

Does Telephone Care Management Help Medicaid Beneficiaries With Depression?

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Public assistance recipients have a disproportionately high prevalence of depression.¹ About 20% of Medicaid beneficiaries suffer from depression, twice the rate of the general population.^{2,3} Moreover, depression is one of the leading causes of disability.⁴ Low-income individuals with depression face increased daily challenges in their lives, making it difficult for them to gain independence and find a way out of poverty.

Despite their high rates of depression, individuals from poor and minority backgrounds have fewer resources that support treatment and they experience problems communicating with providers due to language and cultural differences.⁵⁻⁷ Due, in part, to having less knowledge about depression and fewer treatment options, their rates of depression treatment are low relative to those of the general population.⁸⁻¹¹ Low-income individuals may also lack the resources to fill prescriptions or adhere to pharmacotherapy. Among those who do seek treatment, many struggle to maintain an ongoing relationship with mental health professionals¹¹ and many fail to seek treatment when their depression recurs.^{8,12,13}

Despite the challenges in providing depression treatment to poor populations, interventions have been effective.^{7,14,15} Miranda et al found that offering intensive in-person outreach and supportive services to facilitate in-person depression treatment increased uptake of depression treatment and reduced depression among low-income, minority women.⁷ However, interventions using intensive outreach (eg, provision of transportation, child care) with comprehensive services can be costly to implement.

This study examines the effects of a less costly approach: telephone care management that includes outreach to promote treatment engagement (both psychotherapy and pharmacotherapy), monitoring of treatment adherence and outcomes, and a brief workbook-based telephone psychoeducational program for those unwilling to engage in in-person treatment. The study's primary goal is to facilitate engagement with treatment; its secondary goal is to alleviate depression symptoms. For non-low-income populations, telephone care management has encouraged patients to talk with mental health specialists, increased use of antidepressants, reduced depression, and improved work performance and job retention.¹⁶⁻²¹

Although telephone care management has helped to facilitate in-person treatment and reduce depression among

Objectives: While telephone care management has shown promise as a cost-effective approach to manage patients with depression, there is little evidence on the effectiveness of this method for Medicaid beneficiaries in managed care. This study examines a 1-year telephone care management intervention designed to help this low-income, hard-to-reach population enter and remain engaged with treatment.

Study Design: A randomized controlled trial of 499 Rhode Island Medicaid managed care beneficiaries with depression (all parents, average age of 35, and 90% women). Care managers conducted telephonic outreach with the intervention group to establish a relationship, initiate treatment, make referrals for in-person psychotherapy and/or medication treatment, and monitor treatment progress. The control group received usual care and was given a referral list of providers participating in the Medicaid program.

Methods: Primary outcomes were the use of health services and depression severity at 6 and 18 months. Administrative claims provided information on medical and mental health services use. Surveys of sample members provided information on depression severity. Analysis controlling for sociodemographic characteristics was done to assess the effectiveness of providing care management.

Results: Care managers contacted 91% of those assigned to the intervention group. The intervention was effective in enrolling participants into mental health services (42% in intervention group vs 31% in control; $P = .05$), but did not successfully reduce average depression severity.

Conclusions: The intervention's lack of success in reducing depression severity for Medicaid beneficiaries suggests the need for more intensive interventions that strengthen telephone care management and potentially include in-person components as well.

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In this article

Take-Away Points / e376

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Take-Away Points

Although there is evidence that telephone care management is a relatively inexpensive means of reducing depression for more affluent populations, telephone care management models have not been tested with low-income populations. The results in this paper suggest the following:

- Care managers can successfully engage low-income, depressed individuals to discuss their condition by telephone.
- Telephonic care management can encourage low-income individuals to seek treatment from mental health professionals, at least in the short term.
- A more intensive intervention, including use of antidepressants for depression symptoms, may be needed to help individuals maintain treatment.

populations of relatively high socioeconomic status, its effects for a Medicaid managed care population are unknown. This study begins to fill this void by reporting the results of a randomized, controlled trial of a telephone care management intervention for Medicaid managed care participants.

METHODS

Sample and Recruitment

The intervention targeted Rhode Island Medicaid beneficiaries who: (1) were 18 to 64 years of age living with at least 1 minor child (a companion study examined the effect of the intervention on participants' children); (2) screened positive for depression according to the Quick Inventory of Depressive Symptomatology-Self Report (QIDS-SR)²²; (3) had selected a particular managed care organization as their Medicaid behavioral healthcare provider; (4) were not currently in treatment and had not participated in in-person treatment 3 or more times in the past year; and (5) had not been diagnosed with other mental disorders. QIDS-SR is a 16-item questionnaire which measures the severity of depressive symptoms, defined as no depression if the individual scores 5 or less; mild depression, 6 to 10; moderate depression, 11 to 15; severe depression, 16 to 20; and very severe depression, 21 to 25. The scores usually range from 0 to 27, but the range was limited to 0 to 25 in this study because individuals who answered positively to suicide-related questions were excluded.

From January 2004 to September 2006, 19,120 Rhode Island Medicaid beneficiaries identified in the managed care organization's administrative database were mailed a letter describing the study; they also received the K6 (a widely used, brief summary measure of nonspecific psychological distress)²³ and a \$15 phone card as an incentive for returning a completed K6. A total of 4053 people returned the K6 (Figure 1). Care managers attempted to contact the 1613 individuals who scored 13 or higher (range: 0-24) to assess them for research participation and they successfully reached 1073. These individuals were further assessed for depression using the QIDS-SR.

For individuals with depressive symptoms (QIDS-SR >5), a care manager explained the random-assignment study and obtained verbal consent to participate in the study. If the individual agreed, the care manager randomly assigned the individual by an Internet-based system to either the intervention or control group. A total of 507 individuals met the study criteria and agreed to be in the study; 133 declined (reasons were not given for why these individuals declined). Of those reached, 433 were ineligible because they were currently in treatment or had participated in in-person treatment 3 or more times in the past year (39%), did not screen positive for depression according to the QIDS-SR (32%), had no children (19%), or for other reasons (10%) (eg, having been diagnosed with bipolar disorder, having alcohol or drug dependence, or suicide risk). Those with suicide risk were referred for immediate crisis intervention. Eight participants assigned to the intervention group dropped out at the beginning of the study without providing an explanation. The final study sample included 499 individuals—245 in the intervention group and 254 in the control group. This study received institutional review board approval.

The Intervention

This 12-month, telephone care management intervention was modeled on a structured telephonic depression intervention studied in the Work Outcomes Research and Cost-effectiveness Study (WORCS)²⁴; it included employees from several large corporations, all of whom were covered by employer-sponsored health insurance. The current study included a more disadvantaged and harder-to-reach group enrolled in Medicaid managed care.

Intervention-group members received telephone outreach from care managers to help them engage in and maintain treatment with mental health professionals for depression. Care managers followed a protocol regarding frequency of participant contact, which varied by number of previous contacts, time elapsed between contacts, and depression severity.

Care managers were master's degree-level, licensed clinicians with training in either social work or counseling psychology, and had previous experience in the assessment and treatment of depression. They received on-site training from the managed care organization's staff in providing telephone care management of depression. The training focused on motivational enhancement, which guides the participants to consider possibilities regarding their treatment options. Since about 40% of Hispanic participants were Spanish-speaking, a bilingual care manager was available to work

with individuals who preferred to receive care management in Spanish.

Based on the American Psychiatric Association's Evidence-Based Practice Guidelines for the Treatment of Patients With Major Depression,²⁵ the intent of the care management program was to engage participants with moderate or greater symptoms of depression in both in-person psychotherapy and antidepressant pharmacotherapy. Care managers facilitated appointments with local physicians and therapists who accepted Medicaid and had appointments available. Actual treatment received, of course, depended on each participant's willingness to initiate and continue in treatment. For participants who resisted seeking treatment, care managers attempted to engage them in a workbook-based telephone psychoeducational program, titled *Creating a Balance*,²⁶ to begin talking about their depression and potential treatment.

Once participants began in-person treatment, care managers monitored their progress, paying careful attention to common warning signs of premature care disengagement, and, if called for, encouraged them to continue to receive mental health care. Care managers frequently reminded participants of scheduled appointments and followed up with participants shortly after appointments, especially after the critical first appointment, to ensure continued engagement in treatment. All physical and mental health services available to the participants were covered by Medicaid.

During all telephone contacts with the intervention group, care managers tracked depression symptoms using the 9-item depression module of the Patient Health Questionnaire (PHQ-9).²⁷ These routine assessments of depression helped care managers understand patterns and fluctuations in participant symptoms over time, allowing care managers to respond accordingly.

The Control Group

Control group members were sent a letter informing them that they might be experiencing depression, recommending that they see a healthcare provider concerning their depression, and providing a toll-free telephone number to call for more information about appropriate Medicaid-covered care. Control group members were eligible for the same services as other Medicaid beneficiaries in Rhode Island, but they were not eligible for the telephone care management intervention.

Data Sources

The managed care organization provided claims data on the use of behavioral and physical healthcare services and prescription drugs. A telephone survey administered prior to random assignment collected demographic informa-

tion. Study participants also completed follow-up telephone surveys at 6 and 18 months after random assignment. The 6-month survey was completed by 370 participants (response rate: 74%) and the 18-month survey was completed by 428 participants (response rate: 86%) (Figure). The first follow-up point for depression, which was at 6 months, examined the progress at the halfway point of the intervention. The second follow-up survey was administered at 18 months, which was 6 months after the end of the intervention, to assess whether the intervention had lasting effects. All of the surveys were conducted by a survey firm that was part of the research team.

The depression score was based on the QIDS-SR, which was administered in both the 6- and 18-month surveys. The QIDS-SR was used to assess both the intervention and the control groups because of concern that the intervention group had become familiar with the PHQ-9 through discussions with care managers.

Data Analysis

Mental health service visits were defined as visits to a psychiatrist, psychologist, social worker or mental health counselor, or a primary care physician with a primary diagnosis related to depression. Service use was reported for the 12 months of the intervention and for the 6 months following the end of the intervention.

An intent-to-treat analysis was used for all outcomes, meaning all participants who were randomized were included in the analysis regardless of whether they received any care management or mental health services. Logistic regression was used for binary outcomes, including ever received mental health services; ever visited a psychiatrist, primary care physician, or other mental health provider; and ever filled antidepressant prescription medication. Ordinary least squares models were used to estimate the impact on number of visits and days for antidepressant prescriptions.

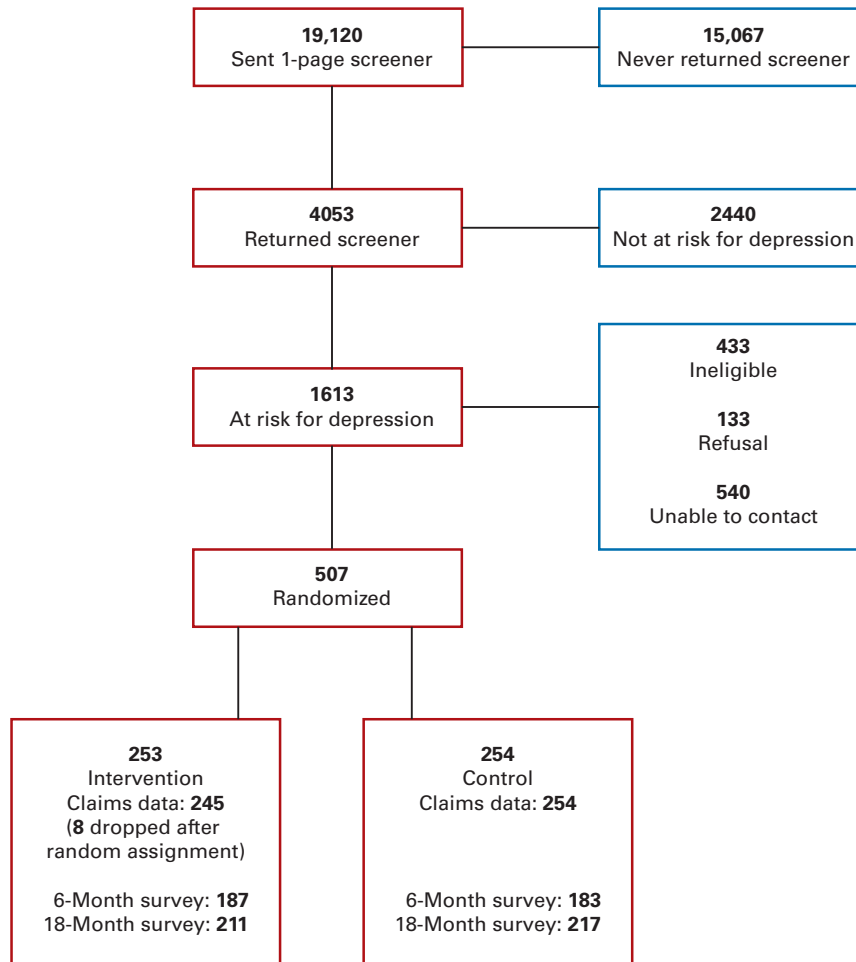
To increase statistical precision, the impact analyses included the following control variables assessed at baseline: depression level, sex, age, race/ethnicity, marital status, education, number of children, prior treatment status, and quarter of random assignment (to capture seasonal fluctuations in depression symptomatology). All analyses were done using software SAS 9.1.3 and Stata/SE 10.0.

RESULTS

Characteristics of the Sample

A comparison of the 2 groups at baseline indicates there were few differences (Table 1). Even with randomization, the intervention group had a higher percentage of individuals with prior depression treatment than the control group did

■ **Figure.** Participant Recruitment Flow Chart



(49.8% to 40.5%, $P = .04$). The intervention group also had more moderate cases of depression and fewer mild and severe cases. Despite these differences, the average QIDS-SR score was not significantly different between the 2 groups.

The average age of participants was 35, and 90% were women. About half of the participants had a General Educational Development certificate or high school diploma; approximately 45% were employed; about 33% were Hispanic; more than half of the participants were either single or legally separated and not living with a spouse or partner; about 74% had a total score on the QIDS-SR in the moderate to severe range at baseline with an average score of 15. At baseline, about 45% of the sample reported prior treatment for symptoms of depression.

Telephone Contact With Care Managers

More than 91% of the intervention group was contacted by a care manager at least once during the intervention, 86% at least twice, and more than 68% at least 5 times. Successful contacts required multiple attempts, and care managers aver-

aged approximately 30 attempts per participant over the full intervention period. On average, approximately 9 contacts (standard deviation [SD] = 6.0) per participant were made during the intervention year. Contacts were more frequent with participants experiencing moderate or severe depression (10.3 contacts, SD = 6.9) than for the mildly depressed (8.4 contacts, SD = 5.2; $P = .05$). Telephone contacts with participants varied somewhat across the care managers, but calls generally lasted less than 1 hour. Complete information on how often the *Creating a Balance* workbook was used or which participants used it was not collected.

Use of Mental Health Services

During the year of the intervention, about 42% of the intervention group had a mental health visit, compared with about 31% of the control group ($P = .05$) (Table 2). The intervention group also averaged about 1.4 more visits over the intervention year ($P = .01$). Visits to a psychiatrist, in particular, were significantly higher for the intervention group than for the control

■ **Table 1.** Study Sample Characteristics, by Research Group Status

Sociodemographic Characteristics	Intervention Group (n = 245)	Control Group (n = 254)	Total (N = 499)	P
Sex,^a %				.52
Female	88.98	90.55	89.78	
Male	11.02	9.45	10.22	
Age,^a %				.20
18-25 y	15.51	10.63	13.03	
26-35 y	35.51	43.70	39.68	
36-45 y	32.24	30.31	31.26	
46-max age (62), y	16.73	15.35	16.03	
Race/ethnicity,^a %				.76
White	43.27	47.24	45.29	
Hispanic	35.10	31.50	33.27	
Black/African American	13.24	11.81	12.42	
Other	8.57	9.45	9.02	
Marital status,^a %				.86
Single	37.04	37.70	37.37	
Married or lives with partner	39.92	41.27	40.61	
Divorced, separated, or widowed	23.05	21.03	22.02	
Highest degree/diploma,^a %				.60
High school or GED certificate	51.85	56.22	54.07	
Technical or 4-year college	23.87	20.88	22.36	
No high school diploma or GED certificate	24.28	22.89	23.58	
Currently employed,^a %	43.46	45.78	44.65	.61
Had prior depression treatment^a %	49.82	40.48	45.07	.04
Average number of children^b	1.94	1.96	1.95	.86
Depression severity: total score on QIDS-SR,^a %				.03
Mild (6-10)	11.43	15.35	13.43	
Moderate (11-15)	45.71	32.68	39.08	
Severe (16-20)	31.43	38.58	35.07	
Very severe (21-25)	11.43	13.39	12.42	
Average QIDS-SR scores^b	15.15	15.59	15.37	.22

GED indicates General Educational Development; QIDS-SR, Quick Inventory of Depressive Symptomatology-Self Report.
^aP value for unadjusted χ^2 test.
^bP value for mean difference using t test.

group (18.4% vs 9.9%; $P = .03$). The estimated difference in antidepressant use between the intervention and control groups was not statistically significant (53.4% vs 42.2%; $P = .17$).

Depression Outcomes

Table 3 shows the estimated effects of the intervention on depression severity at 6- and 18-month follow-ups. The average QIDS-SR score at 6 months was 12.3 for the intervention group and 13.1 for the control group. At 18 months, the average scores were slightly lower: 11.5 for the intervention group

and 12.0 for the control group. Neither of these differences was statistically significant. Both groups improved somewhat over time, but that improvement was not significantly greater for the intervention group than for the control group. More than two-thirds of participants from both groups had depression improvement at 18-month follow-ups. There were no significant differences in the percentage of participants whose symptoms of depression were in remission, which was defined as having a score of 5 or less on the QIDS-SR at both the 6- and 18-month follow-up assessments.

■ **Table 2.** Estimated Impacts on Service Use During the 12 and 18 Months Post Random Assignment: Regression Adjusted Means and Coefficients

	Adjusted means (SD) ^a		Estimated Coefficient ^c (95% CIs)	P
	Intervention Group (n = 234) ^b	Control Group (n = 242) ^b		
Use of mental health services & antidepressants, n (%)				
Received any mental health services				
Months 0-12	41.88 (18.64)	30.99 (16.56)	1.51 (1.00-2.28)	.05
Months 13-18	24.79 (11.74)	20.25 (10.14)	1.20 (0.76-1.90)	.42
Visited a psychiatrist for depression				
Months 0-12	18.38 (11.57)	9.92 (7.05)	1.90 (1.08-3.35)	.03
Months 13-18	13.25 (10.36)	8.26 (7.47)	1.62 (0.86-3.06)	.14
Visited a primary care physician for depression				
Months 0-12	18.80 (16.93)	11.57 (11.10)	1.57 (0.89-2.75)	.12
Months 13-18	6.84 (6.22)	4.55 (3.95)	1.53 (0.67-3.50)	.31
Visited other mental health providers (psychologist, social worker/counselor) for depression				
Months 0-12	30.34 (15.19)	20.25 (12.34)	1.66 (1.06-2.61)	.03
Months 13-18	15.81 (9.53)	14.87 (9.76)	1.08 (0.63-1.85)	.78
Filled antidepressant medication				
Months 0-12	53.42 (26.51)	42.15 (26.84)	1.34 (0.88-2.11)	.17
Months 13-18	32.91 (15.20)	30.17 (15.28)	0.99 (0.65-1.51)	.97
Visits for mental health services & antidepressants, n (%)				
Number of mental health visits				
Months 0-12	3.61 (2.16)	2.11 (1.99)	1.43 (0.30-2.57)	.01
Months 13-18	1.39 (0.93)	1.18 (1.02)	0.16 (-0.53 to 0.85)	.65
Number of visits to psychiatrist for depression				
Months 0-12	1.05 (0.96)	0.52 (0.88)	0.46 (-0.03 to 0.95)	.07
Months 13-18	0.42 (0.30)	0.21 (0.29)	0.18 (-0.03 to 0.38)	.10
Number of visits to primary care physician for depression				
Months 0-12	0.35 (0.28)	0.21 (0.25)	0.12 (-0.03 to 0.26)	.13
Months 13-18	0.10 (0.93)	0.08 (0.09)	0.02 (-0.06 to 0.09)	.63
Number of visits to other mental health providers (psychologist, social worker/counselor) for depression				
Months 0-12	2.57 (1.61)	1.50 (1.58)	1.11 (-0.06 to 2.29)	.06
Months 13-18	1.31 (1.14)	0.90 (1.21)	0.39 (-0.52 to 1.30)	.40
Number of prescription days for antidepressant medication				
Months 0-12	72.66 (51.65)	56.80 (51.52)	5.98 (-9.71 to 21.68)	.45
Months 13-18	33.64 (20.04)	25.43 (20.31)	4.59 (-4.96 to 14.14)	.35

CI indicates confidence interval; SD, standard deviation.

^aAdjusted for control variables: depression severity, sex, age, race/ethnicity, marital status, education, employment status, prior treatment history, number of children, and time of random assignment.

^bTotal numbers don't add to 499 because some cases were dropped in the regression models due to missing baseline depression values.

^cOdds ratio for outcomes in the "Use of mental health services & antidepressants" section of the table; linear regression coefficient for "Visits for mental health services & antidepressants" section.

DISCUSSION

Few care management models have focused on the needs of public assistance beneficiaries. In this study of telephone care management for Medicaid beneficiaries with depression,

the intervention increased the use of mental health services during the intervention year, but had no significant effects on depression symptoms.

The Medicaid beneficiaries included in this study had more severe depression than the working, middle-class adults de-

■ **Table 3.** Estimated Impacts on Depression Severity at 6 and 18 Months

	Adjusted Means (SD) ^a		Estimated Coefficient (95% CIs) ^b	P
	Intervention Group (n = 234)	Control Group (n = 242)		
Mean depression scores: QIDS-SR scale				
At 6 months	12.33 (2.44)	13.05 (2.47)	0.53 (−1.63 to 0.56)	.34
At 18 months	11.48 (2.27)	12.03 (2.28)	−0.31 (−1.34 to 0.72)	.56
Depression improvement, n (%)				
At 6 months	61.59 (17.21)	62.17 (17.49)	1.07 (0.67-1.72)	.77
At 18 months	72.30 (15.28)	68.87 (17.84)	1.29 (0.81-2.05)	.29
Recovery,^c n (%)				
At 6 months	12.16 (11.66)	9.77 (9.27)	1.22 (0.58-2.57)	.56
At 18 months	16.98 (13.52)	15.61 (12.55)	1.02 (0.56-1.84)	.95

CI indicates confidence interval; QIDS-SR, Quick Inventory of Depressive Symptomatology-Self Report; SD, standard deviation.
^aAdjusted for control variables: baseline depression level, number of services, sex, age, race/ethnicity, marital status, education, employment status, prior treatment history, number of children, and time of random assignment.
^bLinear regression coefficients are shown for mean depression score variable and odds ratio for percentage with depression improvement and recovery variables.
^cThe percentage recovered was defined as a QIDS-SR score of ≤5.

scribed in WORCS, on which the current intervention was modeled.²⁴ This difference in target population may, in part, explain why a telephone care management model proved to be less successful in this instance. The current study's participants also faced more barriers to care, had competing life stressors, and generally represented a population that was relatively hard to reach and hard to engage using traditional outreach methods.

Intervention effects on use of mental health services were statistically significant, but modest in size. For example, intervention-group participants were more likely to receive some in-person mental health care during the first 12 months, but only 42% received those services and this represented only an 11% increase over the control group. This pattern of findings does not suggest that increased use of mental health services could not improve outcomes among depressed Medicaid beneficiaries. Instead it suggests that the telephone care management program did not increase use of mental health services enough to improve outcomes.

Previous studies in managed care systems with a higher degree of integration (eg, staff model health maintenance organizations) have found greater benefits for depressed patients participating in telephone care management, although primarily within a non-Medicaid population.^{18,28} In those programs, care managers work within a single healthcare system where the care managers freely communicate with all in-person care providers and directly coordinate care. Such a collaborative approach was not possible for the current program because these care managers attempted to coordinate care with providers who worked with, but not inside of, the managed care system. For instance, to protect patient confidentiality, care managers were required to obtain written permission

from both the client and the provider before attempting to act as a liaison between them. Unfortunately, this requirement became a significant administrative barrier, generally preventing care managers from performing this role.

The study by Miranda et al,⁷ which focused on in-person outreach to a population of low-income, racial/ethnic minority women, offers another useful point of comparison. That intervention provided support services, such as child care and transportation, to facilitate participation in in-person treatment, which suggests that individuals on Medicaid, as well as other low-income populations, may benefit from more intensive interventions that extend beyond telephone care management with in-person support designed to address common barriers to treatment.

Although it appears that telephone care management alone may not be sufficient for low-income populations with high needs, future studies could explore whether an intervention provided within an integrated managed care system is effective in getting this population to adhere to treatment. Since telephone care management was effective in increasing mental health service use, care managers may be able to provide better care coordination and sustain engagement if they work within a single healthcare system.

Limitations

The main limitation of the present study concerned sample recruitment. Due to limited resources for recruiting participants, the sample included only about 10% of those whom the study attempted to recruit. Thus, results might not apply to depressed Medicaid beneficiaries more generally. Also, about half of study participants had been treated for depression in the past. It is therefore possible that the study included individuals who are

relatively more likely to obtain healthcare services on their own and who are unlikely to respond to treatment for depression.

Another limitation of the study is the lack of information about the quality of specific treatments provided to participants, especially those who received in-person psychotherapy. It is possible that the findings of greater service use without symptom improvement were due to the limited duration or quality of the services received. Given that we do not know much about the quality of therapy provided, future studies should examine the components of the treatment in more depth.

Additionally, because there was interest in knowing whether the intervention had lasting effects on depression, the second follow-up survey was conducted 6 months after the end of the intervention. As a result, it is not known whether the intervention had improved depression symptoms at the time it ended.

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