

Evaluation of a Depression Health Management Program to Improve Outcomes in First or Recurrent Episode Depression

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Objectives: To evaluate the impact of telephone counseling and educational materials on medication adherence and persistency among members with newly diagnosed depression enrolled in a pharmacy benefit management-sponsored disease management program.

Study Design: Longitudinal cohort observation.

Methods: The study population comprised 505 members with a new or recurrent episode of depression who consented and enrolled in a depression disease management program. After written consent was obtained, program participants received up to 4 telephone-counseling calls and 5 educational mailings focused on the importance of medication compliance, barriers to medication compliance, quality of life, symptoms, and satisfaction with the program. A control group of 3744 members was selected from client companies that opted not to offer the depression program. Measures of medication adherence, persistency with prescription drug therapy, and patient refill timeliness were computed for both groups and compared.

Results: Patients enrolled in the depression disease management program were significantly more likely to adhere to their medication regimen during acute (89.0% vs 67.7%, $P < .001$) and continuation treatment phases (81.1% vs 57.6%, $P < .001$). In addition, members enrolled in the program were significantly more likely to continue their therapy after 7 months (77.8% vs 49.5%, $P < .001$) and refilled their prescriptions on a more timely basis (0 vs 18 days, $P < .001$).

Conclusions: A pharmacy benefit management-sponsored health management depression program succeeded in encouraging patients with new or recurrent depression to stay on antidepressant medication and to reach treatment goals outlined by best practice guidelines.

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orders are among the most common illnesses seen by primary care physicians, with each of these affective disorders having an estimated prevalence of 6% to 10%.²⁻⁴

Depressive illness results in significant work loss and is associated with a level of disability comparable to that of a major medical illness such as diabetes.⁵ Longitudinal studies of depressed patients show significant risk for chronicity and relapse.^{4,6} In addition, depression is associated with an increase in the use of health services that is only partially explained by the presence of concurrent medical conditions.⁷ Primary care physicians spend a high proportion of their time treating psychologically distressed individuals, yet they tend not to address the associated mental health issues.⁸

Disease management is widely accepted as an optimal approach to care planning and delivery.⁹ Disease management is particularly well suited for chronic conditions because the program impact considers patients through an episode of care. The essence of disease management combines patient and provider education with practice guidelines, and timely diagnostic, therapeutic, and preventive interventions. Disease management programs have wide appeal for healthcare decision makers interested in containing costs and improving outcomes. Moreover, the clinical and economic impacts of high-intensity case-management programs have been well accepted. However, the affect of lower-

Depression is a common, serious, and often chronic condition that carries a significant burden of personal suffering, disability, lost productivity, and increased healthcare costs. In 1990 the direct and indirect costs of major depressive disorders were estimated to total \$43.7 billion in the United States.¹ Major and minor depressive dis-

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intensity health messaging and education in large populations is unknown. Whether informed patients engage in improved self-care practices and health behavior requires further evaluation. Health management programs (disease management programs that focus on prevention of disease as well as management of a disease) may also improve outcomes and generate cost savings.¹⁰

Medco Health Solutions is a pharmacy benefit management company that provides prescription pharmacy benefits for more than 65 million individuals in the United States. Medco Health Solutions offers a series of health management programs as part of the basic prescription drug benefit. All of the Medco Health Solutions health management programs are developed independently by a Department of Medical Affairs with consent and authorization of an independent external Medical Advisory Board consisting of academicians, researchers, and other experts.

One of the health management programs focuses on helping patients currently being treated for depression to successfully manage their condition. The full program is organized into 3 components that have been described in detail elsewhere.¹¹ We evaluated the patient compliance support program, which targets patients with a new or recurrent episode of depression. We expected that members participating in the program would experience better adherence and persistency with antidepressant medications, an improved quality of life, and a reduction in depressive symptoms.

According to the then Agency for Health Care Policy and Research (AHCPR—now known as the Agency for Healthcare Research and Quality or AHRQ) guidelines for the clinical management of depression, treatment for depression may occur in 3 phases. The *acute treatment phase* is intended to eliminate depressive symptoms and facilitate remission. The aim of *continuation phase treatment* is to prevent relapses that may occur within 6 months of remission. A maintenance phase is aimed at preventing recurrence.¹² The program content was designed to be consistent with recommended guidelines such as those released by the AHCPR.¹²

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METHODS

Using pharmacy claims data, members who received a new prescription for an antidepressant medication were identified as eligible for program participation. A prescription was considered “new” (index prescription) if the member had no prescrip-

tion history for antidepressants during the previous 180 days. Members meeting these requirements received a telephone call from a psychiatric nurse specialist who introduced the program, confirmed that the patient’s physician had diagnosed major depression, and explained the interventions. During this call, which lasted 10 to 20 minutes, the nurse also inquired about the members’ interest in participating in the program. If the member indicated an interest in participating, they received additional information regarding a general overview of depression, including an explanation of their medications, and the importance of adhering to their physician’s recommendation regarding management and medication compliance. The initial call also addressed questions a member had about depression or their antidepressant medications. Members included in this analysis must have been continuously eligible for the pharmacy benefit throughout the study timeframe.

Intervention

To be considered a program enrollee, a member was required to send written authorization to receive additional telephone calls and mailings. After receiving the first phone call of the program, consent to participate was to be received by week 8 of starting their antidepressant therapy. The first mailing was then sent to the member after receiving the consent form. The physicians of program participants were notified of the members’ enrollment. Enrollees received 3 additional telephone-counseling calls and 5 educational mailings during the 8-month program. The telephone calls provided a general overview of depression and answered the members’ questions. The calls also focused on medication compliance, barriers to medication compliance, quality of life, symptoms, and satisfaction with the program. The second program enrollee call and mailing were scheduled at week 10, with the third call and mailing scheduled at month 4. At month 7, program enrollees were scheduled for the fourth call and mailing. During that final call (“call 4”), the nurses provided information regarding average recommended duration of treatment (7-12 months for first episode of depression, and longer than 12 months for recurrent episode as per AHCPR guidelines¹²) and asked about the patient’s satisfaction with the compliance support program. Enrollees could call with questions using an inbound toll-free number, if needed. By month 8, patients were sent their fifth mailing, which concluded their participation in the program.

Comparison Groups

An historical cohort design was used to assess the effect of the program on adherence to pharmaceutical therapy. A comparison (control) group was compiled from members of clients that opted not to offer the depression program to their employees or enrollees. A member was eligible for the comparison (control) group if he or she met the eligibility criteria and inclusion rules based on the pharmacy claims history. The comparison (control) group was matched with a 2:1 ratio on age, sex, and geographic region to program participants.

Patients with a confirmed diagnosis who expressed an interest in the program and completed the first call intervention, but did not return the authorization for additional interventions, were used as a subgroup of program participation (minimal intervention group).

Outcomes

Using the pharmacy claims data, we estimated patient adherence using a modified Health Plan Employer Data and Information Set (HEDIS) quality measure.¹³ To comply with HEDIS specifications, health plans define a depression cohort using the *International Classification of Diseases, Ninth Revision* (ICD-9) codes for depression and pharmacy claims data to define the medication compliance measures. We defined cohorts for each group using antidepressant pharmacy claims and included information from a subsequent telephone call. Somewhat more conservative than HEDIS specifications, we required a 180-day negative claims history to designate a patient as new to therapy, whereas HEDIS calls for a 120-day negative diagnosis history and a 90-day negative medication history. Consistent with HEDIS, acute phase medication compliance was defined as having a minimum of 84 days of therapy in a 114-day period and continuation phase compliance was defined as having 180 days of therapy in a 231-day period. Compliance differences between groups were assessed using the likelihood ratio test.

To measure the persistency of pharmaceutical therapy, we assessed whether the member had a 90-day or longer gap (event defining nonpersistency) in prescription refills during the 7-month observation period. Medication persistency was measured by time to event and summarized using Kaplan-Meier time to event curves.

We also measured patient refill timeliness. Time to refill was defined as the number of days between the expiration date of the index prescription and the date of first refill. Patient refill timeliness was measured as

the time to first refill. A survival distribution of time to refill was also estimated using survival analysis methodology. The time-to-refill estimates were computed within each group (enrollees, minimal intervention, and control). Time (measured in number of days) to the first antidepressant refill (event) was modeled as a function of group, controlling for age, sex, and geographic region. Observations were censored at 30 days and results were summarized by plotting the inverse of the survival distribution function to describe the percent of members refilling antidepressant medications at different points in time. All survival curves were compared using the log-rank test.

A patient's symptom burden, quality of life, and program satisfaction were assessed during the telephone interviews and counseling calls. Quality of life was assessed using the 12-Item Short Form Instrument (SF-12).¹⁴ A 20-item depression symptom checklist (SCL-20) (adapted from the SCL-90)¹⁵ was used to assess symptom burden. The SCL-20 is scored on a scale of 0 to 4, measuring severity. We recorded changes in symptom score from the initial call (baseline, or pre-score) to the third call (assessment, or post-score). The *t* test statistic was used to assess quality-of-life and symptom score differences.

RESULTS

For 32 548 members who met the criteria of receiving a new antidepressant prescription after a 6-month negative history, we attempted telephone contact, verified their eligibility (depression diagnosis), and invited them to participate in the health management program. Of 15 616 people contacted, 95% provided diagnosis information and 5422 (34.7%) indicated a diagnosis of new or recurrent major depression. A total of 2167 members indicated an interest in the program, 1880 of whom had continuous eligibility and were available for outcome measurement. Of the 1880 eligible members (with a confirmed depression diagnosis) who indicated interest and completed the first call, 505 (27%) returned consent forms allowing them to receive additional telephone calls and mailings (program enrollees); the remaining 1375 (73%) comprised the minimal intervention group. The control group comprised 3744 depressed individuals who had no depression management program. Characteristics of the eligible study population are shown in **Table 1**.

Nearly two thirds of program participants and comparison patients were women. The average age

was 54 years; 26% of patients were from the Midwest and 41% from the South. Of members who refilled their prescription, 73% refilled at a retail pharmacy and 27% refilled through a mail pharmacy. No baseline differences were noted in age, sex, or region between the program enrollees and members of the 2 comparison groups.

Using a modified HEDIS definition of adherence, we found that program enrollees were significantly more likely to adhere to their medication regimen than both comparison groups (Figure 1). This finding was consistent for the acute treatment phase and continuous treatment phase subgroups ($P < .001$).

As shown in Figure 2, program enrollees were significantly more likely to remain on therapy for 7 months after the index prescription than the minimal intervention or control groups (77.8% vs 57.1% vs 49.5%; $P < .001$). This observation represents a 36% increase in therapy persistency among program enrollees when compared with the minimal intervention group and a 57% increase when compared with the control group.

Figure 3 shows the timeliness of the first refill by group. Program enrollees were significantly more likely to have refilled their antidepressant medications on time than both comparison groups. The median time (days) to refill for patients enrolled in the program was 0 day (eg, exactly on the date the complete prescription supply should have been consumed), compared with 3 days late for the minimal intervention group and 18 days late for the control group.

Quality of life and symptom burden results are shown in Table 2 and Table 3, respectively. The SF-12 physical function scores did not change compared with baseline. However, we did observe improvement in the SF-12 mental function scores between the initial call and the third call (37.8 vs 49.1, $P < .0001$). The average depression scores on the symptom checklist were significantly lower after the third counseling call compared with the first call (Table 3). For patients who reported severe

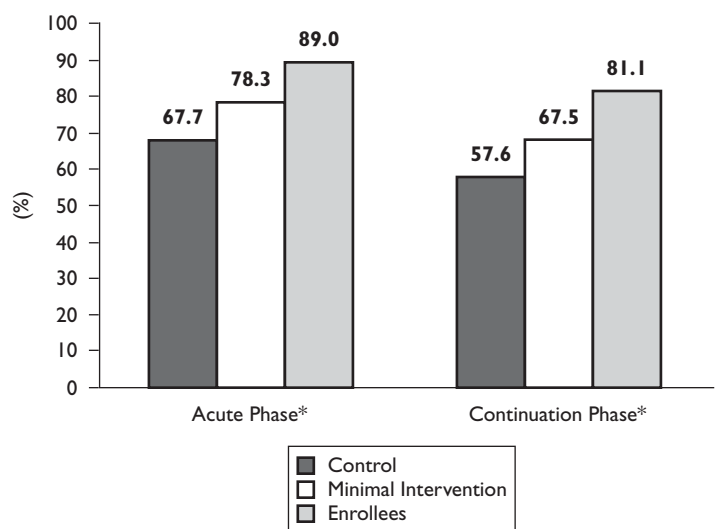
Table 1. Characteristics of the Study Population

Characteristic	Enrollees	Minimal Intervention	Control	Overall
Continuous eligibility, n	505	1375	3744	5624
Female, %	71	69	70	70
Age, y (SD)	54 (15)	54 (16)	54 (16)	54 (16)
Mail Prescription, %	19	13	34	27
Region, %				
Midwest	27	26	26	26
Northeast	13	15	14	14
Northwest	19	17	18	18
South	41	41	41	41

symptoms, we observed a 51% reduction in symptom scores. For patients who reported mild to moderate symptoms we observed a 13% to 44% reduction in symptom scores. Approximately 56% of patients with severe symptoms had a decrease in symptom scores of more than 50%, a customary measure of treatment response. Among members reporting moderate symptoms, half had a 50% or greater decrease in symptom scores.

At the end of call 4, program enrollees were asked to assess the program. Ninety percent of respon-

Figure 1. Percent of Patients Remaining on Antidepressant Medication by Study Group and Treatment Phase



*Length of treatment for the acute phase was at least 114 days; for the continuation phase, treatment lasted at least 231 days.

Figure 2. Percent of Patients Remaining on Antidepressant Medication Therapy After 7 Months of Treatment by Study Group

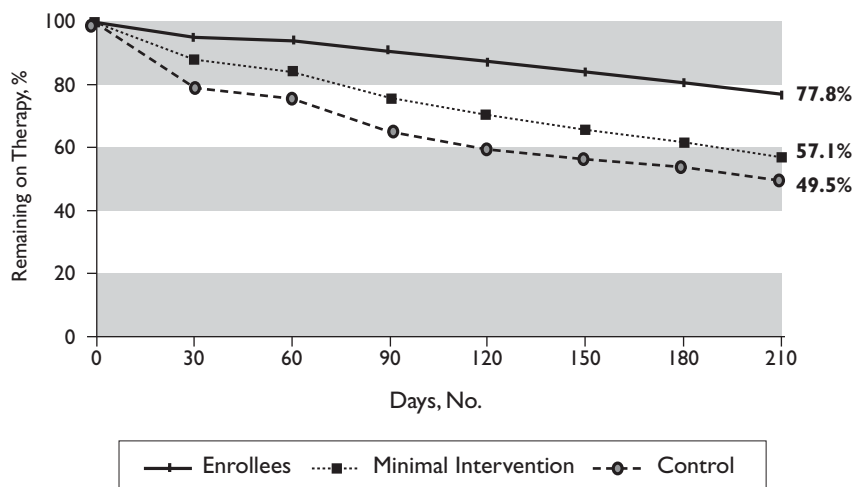
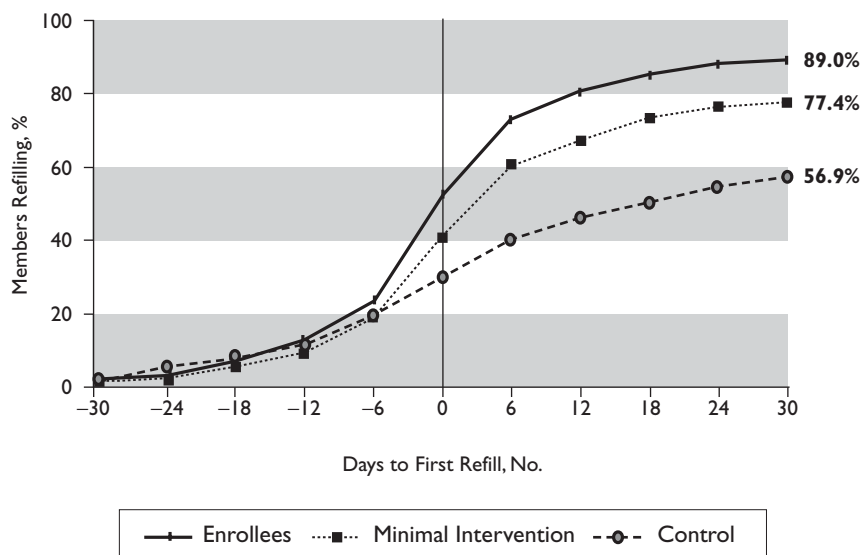


Figure 3. Number of Days Between Index Prescription and First Refill by Study Group



dents reported the mailings were helpful, 98.7% reported the calls helped answer questions, and 81.7% reported that calls helped them take their medication as recommended by their healthcare provider.

those of the telephone-counseling group described by Simon et al.

Limitations of this evaluation included possible selection bias. Enrollees could have been more motivated than individuals electing not to participate in

DISCUSSION

The results obtained in this evaluation are comparable to what has been reported by others. Katon and colleagues¹⁵ reported that a multifaceted intervention consisting of patient education and a highly structured primary care treatment program that included psychotherapy resulted in favorable outcomes. They found that patients in the intervention group were significantly more likely to be adherent to their antidepressant medications at 4 and 7 months, and patients with major depression were significantly more likely to show a 50% or greater improvement in symptoms.¹⁵

Recently, Simon and associates¹⁶ reported the results of a randomized trial demonstrating the effectiveness of nurse care managers to improve the management of depression in a group model health maintenance organization. They found that patients randomized to feedback and telephone-based care management provided by nurses had a higher probability of receiving at least moderate doses of antidepressants and a 50% improvement in depression scores on the symptom checklist.¹⁶ They also found lower mean depression scores on the symptom checklist at follow-up, and a lower probability of major depression at follow-up.¹⁶ The symptom scores observed in our analysis are of similar magnitude as

the program. If true, the observed results would overestimate compliance and persistency compared with what may be observed in a general population with depression. However, we did see statistically significant outcome differences between enrollees who received the full program and members who indicated an interest and completed only the first counseling call (minimal intervention group). These minimal intervention members were similar to enrollees for average age, sex, geographic distribution, and presumably other factors associated with participating in such programs. They also were comparable to program enrollees for the percent of antidepressant medication prescriptions refilled via home delivery pharmacy. These findings suggest that the full program did have an impact for program enrollees.

The lack of a comparison group for the self-reported measures does not account for the impact of secular trend (ie, factors that may have been associated with response to medication or other factors more related to the intervention). For example, patients in the control group may also have had changes in mood or quality of life, but these factors were not measured in this group. However, the magnitude of change in symptom scores was comparable to findings in the telephone-counseling and physician-feedback arm reported in a randomized controlled trial.¹⁶

A general limitation was that we assumed refill behavior is a good surrogate measure of medication adherence. Because measuring actual drug-taking behavior remains a challenge, refill behavior appears to be an appropriate marker of adherence. The consistency of these findings and their comparability with other published data with similar outcome measurements suggest that refill behavior may be an adequate outcome measure for program evaluation.

Future efforts should examine the possibility of obtaining verbal consent for participation rather than informed consent to be returned by mail. Given the particularly high level of interest in the program and the high completion rate of the initial call, we believe that requiring written informed consent after verbal interest may have hindered participation rates in the pro-

Table 2. Pre and Post Quality of Life (SF-12) Scores for Enrollees in Medco Health Solutions Depression Health Management Program

	Physical Function	Mental Function
Patients, No.	271	271
Pre-score	45.12	37.76
Post-score	44.53	49.09
Average change	-0.59	11.33
<i>P</i> value	.3059	.0001

SF-12 indicates 12-item short form health survey; pre-score, baseline score obtained from the first call; post-score, assessment score obtained from the third call.

gram. Only 26% returned the signed forms, resulting in a large segment of the eligible members being excluded from the program.

CONCLUSION

The Medco Health Solutions Depression Health Management program succeeded in encouraging patients with new or recurrent depression to stay on antidepressant medication and to reach treatment goals outlined by AHCPR best practice guidelines. In this evaluation, we observed a 31% to 41% increase in adherence to medication regimen and a 57% increase in persistency of taking medication among

Table 3. Pre and Post Symptom Scores (SCL-20) for Enrollees in Medco Health Solutions Depression Health Management Program

	Mild	Moderate	Severe	Overall
Patients, No.	79	129	71	279
Pre-score	0.42	1.17	2.18	1.21
Post-score	0.36	0.65	1.07	0.68
Average score	-0.06	-0.52	-1.11	-0.53
<i>P</i> value for change	.1197	.0001	.0001	.001
Improvement, %	13.4	44.4	50.9	43.8
Percent with ≥ 50% change	36.7	50.4	56.3	48.0

SCL-20 indicates a 20-item depression symptom checklist (adapted from the SCL-90)¹⁵; pre-score, baseline score obtained from the first call; post-score, assessment score obtained from the third call.

members participating in the program. Members enrolled in the program had fewer days off medication during the critical period between their index prescription and first refill, and stayed on therapy longer than members who did not enroll in the program. In addition, they reported improved quality of life, a reduction in symptoms, and high satisfaction with program components. The Medco Health Solutions Depression Health Management program promotes patient adherence and persistence to practice guidelines and reduces patient symptoms, while increasing quality of life.

Because data are lacking to show that optimal antidepressant management reduces medical care costs, future research is needed to demonstrate the economic value of health management programs in terms of direct and indirect costs.

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