

Investigating Depression Severity in the Working toward Wellness Study

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Authors: Sue Kim and Charles Michalopoulos, MDRC

Submitted to: Girley Wright, Project Officer
Office of Planning, Research and Evaluation
Administration for Children and Families

Kristen Joyce and Amy Madigan, Project Officers
Assistant Secretary for Planning and Evaluation
U.S. Department of Health and Human Services

Project Director: David Butler
MDRC
16 East 34th Street
New York, NY 10016

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Abstract

This paper describes several additional analyses and results that go beyond the basic impact findings from the evaluation of the Working toward Wellness (WtW) program in Rhode Island. WtW was a one-year telephone care management intervention for depressed parents who were Medicaid recipients. To encourage individuals with depression to seek treatment from mental health professionals, the WtW program randomly assigned depressed Medicaid recipients to a program group, which had access to telephone care management for up to a year, or to a control group, which had access to the usual mental health services available to Medicaid recipients. Results from the study found that telephone care management modestly increased in-person treatment for depression during the year of the intervention but not after that point. No impacts on average depression severity were observed for the sample as a whole.

To understand which individuals showed reduced depression over time, the paper examines the relationship between participants' characteristics and changes in depression scores from baseline to six months and to eighteen months. The results do not, however, suggest a clear means of targeting services like WtW to those who are least likely to improve on their own. Other than baseline depression severity, few participant characteristics were found to be associated with reduced depression over time. This suggests that most subgroups of participants could have benefited from a more effective intervention.

Also, because only about 40 percent of the study population participated in in-person mental health treatment, the paper examines which factors contributed to receiving treatment and the intensity of that treatment. The results suggest that a number of factors were associated with seeking mental health treatment. In particular, treatment occurred more frequently for those who were more severely depressed, those who were not working at baseline, white sample members, and those who had received treatment for depression prior to random assignment. This may suggest providing more resources and supports to encourage those groups to receive treatment who are least likely to participate, for whom the program might make a larger difference. It may also suggest excluding individuals with prior treatment for depression from future studies of similar interventions.

Lastly, because the eighteen-month results showed that there were significantly fewer program group members in the very severely depressed group, the paper investigates which baseline characteristics are associated with being very severely depressed at follow-up. It was found that although some characteristics are associated with having severe depression at follow-up, the impacts on depression severity for this high-risk subgroup are not statistically significant.

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Introduction

Although low-income individuals are disproportionately likely to suffer from depression, few receive treatment, and even fewer persist with their treatment. Untreated depression can negatively affect all aspects of life, including employment, job performance, and worker productivity. To encourage individuals with depression to seek treatment from mental health professionals, the Working toward Wellness (WtW) program in Rhode Island provided telephone care management for up to one year to depressed parents who were Medicaid recipients. The program represents one of four strategies being studied in the Enhanced Services for the Hard-to-Employ Demonstration and Evaluation to improve employment and other outcomes for low-income parents and others who face serious barriers to employment. The project is sponsored by the Administration for Children and Families (ACF) Office of Planning Research and Evaluation (OPRE) and the Office of the Assistant Secretary for Planning and Evaluation (ASPE) in the U.S. Department of Health and Human Services (HHS), with additional funding from the Department of Labor (DOL). WtW is being evaluated by MDRC in partnership with United Behavioral Health (UBH) and Group Health Cooperative (GHC). UBH delivered the care management services, and GHC designed the intervention and provided technical assistance and training to UBH staff.

The evaluation of WtW randomly assigned depressed Medicaid recipients to a program group, which had access to telephone care management for up to a year, or to a control group, which had access to the usual mental health services available to Medicaid recipients in Rhode Island. Results from the study found that telephone care management modestly increased in-person treatment for depression during the year of the intervention but not after that point. Impacts on average depression severity are not statistically significant for the sample as a whole. While early findings suggested that the program reduced depression severity for Hispanic sample members, that effect did not persist after the intervention ended. Through three years, however, there continued to be a small but statistically significant reduction in the proportion of program group members who were severely depressed, compared with the proportion of control group members.

Although the results of the WtW intervention are somewhat disappointing, this paper describes several additional analyses that go beyond the basic impact findings and that may help inform similar future interventions. Specifically, to understand which individuals showed reduced depression severity over time, the paper examines the relationship between participants' characteristics and changes in their depression scores from baseline to six months and eighteen months. These analyses are intended to identify groups whose depression would have deteriorated in the absence of the intervention and who would be promising candidates for intervention. Because program group members' depression severity might have been influenced by the program, this analysis was limited to the control group.

1. The results of these analyses are not especially informative: differences in depression improvement are generally similar across different characteristics of study participants.
2. Because only about 40 percent of the study population participated in treatment, the paper examines which factors were associated with receiving in-person mental health treatment and the intensity of that treatment. A future intervention like WtW might want to focus on individuals who have characteristics that are associated with not receiving treatment or with receiving less intensive amounts of treatment. The results of this analysis show that individuals with less severe depression, minority group members, and those who were working received less treatment than others.
3. Because the eighteen-month results showed that there were significantly fewer program group members than control group members in the very severely depressed group, the paper investigates which baseline characteristics are associated with being very severely depressed at follow-up. This is done by determining the probability that an individual is likely to be severely depressed at follow-up, using baseline characteristics (baseline depression, age, education, race/ethnicity, marital status, employment, gender, treatment history, and number of children). The goal is to find a subgroup, defined using baseline characteristics, whose depression severity was reduced by the program. Impact estimates were then calculated for the subgroup that was predicted to be most likely to be severely depressed at follow-up. Although some characteristics were found to be associated with having severe depression at follow-up, the impacts on depression severity for the high-risk subgroup defined by these characteristics are not statistically significant.

Shifts in Depression Scores

This section examines the relationship between participants' characteristics and changes in their depression scores from baseline to the two follow-up periods. Three sets of analyses are presented. First, the distribution of depression severity is presented at baseline and each follow-up point to show how depression scores changed over time. Second, the average depression score over time is presented by baseline depression severity to see whether improvement was greater for some groups than for others. Finally, the relationship between baseline characteristics and depression levels at follow-up are examined to better understand which individuals improved on their own. The analyses are limited to the control group in order to identify possible subgroups that were likely to get well on their own or to seek treatment, without being encouraged by the care managers.

Distribution of Depression Severity Over Time

Table 1 shows the percentages of control group members by category of depression severity — no depression, mild depression, moderate depression, severe depression, and very severe depression — at baseline and at the six-month and the eighteen-month follow-up points.

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Table 1

Depression Levels at Baseline, at 6 Months, and at 18 Months: Control Group

Rhode Island: Working toward Wellness

QIDS-SR Depression Category	Baseline (%)	6 Months (%)	18 Months (%)
No depression	0.0	9.7	14.6
Mild (6-10)	19.4	29.7	23.0
Moderate (11-15)	31.5	24.2	32.1
Severe (16-20)	37.6	24.9	20.6
Very severe (21-25)	11.5	11.5	9.7
Sample size	165	165	165

SOURCES: MDRC calculations from responses to the baseline, the 6-month, and the 18-month surveys.

NOTES: The sample sizes include WtW control group participants who had complete depression data at baseline, at 6 months, and at 18 months.

A chi-square test of changes in the distribution of depression severity found statistical significance at the 1 percent level for each pair of time periods (baseline to 6 months, baseline to 18 months, and 6 months to 18 months).

At baseline, about two-thirds of the control group had moderate or severe depression. About 19 percent had mild depression, and about 12 percent had very severe depression. Because individuals had to be depressed to be eligible for the study, none of them were free of depression at baseline.

At six months, control group members overall showed substantial improvement in their depression. Nearly 10 percent had improved enough that they no longer showed the symptoms of depression. While about 19 percent of the control group members were mildly depressed at baseline, about one-third were mildly depressed at the six-month follow-up. At the other end of the spectrum, the proportion of individuals who were severely depressed stayed about the same, at 12 percent, from baseline to six months.

Although the change between the six-month and the eighteen-month follow-up points was more modest, the sample continued to improve over time. In particular, the proportion who

were no longer depressed increased from about 10 percent of the sample to about 15 percent. Also, the proportion who were severely or very severely depressed declined more than one-third (36.4 percent) at six months to less than one-third (30.3 percent) at the eighteen-month follow-up. Differences in the distribution of depression severity between each of the time periods are all statistically significant at less than the 1 percent level.

Improvements in Depression Severity, by Severity of Depression at Baseline

Although it is clear from Table 1 that depression levels improved over time, it is not clear how many individuals improved over time. For example, it is possible that 10 percent of the sample moved from mildly depressed at baseline to not depressed at follow-up but that other individuals moved from moderately or more severely depressed at baseline to mildly depressed at follow-up. Alternatively, those who were mildly depressed at baseline might have stayed the same or had their depression worsen over time while other individuals might have improved enough that they no longer showed the symptoms of depression.

Table 2 begins to explore which individuals improved over time, by showing average depression severity over time for the four categories of depression severity at baseline. The table also shows the standard deviation of depression severity at each point for each subgroup as a measure of how much depression varied from person to person.

For individuals who were at least moderately depressed at baseline, the average level of depression severity declined between baseline and six months, and the improvements were greater for those who were more severely depressed. In particular, the average score declined by about two points (from 13.3 to 11.4; $p\text{-value} < 0.01$) for those who were moderately depressed at baseline; by a little less than four points (from 17.9 to 14.4; $p\text{-value} < 0.001$) for those who were severely depressed at baseline; and by about six points (from 21.9 to 16.1; $p\text{-value} < 0.01$) for those who were very severely depressed.

Changes in depression severity were much smaller after six months, declining by less than one point for all but the mildly depressed. Although the reduction in average depression severity for the mildly depressed was statistically significant between six and eighteen months, overall there was not a substantial change in their average depression levels over time.

In short, the results indicate that even the severely depressed can improve to some extent on their own, given the episodic nature of depression, but improvements are likely to come soon after depression has been diagnosed.

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Table 2

**Average Depression Severity Over Time, by Depression Level at Baseline:
Control Group**

Rhode Island: Working toward Wellness

QIDS-SR Depression Category	Baseline	6 Months	18 Months
Mild (6-10)	9.2 (1.0)	10.4 (4.5)	8.0 (5.2)
Moderate (11-15)	13.3 (1.4)	11.4 (5.2)	11.6 (5.2)
Severe (16-20)	17.9 (1.3)	14.4 (5.7)	14.1 (5.1)
Very severe (21-25)	21.9 (1.2)	16.1 (6.6)	15.3 (5.2)
Sample size	165	165	165

SOURCES: MDRC calculations from responses to the baseline, the 6-month, and the 18-month surveys.

NOTES: The sample sizes include WtW control group participants who had complete depression data at baseline, at 6 months, and at 18 months.

Standard deviations are shown in parentheses.

Differences between baseline and 6 months are statistically significant at the 1 percent level for all categories other than mildly depressed. Differences between baseline and 18 months are statistically significant at the 1 percent level or better for all categories other than the mildly depressed group. Differences between 6 months and 18 months are statistically significant only for the mildly depressed group (p-value < 0.01).

Improvements in Depression Severity, by Characteristics at Baseline

The next step of the analysis was to use regression methods to explore the relationship between a wider set of participant characteristics and depression scores at six and eighteen months following random assignment. For this analysis, a logistic regression was conducted using a dichotomous variable indicating any reduction in depression severity. The set of baseline characteristics that were used as explanatory variables included depression severity, age, education, race and ethnicity, marital status, employment status, gender, whether the individual had received prior treatment, and number of children.

In Table 3, results from the logistic regression were used to predict the probability that an average sample member with that characteristic had an improvement in the depression score between baseline and six months and between baseline and eighteen months. For example, the first rows of Table 3 show that, after controlling for differences in age and the other baseline characteristics noted above, the predicted probability of depression improvement between baseline and six months of follow-up ranged from 35.5 percent for those who were mildly depressed at baseline to 85.6 percent for those who were very severely depressed. Likewise, between baseline and eighteen months, depression was more likely to improve for those who were more severely depressed.

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Table 3

**Depression Improvement at 6 Months and 18 Months, by Characteristic at Baseline:
Control Group**

Rhode Island: Working toward Wellness

Control Variable (%)	Adjusted Probability of Depression Improvement	
	6 Months (%)	18 Months (%)
Depression outcome: QIDS-SR	***	**
Mild (6-10)	35.5	57.5
Moderate (11-15)	56.0	64.3
Severe (16-20)	75.3	72.2
Very severe (21-25)	85.6	83.1
Age (years)		
18-25	74.8	81.9
26-35	60.8	67.2
36-45	60.3	64.5
46+	63.0	68.6
Education ^a		
Completed high school or obtained GED certificate	67.7	70.8
Completed technical or four-year college	46.4	71.4
Has no high school credential	60.0	57.1
Race/ethnicity ^a		
White	67.5	69.9
Hispanic	56.8	72.7
African-American	57.1	61.9
Other	54.5	45.5
Married		
Yes	54.8	64.5
No	67.0	70.1
Employed		
Yes	56.8	64.9
No	67.1	70.6
Gender		
Female	63.4	68.3
Male	52.9	64.7

(continued)

Table 3 (continued)

Control Variable (%)	Adjusted Probability of Depression Improvement	
	6 Months (%)	18 Months (%)
Treatment history		
Prior treatment for depression	65.6	67.2
No prior treatment for depression	60.0	68.4
Number of children		
1	66.4	71.1
2	62.5	68.1
3-7	53.6	61.6
Sample size ^b	159	159

SOURCES: MDRC calculations from responses to the baseline, the 6-month, and the 18-month surveys.

NOTES: Estimates are regression-adjusted using logit models, controlling for sample members' characteristics. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

^aThe reference group for education is "no high school credential," and "white" is the reference group for the race/ethnicity variable.

^bThe sample size does not equal 165 because of missing values for some control variables.

For the most part, baseline characteristics other than depression severity are not significantly associated with improved depression levels. There is only one exception to this: white control group members were more likely to have depression improvement than Hispanic participants (p -value = 0.06) between baseline and six months. Prior analysis has shown that WtW reduced average depression for Hispanics but not for other sample members at six months.

Individuals who were more severely depressed at baseline were more likely to improve over time, but their average depression severity continued to lag behind those who were less severely depressed. In short, these results did not find particular subgroups that should be targeted for interventions such as WtW. The findings do suggest, however, that future studies should further examine the Hispanic subgroup. Although WtW findings on the Hispanic subgroup should be interpreted with caution because of the small sample size, it is worth noting that there were differences for this group. Only the Hispanic subgroup had a favorable depression impact at six months of follow-up, and, compared with white participants, Hispanics were less likely to improve on their own.

Which Characteristics Are Associated with Receiving Mental Health Treatment?

About 20 percent of Medicaid recipients suffer from depression — a rate twice as high as among the general population.¹ Despite their relatively high rates of depression, individuals from poor and minority backgrounds have fewer social and economic resources that support treatment; their rates of depression treatment are low relative to the rates of the general population. Even among those individuals who do seek treatment, depression can be episodic, and many patients relapse, suggesting the importance of maintaining treatment continuity,² including an ongoing relationship with a mental health professional.³ Previous studies show that, with depression treatment, remission rates range from about 25 percent to 40 percent.⁴

Although depression treatment is generally low among Medicaid recipients, it may be lower for some subgroups than for others. Future interventions like WtW may be more effective if they are targeted at groups that are least likely to seek treatment on their own. This section investigates this issue by exploring whether there are subgroups of control group members who were unlikely to seek treatment on their own.

Baseline Characteristics of Those Who Made at Least One Mental Health Visit

Table 4 shows the probability of having at least one mental health visit in the first six months of follow-up and in the first eighteen months of follow-up. A mental health service visit was defined as a visit to a psychiatrist, psychologist, or social worker or mental health counselor or a visit to a primary care physician with a primary diagnosis related to depression. Results are predicted probabilities from a logistic regression, after controlling for the same set of baseline characteristics as in Table 3. For comparison, about 27 percent of the full sample had at least one visit in the first six months, and about 42 percent had at least one visit in the first eighteen months.

The first rows of results in Table 4 show that the probability of having at least one mental health visit did not vary significantly by baseline depression severity. This is a somewhat troubling finding, since those who had more severe depression were in greater need of mental health services.

¹Adelmann (2003).

²Belsher and Costello (1988).

³American Psychiatric Association (2000).

⁴Rush et al. (2004); Trivedi et al. (2006).

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Table 4

**Adjusted Probability of Participants' Having Any Mental Health Visit,
by Characteristic at Baseline:
Control Group**

Rhode Island: Working toward Wellness

Control Variable (%)	Adjusted Probability of Mental Health Visit	
	6 Months (%)	18 Months (%)
Depression outcome: QIDS-SR		
Mild (6-10)	27.0	28.3
Moderate (11-15)	30.6	33.6
Severe (16-20)	37.6	40.7
Very severe (21-25)	43.9	45.6
Age (years)		
18-25	54.9	53.3
26-35	31.3	37.7
36-45	31.6	34.4
46+	33.6	27.0
Education ^a		
Completed high school or obtained GED certificate	32.3	35.4
Completed technical or four-year college	35.7	42.9
Has no high school credential	37.1	34.3
Race/ethnicity ^a		
White	41.0	44.6
Hispanic	27.3	25.0 **
African-American	28.6	38.1
Other	18.2 *	18.2 *
Married		
Yes	33.9	35.5
No	34.0	37.1
Employed *		
Yes	25.7	32.4
No	41.2	40.0
Gender		
Female	33.1	37.3
Male	41.2	29.4

(continued)

Table 4 (continued)

Control Variable (%)	Adjusted Probability of Mental Health Visit	
	6 Months (%)	18 Months (%)
Treatment history		
Prior treatment for depression	43.8	43.8
No prior treatment for depression	27.4	31.6
Number of children		
1	37.0	36.4
2	30.9	36.1
3-7	32.7	37.6
Sample size ^b	159	159

SOURCES: MDRC calculations from responses to the baseline, the 6-month, and the 18-month surveys.

NOTES: Estimates are regression-adjusted using logit models, controlling for sample members' characteristics. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

^aThe reference group for education is "no high school credential," and "white" is the reference group for the race/ethnicity variable.

^bThe sample size does not equal 165 because of missing values for some control variables.

In general, few baseline characteristics are associated with receiving any treatment. White sample members were more likely than others to have a mental health visit. Through six months, for example, white sample members were significantly more likely to receive treatment than those who were neither white, Hispanic, nor African-American (41 percent, compared with 18.2 percent). Through eighteen months, white participants were significantly more likely to have a mental health visit than Hispanic participants (45 percent, compared with 25 percent).

At six months, participants who were not working at baseline were more likely to seek treatment than those who were working (41.2 percent, compared with 25.7 percent), but this gap closed over the next twelve months.

Not surprisingly, individuals who had sought treatment prior to entering the study were much more likely to seek treatment afterward as well. Through six months, about 44 percent of those who had received prior treatment had made at least one additional mental health visit, compared with only 27 percent of those who had not sought prior treatment.

Such characteristics as a participant's age, gender, marital status, education level, and number of children are not associated with receiving treatment. In other words, participants who were married were just as likely to have had a mental health visit as those who were single. Similarly, participants with high school education were as likely to have had a visit as participants with a college degree or with no high school credential.

Number of Mental Health Visits

Although it is important to help individuals seek treatment, it is also important for individuals to stay in treatment if it is to be effective. The next analyses, therefore, explore the relationship between baseline characteristics and how extensively individuals made use of mental health services. The outcome variable of interest is the number of mental health visits.

Table 5 shows the predicted number of mental health visits from an ordinary least squares regression, controlling for the baseline characteristics used in the preceding tables. Results are shown both through six months and through eighteen months. The table shows first that few baseline characteristics are associated with more intensive use of mental health services. Individuals who were more severely depressed at baseline did make more visits, even though they were not more likely to have made a visit (Table 4). Through six months, for example, those with very severe depression made three mental health visits, on average, compared with less than one visit, on average, for those with mild depression. That gap increased through eighteen months, and the difference remained statistically significant. At eighteen months, those with very severe depression had about six visits, compared with about one visit for the mildly depressed.

Just as white sample members were more likely than Hispanic sample members to make any mental health visits at eighteen months, they made more visits on average. Through eighteen months, white sample members made five visits, on average, compared with a little less than three visits for Hispanic members.

Finally, those who had received treatment prior to random assignment made more visits than those who had not received treatment. Through eighteen months, those with prior treatment had made six mental health visits, on average, compared with two and a half visits for those with no prior treatment.

In summary, these findings suggest that having higher baseline depression is most strongly associated with making more mental health visits. It also appears that being white and having had prior treatment are associated with making more mental health visits. Interventions like WtW might have larger effects if they target the groups who are least likely to seek and maintain treatment on their own, namely, those who have never received treatment for depression and Hispanic sample members.

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Table 5

Predicted Number of Mental Health Visits, by Characteristic at Baseline:
Control Group

Rhode Island: Working toward Wellness

Control Variable (%)	Predicted Number of Mental Health Visits	
	6 Months (%)	18 Months (%)
Depression outcome: QIDS-SR		
Mild (6-10)	0.4	1.1
Moderate (11-15)	1.3	3.4
Severe (16-20)	2.2	5.2
Very severe (21-25)	3.0	5.9
Age (years)		
18-25	2.3	4.4
26-35	1.3	3.5
36-45	1.5	4.1
46+	2.3	4.2
Education ^a		
Completed high school or obtained GED certificate	1.6	4.5
Completed technical or four-year college	1.4	2.3
Has no high school credential	1.9	3.5
Race/ethnicity ^a		
White	2.0	5.2
Hispanic	1.5	2.6
African-American	1.0	2.7
Other	0.8	1.2
Married		
Yes	1.2	3.1
No	1.9	4.4
Employed		
Yes	1.1	3.9
No	2.1	3.8
Gender		
Female	1.7	3.9
Male	1.3	3.5

(continued)

Table 5 (continued)

Control Variable (%)	Predicted Number of Mental Health Visits	
	6 Months (%)	18 Months (%)
Treatment history		
Prior treatment for depression	2.3	6.0
No prior treatment for depression	1.2	2.5
Number of children		
1	1.8	4.2
2	1.5	3.8
3-7	1.7	3.6
Sample size ^b	159	159

SOURCES: MDRC calculations from responses to the baseline, the 6-month, and the 18-month surveys.

NOTES: Estimates are regression-adjusted using ordinary least squares, controlling for sample members' characteristics. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

^aThe reference group for education is "no high school credential," and "white" is the reference group for the race/ethnicity variable.

^bThe sample size does not equal 165 because of missing values for some control variables.

Subgroup of Those at High Risk of Severe Depression

As described in the eighteen-month report on WtW,⁵ at both the six-month and the eighteen-month follow-up, there was a significant impact on the distribution of depression scores. In particular, fewer program group members than control group members were very severely depressed at follow-up. If a subgroup of control group members could be found that was likely to be severely depressed, this may also be a subgroup where the effects of WtW were more concentrated.

The first stage of the analysis was to explore which baseline characteristics are associated with being severely depressed at follow-up. To do this, a logistic regression was conducted to look for such baseline characteristics. For this analysis, the severe and very severe levels of depression were combined to increase the sample size, and the dependent variable was defined as having severe or very severe depression at follow-up. To avoid introducing bias into any subsequent impact analyses, the regression was performed with a randomly chosen half of the control group.

⁵Kim et al. (2010).

Results of the logistic regression were used to predict the probability that someone would have been severely or very severely depressed at eighteen months. This predicted probability was then interacted with the program group indicator in a subsequent linear regression in which the outcome was the level of depression severity.⁶ If the interaction term is significant, that means that a participant who is more likely to become severely or very severely depressed (defined as the “high-risk subgroup”) is affected more by the intervention of telephone care management. In other words, it would explain why the program group had fewer severely depressed participants at eighteen months after random assignment.

The results did not find significantly larger intervention effects for those who were predicted to be the high-risk subgroup than for others. This may simply reflect the small size of the high-risk subgroup. Additional analyses were conducted to examine the sensitivity of the results to how the high-risk subgroup was defined, but the impacts on the probability of severe depression were never statistically significant for the high-risk group.

Summary

This paper reports on some further analyses using the Rhode Island Working toward Wellness (WtW) study to explore ways of targeting services to those who would be less likely to improve or seek treatment for depression on their own. It also investigates the possibility that impacts might be concentrated in a subgroup at high risk of being severely depressed at follow-up.

The results do not suggest a clear means of targeting services to those who are least likely to improve on their own. Other than baseline depression severity, few participant characteristics were found to be associated with reduced depression over time. This suggests that most subgroups of participants could have benefited from a more effective intervention. Likewise, impacts on depression severity are not statistically significant for a group that was at high risk for being severely depressed.

However, a number of factors were found to be associated with seeking mental health treatment. In particular, treatment occurred more frequently for those who were more severely depressed, those who were not working at baseline, white sample members, and those who had received treatment for depression prior to random assignment. This may suggest providing more resources and supports to encourage receiving treatment among such groups as workers and the Hispanic population. It might also suggest excluding individuals with prior treatment for depression from future studies of similar interventions.

⁶This regression model used the other half of the control group sample and all program group members.

References

- Adelmann, P. K. 2003. "Mental and Substance Use Disorders Among Medicaid Recipients: Prevalence Estimates from Two National Surveys." *Administrative Policy in Mental Health* 31, 2: 111-129.
- American Psychiatric Association. 2000. *Diagnostic and Statistical Manual of Mental Disorders, DSM IV, Fourth Edition*. Washington, DC: American Psychiatric Association.
- Belsher, Gayle, and Charles G. Costello. 1988. "Relapse After Recovery from Unipolar Depression: A Critical Review." *Psychology Bulletin* 104: 84-96.
- Kim, Sue, Allen LeBlanc, Pamela Morris, Greg Simon, and Johanna Walter. 2010. *Working toward Wellness: Telephone Care Management for Medicaid Recipients with Depression, Eighteen Months After Random Assignment*. New York MDRC.
- Rush, John A., Madhukar H. Trivedi, Thomas J. Carmody, Melanie M. Biggs, Kathy Shores-Wilson, Hicham M. Ibrahim, and Lynn M. Crismon. 2004. "One-Year Clinical Outcomes of Depressed Public Sector Outpatients: A Benchmark for Subsequent Studies." *Biological Psychiatry* 56: 46-53.
- Trivedi, M. H., A. J. Rush, S. R. Wisniewski, A. A. Nierenberg, D. Warden, L. Ritz, G. Norquist, R. H. Howland, B. Lebowitz, P. J. McGrath, K. Shores-Wilson, M. M. Biggs, G. K. Balasubramani, and M. Fava. 2006. "Evaluation of Outcomes with Citalopram for Depression Using Measurement-Based Care in STAR*D: Implications for Clinical Practice." *American Journal of Psychiatry* 163, 1: 28-40.

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