpatient appointments. *J Mental Health* 1997;6:301–6.
  19. Killaspy H, Banerjee S, King M, Lloyd M. Prospective controlled study of psychiatric out-patient non-attendance. Characteristics and outcome. *Br J Psychiatry* 2000;176:160–5.
  20. Von Korff M, Myers L. The primary care physician and psychiatric services. *Gen Hosp Psychiatry* 1987;9:235–40.
  21. Orleans CT, George LK, Houpt JL, Brodie HK. How primary care physicians treat psychiatric disorders: a national survey of family practitioners. *Am J Psychiatry* 1985;142:52–7.
  22. Noonan JR. A follow-up of pretherapy dropouts. *J Community Psychol* 1973;1:43–4.
  23. Eraker SA, Kirscht JP, Becker MH. Understanding and improving patient compliance. *Ann Intern Med* 1984;100:258–68.
  24. Dillman DA. Mail and telephone surveys: the total design method. New York: Wiley, 1978.
  25. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med Care* 1992;30:473–83.
  26. Berwick DM, Murphy JM, Goldman PA, Ware JE Jr, Barsky AJ, Weinstein MC. Performance of a five-item mental health screening test. *Med Care* 1991;29:169–76.
  27. Kaplan SH, Greenfield S, Gandek B, Rogers WH, Ware JE Jr. Characteristics of physicians with participatory decision-making styles. *Ann Intern Med* 1996;124:497–504.
  28. Katon W, von Korff M, Lin E, Bush T, Ormel J. Adequacy and duration of antidepressant treatment in primary care. *Med Care* 1992;30:67–76.
  29. Katon W, Von Korff M, Lin E, et al. Collaborative management to achieve treatment guidelines. Impact on depression in primary care. *JAMA* 1995;273:1026–31.
  30. Demyttenaere K, Mesters P, Boulanger B, Dewe W, Delsemme MH, Gregoire J, et al. Adherence to treatment regimen in depressed patients treated with amitriptyline or fluoxetine. *J Affect Disord* 2001;65:243–52.
  31. Kroenke K, West SL, Swindle R, Gilson A, Eckert GJ, Dolor R, et al. Similar effectiveness of paroxetine, fluoxetine, and sertraline in primary care: a randomized trial. *JAMA* 2001;286:2947–55.
  32. Hedrick SC, Chaney EF, Felker B, et al. Effectiveness of collaborative care depression treatment in Veterans’ Affairs primary care. *J Gen Intern Med* 2003;18:9–16.
  33. Lin EH, Simon GE, Katon WJ, et al. Can enhanced acute-phase treatment of depression improve long-term outcomes? A report of randomized trials in primary care. *Am J Psychiatry* 1999;156:643–5.
  34. Nutting PA, Rost K, Smith J, Werner JJ, Elliot C. Competing demands from physical problems: effect

- on initiating and completing depression care over 6 months. *Arch Fam Med* 2000;9:1059–64.
35. Oxman TE, Barrett JE, Sengupta A, et al. Status of minor depression or dysthymia in primary care following a randomized controlled treatment. *Gen Hosp Psychiatry* 2001;23:301–10.
  36. Thompson C, Peveler RC, Stephenson D, McKendrick J. Compliance with antidepressant medication in the treatment of major depressive disorder in primary care: a randomized comparison of fluoxetine and a tricyclic antidepressant. *Am J Psychiatry* 2000;157:338–43.
  37. Casacalenda N, Perry JC, Looper K. Remission in major depressive disorder: a comparison of pharmacotherapy, psychotherapy, and control conditions. *Am J Psychiatry* 2002;159:1354–60.
  38. Sclar DA, Robison LM, Skaer TL, et al. Antidepressant pharmacotherapy: economic outcomes in a health maintenance organization. *Clin Ther* 1994;16:715–30.
  39. Bultman DC, Svarstad BL. Effects of physician communication style on client medication beliefs and adherence with antidepressant treatment. *Patient Educ Couns* 2000;40:173–85.
  40. Cooper-Patrick L, Gallo JJ, Gonzales JJ, et al. Race, gender, and partnership in the patient-physician relationship. *JAMA* 1999;282:583–9.
  41. AHCPR Depression Guideline Panel. Clinical Practice Guideline Number 5. Depression in primary care. Volume 2: treatment of major depression. AHCPR publication no. 93-0550. Rockville (MD): Agency for Health Care Policy and Research, Public Health Services, US Department of Health and Human Services; 1993.