

Online Supplementary Material

Klinkman MS, Bauroth S, Fedewa S, et al. Long-term clinical outcomes of care management for chronically depressed primary care patients: a report from the Depression in Primary Care project. *Ann Fam Med*. 2010;8(5):387-396.

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Supplemental Appendix. Methods Used for Outcome Analyses

Quarterly Assessment of Core Outcomes for the Full DPC Enrollee Population

One primary goal of the demonstration was to determine whether the intervention was effective over time for the full cohort of enrolled patients as well as for individual enrollees. To assess whether overall program effectiveness was maintained over time, we constructed a rolling average measure of improvement in key outcome measures between intake and most recent assessment. For each active Depression in Primary Care (DPC) enrollee, we compared the Patient Health Questionnaire-8 (PHQ-8) score and reduced-function days at intake with the most recent score at quarterly intervals from the first quarter 2003 through the fourth quarter 2005. For example, an enrollee with PHQ-8 score of 14 and 4 reduced-function days at intake and a most recent PHQ-8 score of 7 with 3 reduced-function days in Q3 2005 would have a 50% reduction in PHQ-8 and 25% improvement in reduced-function days for the Q3 2005 measure. Scores for all enrollees were summed to create the population-based outcome measures of percentage of improvement in PHQ-8 and percentage improvement in reduced-function days. If the most recent PHQ-8 score was 4 or less, the enrollee was considered in remission at that assessment. If the most recent PHQ-8 score showed a 50% or greater decline from the intake score, the enrollee was considered to have clinical response at that assessment point. The proportion of DPC enrollees in remission and in recovery were calculated and reported at each assessment. To ensure that old scores were not carried forward inappropriately in the series of quarterly measures, DPC enrollees who did not complete an outcome measure during the 3 months before each quarterly assessment were not included in that quarterly assessment. We reasoned that stable or increasing rates of remission, recovery, or mean percentage of improvement in PHQ-8 or reduced-function days would provide evidence to support the ongoing effectiveness of the intervention.

Results

Clinical Outcomes by Quarter for the DPC Enrollee Cohort

Supplemental Table 1 and Supplemental Figure 1 display the results of the quarterly rolling average of improvement in key outcome measures for the full 18-month period of the demonstration. The n reported for each quarter represents the number of active enrollees who had completed an outcome assessment during that quarter and were included in that quarter's analysis. In each quarter, improvements between baseline and most recent assessment were seen for all outcomes. The improvement in mean PHQ-8 score ranged from 21% to 41%, the percentage of enrollees in remission ranged from 28% to 45%, and the percentage of enrollees meeting criteria for recovery ranged from 31% to 50%. Improvement in reduced-function days ranged from 10% to 43% from a baseline of approximately 14 days in the past month. Although there was quarter-to-quarter variability in each of these measures, the level of improvement in general did not attenuate over time.

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Supplemental Table 1. Change Between Baseline and Most Recent PHQ and Reduced-Function Days for Full DPC Enrollee Cohort By Quarter: Q2 2003 Through Q4 2005

	Q3 2003	Q4 2003	Q1 2004	Q2 2004	Q3 2004	Q4 2004	Q1 2005	Q2 2005	Q3 2005	Q4 2005
No. of DPC enrollees included (outcomes assessed in quarter)	102	145	198	250	275	283	273	278	159	202
Baseline PHQ-8 score, mean	12.36	12.54	12.09	12.01	11.65	11.61	11.94	11.77	12.16	12.36
PHQ-8 score for quarter, mean	8.84	8.41	8.21	7.61	6.96	6.91	7.00	7.03	7.38	7.8
Improvement from baseline, %	28	33	32	37	40	40	41	40	39	37
Baseline reduced-function days, ^a mean No.	14.74	13.47	14.70	14.17	14.34	13.90	14.72	13.65	14.12	14.65
Reduced-function days ^a for quarter, mean No.	11.51	12.07	11.52	10.16	9.63	10.03	8.39	9.12	10.46	9.75
Improvement from baseline, %	28	10	28	28	33	28	43	33	26	33

DPC = Depression in Primary Care; PHQ = Patient Health Questionnaire; Q = quarter.

Note: This table does not represent longitudinal outcomes for individual DPC enrollees. The cohort of DPC enrollees included in each quarterly assessment varied month to month. For enrollees who completed at least 1 outcome assessment during the quarter, the last available assessment from that quarter was selected, and that enrollee's baseline PHQ and reduced-function days were retrieved. The selected cohort's mean result for the quarter was calculated and compared with baseline to estimate percentage of improvement in PHQ and reduced-function days.

^a Reduced function days operationally defined days in last 30 days when able to work and carry out normal activities, but could not perform to usual level despite best effort.

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Supplemental Table 2. Clinical Outcome Comparison for DPC Enrollees and Usual Care Patients Completing 18-Month Assessments

Measure	DPC Enrollees (n = 120)	Usual Care (n = 65)	P Value
PHQ-8 at entry, mean (SD)	10.98 (6.03)	9.94 (5.32)	.240 ^a
PHQ-8 at 6 mo, mean (SD)	7.19 (5.64)	8.04 (4.57)	.300 ^a
PHQ-8 at 12 mo, mean (SD)	6.81 (5.53)	8.20 (4.82)	.110 ^a
PHQ-8 at 18 mo, mean (SD)	6.89 (5.32)	8.77 (4.85)	.019 ^a
Change in PHQ-8 score from baseline, mean (SD)			
Baseline to 6 mo	-3.84 (5.95)	-1.99 (4.20)	.030 ^a
6 to 12 mo	-0.48 (4.81)	+0.13 (3.87)	.400 ^a
12 to 18 mo	0.03 (4.78)	+0.35 (3.97)	.650 ^a
Baseline to 18 mo	-4.16 (6.37)	-1.07 (4.79)	<.001 ^a
Patients in remission %	%	%	
At 6 mo	48.7	37.1	.130 ^b
At 12 mo	53.1	35.1	.026 ^b
At 18 mo	49.2	27.3	.004 ^b

DPC = Depression in Primary Care.

^a Assessed using *t* test.

^b Assessed using χ^2 .

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Supplemental Table 3. Linear Regression Model: Factors Potentially Associated With Change in PHQ-8 Score Over an 18-Month Period

Variable	β	95% CI	<i>t</i>	<i>P</i> Value
Age	0.02	-0.04 to 0.09	0.66	.513
Sex (female)	0.24	-1.51 to 1.99	0.27	.784
Presence of heart disease	-1.66	-4.03 to 0.72	-1.38	.170
Presence of diabetes	0.31	-1.90 to 2.52	0.28	.783
Presence of asthma	0.42	-1.61 to 2.46	0.41	.681
Presence of chronic obstructive pulmonary disease	1.08	-2.16 to 4.32	0.66	.510
Insurance type = fee-for-service ^a	-0.25	-1.80 to 1.29	-0.33	.743
Insurance type = Medicare ^a	-1.60	-4.55 to 1.34	-1.07	.284
Insurance type = safety net/none ^a	-0.22	-3.80 to 4.24	0.11	.914
Ethnicity (nonwhite)	-0.26	-3.44 to 2.92	-0.16	.873
PHQ-8 at baseline	-0.63	-0.76 to -0.50	-9.73	<.001
Intervention	2.44	0.92 - 3.97	3.17	.002
Number of observations: 176				
$F_{12,163} = 10.44, P < .001$				
Adjusted $R^2 = 0.393$				

F = *F* test; PHQ = Patient Health Questionnaire; R^2 = multivariate coefficient of determination.

Note: Dependent variable in regression: change in PHQ-8 score between baseline and 18 months, normally distributed with mean of -3.07, range -19 to 14.

^a Dummy variable construction.

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Supplemental Figure 1. Clinical outcomes by quarter for the full Depression in Primary Care project enrollee cohort.

