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Adherence to Antidepressant Treatment Among Privately Insured Patients Diagnosed With Depression

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Abstract

Background—Antidepressants are effective in treatment of depression, but poor adherence to medication is a major obstacle to effective care.

Objective—We sought to describe patient and provider level factors associated with treatment adherence.

Methods—This was a retrospective, observational study using medical and pharmacy claims from a large health plan, for services provided between January 2003 and January 2005. We studied a total of 4312 subjects ages 18 or older who were continuously enrolled in the health plan with a new episode of major depression and who initiated antidepressant treatment. Treatment adherence was measured by using pharmacy refill records during the first 16 weeks (acute phase) and the 17–33 weeks after initiation of antidepressant therapy (continuation phase). Measures were based on Health Plan Employer Data and Information Set (HEDIS) quality measures for outpatient depression care.

Results—Fifty-one percent of patients were adherent through the acute phase; of those, 42% remained adherent in the continuation phase. Receipt of follow-up care from a psychiatrist and higher general pharmacy utilization (excluding psychotropics) were associated with better adherence in both phases. Younger age, comorbid alcohol or other substance abuse, comorbid cardiovascular/metabolic conditions, use of older generation antidepressants, and residence in lower-income neighborhoods were associated with lower acute-phase adherence. Continuation-phase adherence was lower for HMO participants than for others.

Conclusion—In an insured population, many patients fall short of adherence to guideline recommended therapy for depression. Information from existing administrative data can be used to predict patients at highest risk of nonadherence, such as those with substance abuse, and to target interventions.

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Keywords

adherence; antidepressants; depression; substance abuse; treatment guidelines

Depression imposes a substantial burden at the population level, with a lifetime prevalence of 13–16%, significant associated disability, and a liability to relapse.[1–4] Its negative outcomes include suicide, substantial impairment, lower quality of life, increased health care utilization and cost, and adverse impact on employment productivity.[3–10] Antidepressant treatment is efficacious, and treatment adherence is important in achieving effectiveness, ie, remission, restoring previous level of functioning, and preventing reoccurrence.[11–13] Specifically, antidepressants are recommended to be continued for at least 4 months beyond the initial symptom resolution.[14]

Early discontinuation of antidepressant treatment has been documented in various populations and clinical settings.[15–22] Existing findings on correlates/predictors of adherence to antidepressants often focus on a limited range of sociodemographic and clinical characteristics and have sometimes produced inconsistent findings. Comorbid medical conditions generally are associated with poor adherence,[20] but findings on age and gender variations are mixed.[15,20–23] Use of newer drugs[20–22,24] and mental health specialty services[15,16,20,21,25] generally have been associated with better antidepressant adherence. Economic status has rarely been included as an explanatory variable; we identified 1 study, which reported a positive association between income and adherence among veterans.[15] Effects of economic-status variables on adherence have more often been studied with other pharmaceutical treatments, but the results are inconsistent.[26] There is a need for up-to-date data because pronounced secular trends have been documented in depression care.[27]

Depression care improvement can be approached as a special case of the broader effort to improve management of chronic conditions of all kinds. The most prominent model, the chronic care model of Wagner and colleagues,28 frames clinical issues as multilevel challenges, and has motivated several initiatives to improve depression care.29–33 The Depression in Primary Care program, for example, identifies barriers and intervention opportunities at 6 levels (patient/consumer, provider, practice/delivery systems, plans, purchasers (public/private), and populations/policies).[34]

In this study, we investigated factors associated with poor adherence in a privately insured population using medical and pharmacy claims. Our goal was to examine the impact of patient characteristics in the context of provider, practice/delivery systems, or plan level variables, with the implications for policy and service system interventions likely to be of interest to purchasers and other stakeholders. Available variables include patients' demographic/economic characteristics, comorbid alcohol and other substance abuse, other prevalent comorbid conditions, depression treatment patterns, general use of health and pharmacy services, and insurance plan type. We conceptualized these variables based on their potential for modification by intervention at one or another level. For example, although patient behavior can be modified (eg, by education), most patient level variables available in our data are nonmodifiable (eg, demographics). Comorbid substance abuse is open to direct modification by treatment and to indirect influence by provider and practice innovations (eg, screening, prevention). Possibly open to some influence from higher level organizational interventions are the care sector of the initial depression diagnosis or use patterns of general medical services and pharmacy. Variables potentially open to organizational level interventions are follow-up care from mental health specialists, medication class, and company policies (eg, gate-keeping/authorization/referral requirements, financial incentives/costs etc.). We use plan type as a proxy for policies.

Methods

Design

This retrospective study used paid claims for pharmacy, inpatient, and outpatient services (including behavioral health care) for services provided between January 2003 and January 2005, from a large healthcare organization operating in northeast United States serving approximately 3 million individuals.

Study Population

Medical service claims contained information on date of service, procedure codes, diagnosis, place of service, and provider specialty. Study participants (n = 4312) were members aged 18 or older who were newly diagnosed with major depression, with recently commenced depression care (ie, no depression or antidepressant history within the 4 months prior to the depression diagnosis). Participants were identified in accordance with Health Plan Employer Data and Information Set (HEDIS) quality measures for outpatient depression care.[35] Demographic characteristics (Table 2) were comparable with national samples of persons with depression.36 Median household income at the zip-code level was used as a proxy for economic status.37 More than 60% of participants lived in neighborhoods with median household incomes greater than $50,000, suggesting that this largely employment-based study population averaged relatively high incomes, compared with national samples with depression.[38] Most were enrolled in point of service (POS) or preferred provider organization (PPO) plans; 9% had HMO coverage, and 14% had traditional indemnity plans. Diagnoses in claims histories were used to identify comorbid conditions, which were classified using Clinical Classification Software[39]: 5% had alcohol abuse and 8% had other substance abuse diagnoses; 25% suffered from a cardiovascular/metabolic condition.

Claims histories indicate that during the study period: 63% had 5 or more outpatient health encounters excluding mental health visits (those containing a procedure code for a mental health visit or evaluation and management in conjunction with a mental health diagnosis code, ICD-9 = 290, 293–302, 306–316); 37% had 6 or more medications excluding psychotropics during the 33 weeks after depression diagnosis. Pharmacy use rates generally are comparable with national estimates.[40,41] Almost half of the participants initially were diagnosed by mental health specialists, with most started on a newer generation antidepressant (Tables 1 and 2); 28% had contact with a psychiatrist during the follow-up period (16 weeks after treatment initiation), and 24% had encounters with other mental health providers (eg, social worker, psychologist). Of those who had any contact with a mental health specialist during the acute phase of treatment, the median number of contacts was 2, and the 95th percentile was 4 (data not shown).

Outcome Measures

Guidelines for depression treatment typically identify the first 2 phases of treatment as: (1) the acute phase, lasting 6–10 weeks focused on clinical remission and improvement of psychosocial functioning, and (2) the continuation phase, lasting 6–9 months aimed at eliminating residual symptoms, restoring prior level of functioning, and preventing reoccurrence and early relapse.[11] Measures of refill adherence were based on pharmacy claims containing dispensing date, days supplied, and national drug code for each prescription filled, allowing us to identify each day the participant possessed an antidepressant (Table 1) during the depression episode. Using the HEDIS quality of outpatient depression care measure for the acute phase,[35] we considered a participant adherent in the acute phase if medication was possessed 75% of the time during the first 16 weeks following treatment initiation. The second measure, adherence during the continuation phase (from week 17 to 33 after treatment initiation), was operationalized similarly (medication possession ratio ≥75%) with analyses

limited to the subset that was adherent during the acute phase (n = 2188). Treatment guidelines suggest switching antidepressants when there is no response to the initial antidepressant[11] and patients who switched medication were considered adherent if there was no extended break in therapy.

Results

The acute-phase adherence rate was 51% (Table 3). Older age and higher economic status (neighborhood income) were associated with better adherence, after controlling for covariates. Lower acute-phase adherence was found for patients with comorbid alcohol abuse (odds ratio [OR] = 0.49) or other substance abuse (OR = 0.72), for those living with 2 or more cardiovascular/metabolic conditions (OR = 0.65), and for those who started treatment with an older generation antidepressant (OR = 0.69). Those with follow-up visits from a psychiatrist had higher adherence (OR = 1.19).

We grouped variables based on their potential for modification, considering levels of intervention of interest to health plans and purchasers concerned with benefit design, policy, and service structure. We performed sensitivity analyses (data not shown) by estimating 3 separate logistic regressions, all predicting adherence, with different sets of explanatory variables. The separate predictive power of each group was calculated from area-under-ROC curves. The model with the nonmodifiable variables as explanatory variables had the highest predictive power (area = 0.61), followed by partially modifiable variables (area = 0.57) and modifiable variables (area = 0.56).

Among patients adherent during the acute phase, 41.5% remained adherent during the continuation phase (Table 4). Significant predictors of better continuation-phase adherence in multivariate analysis included neighborhood income, use of more nonantidepressant medications, and receipt of follow-up visits with a psychiatrist. Adherence was significantly lower for HMO enrollees compared with indemnity plan enrollees (OR = 0.62).

Discussion

Adherence rates in this privately insured population point to substantial room for improvement. Only half of patients were adherent during the acute phase of treatment; and 42% of these remained adherent in the continuation phase (ie, 21% adherent throughout both phases). Although strong conclusions regarding the effectiveness of any strategy require testing with experimental or quasiexperimental designs, the findings identify openings for intervention at several levels and provide a basis for investing limited resources where they are most likely to produce improvements.

Findings contribute to refinement of chronic care models for depression, and point to the need for further research to clarify responsible mechanisms. Some predictive factors (eg, age, socioeconomic status) cannot be modified but may serve to target high-risk groups for direct tailored interventions (eg, disease management programs that focus on self-management) as well as alerting providers on increased risk. For example, to address disproportionate nonadherence among younger adults, educational, self-management, and counseling protocols could increase focus on this group, frame adherence benefits in terms of improved capacity for work/family functioning, and recommend/require more monitoring from providers.

Consistent with previous research, we found that alcohol and other substance abuse increase risk of poor depression treatment outcomes.[42,43] Preventive measures, aggressive screening, and treatment of substance abuse may yield benefits in improving antidepressant adherence. Our findings add to prior research in suggesting that timing matters. The acute phase may be

a window of opportunity, since comorbidities exert less influence during the continuation phase.

Advantages during both acute and continuation phases are apparent for those who received follow-up care from a psychiatrist, a finding consistent with other studies. More use of such care, received by only 28% of subjects, might be an avenue for improving adherence rates. Possible plan level responses include removal of financial disincentives, and efforts to increase referral networks. In addition, our results are consistent with others showing an advantage for newer antidepressants, which have lower side effect profiles and are easier to tolerate compared with older drugs.[44] Many of these are now available as generics, and so may represent low cost opportunities for improved adherence.

Although many studies are limited to managed-care enrollees, group practices or organized settings,[15,21–23,35] the present study includes indemnity, managed care, and hybrid plans. HMO members appear to be at some disadvantage. Our data do not allow us to delineate how organizational and financial variables impact adherence, but our findings point to the need for such studies because HMO members generally are subject to relatively stricter gate-keeping/ authorization/referral requirements.

Practical implications are unclear for our finding that better antidepressant adherence was associated with higher use of more general (nonpsychotropic) pharmacy medications. Further research is needed to investigate this finding. The general adherence literature tends to focus on negative aspects of multiple medications, such as the complexity of the regimens. The positive association found here between general pharmacy use patterns and antidepressant adherence could reflect a patient's familiarly with medication taking, leading to higher skills for managing complex regimens, higher motivation or perceived benefits of pharmacotherapy in general.

Our findings may be limited because we use data from an insured population, mostly residing in northeast United States. Although resembling national figures in many respects, this group had higher incomes, so generalization to low-income populations must be done with caution. Claims-based adherence measures confirm that a patient possesses a drug, but cannot confirm that he or she has taken it as prescribed (although these measures avoid problems of recall bias or desirability bias associated with self reports). Poor adherence is a multilevel problem, affected by knowledge, attitudes, skills and the environment of the patient; provider's practices; and the health care system.[45] Our controls are limited to variables derivable from insurance claims and we lack information on motivation/skills/attitude/environment of the patient or factors that affect these patient-level constructs, including race/ethnicity, disease severity, social support of perceived stigma, as well as details on providers' practices or systems.

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Table 1

Medications

Older-Generation Antidepressants		Newer-Generation Antidepressants	
Tricyclics	**Monoamine Oxidase Inhibitors (ie, MAOIs)**	**Selective Serotonin Reuptake Inhibitors (ie, SSRIs)**	**Others**
Amitriptyline	Phenelzine	Citalopram	Bupropion
Amoxapine	Tranylcypromine	Escitalopram	Isocarboxazid
Clomipramine		Fluoxetine	Mirtazapine
Desipramine		Fluvoxamine	Nefazodone
Doxepin		Paroxetine	Trazodone
Imipramine		Sertraline	Venlafaxine
Maprotiline			
Nortriptyline			
Protriptyline			
Trimipramine			

Table 2

Characteristics of the Study Population

	Study Population	
	n	%
All	4312	100
Nonmodifiable variables		
Demographic/Socioeconomic variables		
Gender		
Male	1405	32.6
Female	2907	67.4
Age, yrs		
18–25	446	10.3
25–39	1352	31.4
40–49	1207	28.0
50–64	1123	26.0
65+	184	4.3
Income at the zip-code level		
<50,000	1248	28.9
50,000–70,000	1795	41.6
70,000+	1269	29.4
Comorbid conditions		
Anxiety disorder		
No	3095	71.8
Yes	1217	28.2
Cancer		
No	3555	82.4
Yes	757	17.6
Headache or migraine		
No	3783	87.7
Yes	529	12.3
No. CVD/diabetes		
0	3257	75.5
1	790	18.3
2+	265	6.2
Partially modifiable variables		
Type of provider on initial visit		
Mental health professional	2134	49.5
General medical care	2178	50.5
No. medications excluding psychotropics		
0	465	10.8
1–2	1048	24.3
3–5	1190	27.6

	Study Population	
	n	%
6 or more	1609	37.3
No. outpatient visits		
0	194	4.5
1–4	1407	32.6
5 or more	2711	62.9
Modifiable variables		
Initial antidepressant		
Newer-generation drugs	4162	96.5
Older-generation drugs	150	3.5
Alcohol abuse		
No	4099	95.1
Yes	213	4.9
Other substance abuse		
No	3979	92.3
Yes	333	7.7
Insurance product line		
HMO	405	9.4
POS	1736	40.3
PPO	1589	36.9
Indemnity	82	13.5
Follow-up with a psychiatrist		
No	3119	72.3
Yes	1193	27.7
Follow-up with other mental health providers		
No	3290	76.3
Yes	1022	23.7

Conditions classified under CVD/diabetes include disorders of lipid metabolism, hypertension, acute myocardial infarction, coronary artery disease, heart failure, cerebrovascular disease, or diabetes.

Table 3

Bivariate and Multivariate Predictors of Adherence during the Acute Phase

			Predictors†	
	n	Rates, % Adherent*	Odds Ratio	95% CI
All	4312	50.7		
Nonmodifiable variables				
Demographic/Socioeconomic variables				
Gender				
Male	1405	47.7	0.91	0.79–1.03
Female	2907	52.2	—	—
Age, yrs				
18–25	446	38.1	—	—
25–39	1352	43.3	1.22	0.98–1.53
40–49	1207	52.0	1.71	1.36–2.15
50–64	1123	62.4	2.48	1.94–3.15
65+	184	56.5	1.96	1.34–2.85
Income at the zip-code level				
<50,000	1248	46.4	—	—
50,000–70,000	1795	51.5	1.22	1.05–1.42
70,000+	1269	54.0	1.30	1.11–1.53
Comorbid conditions				
Anxiety disorder				
No	3095	51.2	—	—
Yes	1217	49.7	0.99	0.86–1.14
Cancer				
No	3555	49.4	—	—
Yes	757	57.2	1.05	0.89–1.25
Headache or migraine				
No	3783	51.2	—	—
Yes	529	47.6	0.82	0.67–0.99
No. CVD/diabetes				
0	3257	49.5	—	—
1	790	56.2	0.98	0.82–1.16
2+	265	50.2	0.65	0.49–0.86
Partially modifiable variables				
Type of provider on initial visit				
Mental health professional	2134	52.6	—	—
General medical care	2178	48.9	0.95	0.83–1.08
No. medications excluding psychotropics				
0	465	40.4	—	—
1–2	1048	45.3	1.10	0.87–1.38
3–5	1190	50.7	1.33	1.06–1.68

	n	Rates, % Adherent*	Predictors†	
			Odds Ratio	95% CI
6 or more	1609	57.3	1.70	1.34–2.16
No. outpatient visits				
0	194	39.7	0.75	0.54–1.03
1–4	1407	48.3	—	—
5 or more	2711	52.8	0.95	0.82–1.11
Modifiable variables				
Initial antidepressant				
Newer-generation drugs	4162	50.9	—	—
Older-generation drugs	150	46.0	0.69	0.49–0.97
Alcohol abuse				
No	4099	51.8	—	—
Yes	213	30.1	0.49	0.36–0.68
Other substance abuse				
No	3979	51.8	—	—
Yes	333	37.8	0.72	0.56–0.93
Insurance product line				
HMO	405	46.7	0.91	0.70–1.19
POS	1736	51.9	1.03	0.85–1.25
PPO	1589	51.0	1.09	0.90–1.33
Indemnity	582	49.3	—	—
Follow-up with a psychiatrist				
No	3119	49.8	—	—
Yes	1193	53.3	1.19	1.03–1.38
Follow-up with other mental health providers				
No	3290	50.9	—	—
Yes	1022	50.3	1.01	0.87–1.18

*Rates represent the proportion of adherent patients tabulated by covariates, and χ^2 tests were used to identify bivariate associations between adherence and the potential predictors.

†Multivariate logistic regression was used to predict adherence. Estimates are converted into odds ratios with 95% confidence intervals.

Conditions classified under CVD/diabetes include disorders of lipid metabolism, hypertension, acute myocardial infarction, coronary artery disease, heart failure, cerebrovascular disease, or diabetes.

Table 4

Bivariate and Multivariate Predictors of Adherence During the Continuation Phase (Among Those Adherent in the Acute Phase)

			Predictors†	
	n	Rates, % Adherent*	Odds Ratio	95% CI
All	2188	41.5		
Nonmodifiable variables				
Demographic/Scioeconomic vriables				
Gender				
Male	670	40.8	0.98	0.80–1.19
Female	1518	41.8	—	—
Age, yrs				
18–25	170	37.1	—	—
25–39	585	33.3	0.82	0.57–1.18
40–49	628	43.0	1.22	0.85–1.75
50–64	701	47.4	1.41	0.96–2.02
65+	104	46.2	1.20	0.71–2.04
Income at the zip-code level				
<50,000	579	37.7	—	—
50,000–70,000	924	43.0	1.25	1.002–1.55
70,000+	685	42.6	1.22	0.95–1.54
Comorbid conditions				
Anxiety disorder				
No	1583	41.5	—	—
Yes	605	41.5	1.02	0.83–1.24
Cancer				
No	1755	43.2	—	—
Yes	433	41.1	0.92	0.73–1.15
Headache or migraine				
No	1936	41.8	—	—
Yes	252	39.3	0.79	0.59–1.04
No. CVD/diabetes				
0	1611	40.0	—	—
1	444	46.2	1.10	0.89–1.38
2+	133	44.4	0.91	0.62–1.34
Partially modifiable variables				
Type of provider on initial visit				
Mental health professional	1066	42.7	—	—
General medical care	1122	40.2	1.00	0.83–1.20
No. medications excluding psychotropics				
0	188	30.3	—	—
1–2	475	35.8	1.20	0.83–1.74

	n	Rates, % Adherent*	Predictors†	
			Odds Ratio	95% CI
3–5	603	42.6	1.58	1.10–2.26
6 or more	922	46.0	1.75	1.21–2.54
No. outpatient visits				
0	77	26.0	0.60	0.35–1.04
1–4	680	39.9	—	—
5 or more	1431	43.1	0.95	0.77–1.18
Modifiable variables				
Insurance product line				
HMO	189	31.8	0.62	0.42–0.92
POS	901	43.1	0.90	0.69–1.19
PPO	811	41.1	0.91	0.69–1.20
Indemnity	287	44.3	—	—
Alcohol or other substance abuse				
No	2027	41.9	—	—
Yes	161	36.7	0.80	0.57–1.13
Follow-up with a psychiatrist				
No	1552	40.0	—	—
Yes	636	45.3	1.25	1.02–1.53
Follow-up with other mental health providers				
No	1674	41.2	—	—
Yes	514	42.4	1.09	0.87–1.35

*Rates represent the proportion of adherent patients tabulated by covariates, and χ^2 tests were used to identify bivariate associations between adherence and the potential predictors.

†Multivariate logistic regression was used to predict adherence. Estimates are converted into odds ratios with 95% confidence intervals.

Conditions classified under CVD/diabetes include disorders of lipid metabolism, hypertension, acute myocardial infarction, coronary artery disease, heart failure, cerebrovascular disease, or diabetes.