

Predictors of Primary Care Management of Depression in the Veterans Affairs Healthcare System

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BACKGROUND: Primary care providers (PCPs) vary in skills to effectively treat depression. Key features of evidence-based collaborative care models (CCMs) include the availability of depression care managers (DCMs) and mental health specialists (MHSs) in primary care. Little is known, however, about the relationships between PCP characteristics, CCM features, and PCP depression care.

OBJECTIVE: To assess relationships between various CCM features, PCP characteristics, and PCP depression management.

DESIGN: Cross-sectional analysis of a provider survey.

PARTICIPANTS: 180 PCPs in eight VA sites nationwide.

MAIN MEASURES: Independent variables included scales measuring comfort and difficulty with depression care; collaboration with a MHS; self-reported depression caseload; availability of a collocated MHS, and co-management with a DCM or MHS. Covariates included provider type and gender. For outcomes, we assessed PCP self-reported performance of key depression management behaviors in primary care in the past 6 months.

KEY RESULTS: Response rate was 52 % overall, with 47 % attending physicians, 34 % residents, and 19 % nurse practitioners and physician assistants. Half (52 %) reported greater than eight veterans with depression in their panels and a MHS collocated in primary care (50 %). Seven of the eight clinics had a DCM. In multivariable analysis, significant predictors for PCP depression management included comfort, difficulty, co-management with MHSs and numbers of veterans with depression in their panels.

CONCLUSIONS: PCPs who felt greater ease and comfort in managing depression, co-managed with MHSs, and

reported higher depression caseloads, were more likely to report performing depression management behaviors. Neither a collocated MHS, collaborating with a MHS, nor co-managing with a DCM independently predicted PCP depression management. Because the success of collaborative care for depression depends on the ability and willingness of PCPs to engage in managing depression themselves, along with other providers, more research is necessary to understand how to engage PCPs in depression management.

KEY WORDS: primary care; mental health; depression; care management.

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INTRODUCTION

Depression is prevalent in the primary care (PC) setting,^{1–3} but undertreated^{4–6}. Primary care providers (PCPs) vary in their skills to effectively diagnose and treat depression,^{4,7–10} a deficit attributed in prior research to lack of comfort with depression management, competing demands and time constraints, and lack of training in depression management.^{8,11–14} Collaborative care models (CCMs) can facilitate PCP depression management;^{15–22} these models, however, depend upon active PCP engagement. This study, based on a survey of PCPs in eight geographically dispersed Veterans Affairs (VA) PC practices,²³ assesses PCP attitudes and experiences as predictors of self-reported performance of depression management behaviors.

The CCM delivers mental health treatment for depression using a team approach, consistent with core elements of patient-centered medical homes (PCMH). In CCM, depression care managers (DCMs) work with PCPs to assess and follow

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depression symptoms using structured assessment tools. Supervised by a mental health specialist (MHS), the care managers follow a “stepped care approach” to counsel and support patients with uncomplicated depression within PC, while assisting with the referral of complex patients.²⁴ In comparison to usual care, collaborative care improves depression and quality of life among many PC populations,^{25,26} reduces hospitalizations and emergency room visits,²⁷ and reduces costs.²⁸ Collaborative care can also prevent adverse depression consequences.²⁹ Variations in collaborative care effectiveness as implemented by different PC practices and healthcare organizations, however, suggest barriers to effective widespread implementation.^{30–33} One such barrier may be lack of effective PCP engagement in collaborative care.

While PCPs often believe that DCMs enhance depression care^{12,31}, clinicians may vary in levels of willingness or ability to work effectively within the CCM. For example, in one randomized trial, patients referred by the trial to collaborative care who were patients of early CCM adopter clinicians had greater adherence to CCM protocols and achieved better depression outcomes than patients managed by clinicians who adopted CCM late, if at all.³⁰ Early adopter clinicians were those who had voluntarily engaged in CCM prior to the start of the trial. While research has focused on CCM process and outcomes, little is known about PCP characteristics that may contribute to observed variations in collaborative care effectiveness.

As the framework for the analyses here, we adapted the Theory of Planned Behavior,^{34,35} a well-established theory that links attitudes, perceived control (self-efficacy), and past experience to performance of the behaviors. Based on this theory, we investigated PCP performance of key guideline-recommended depression management behaviors^{36,37} as a function of PCP attitudes, experience, and access to CCM features. We hypothesized that comfort and difficulty with depression management, experience with depression management, and the CCM features of co-management with a DCM and co-management with a MHS would predict PCP performance of depression management in PC.

METHODS

Overview

This cross-sectional study, approved by Institutional Review Boards for all eight participating sites, uses data from *The VA Survey of Depression Care Practices in Primary Care*.^{38,39} We conducted the study in the context of the Regional Expansion of Translating Initiatives for Depression into Effective Solutions (ReTIDES) study. ReTIDES used an encouragement design to test the Evidence-Based Quality Improvement (EBQI) method for spreading a VA-adapted collaborative care program for depression management.^{23,38,40} The spread

process occurred between January 2005 and January 2006. The survey was available both online and in paper-and-pencil formats from October 2006 to July 2008.

Participating Sites

The survey component of ReTIDES was designed to inform CCM spread based on learning about PCP attitudes and behavior in the context of sites with variable levels of CCM implementation. Study sites included five target EBQI encouragement sites and three additional sites of similar size and complexity, all with prior evidence of interest in or implementation of depression collaborative care. Two of the additional sites had hired their own DCMs prior to ReTIDES, and one had volunteered previously for adopting collaborative care. The five experimental sites used a multi-level research/clinical partnership quality improvement approach, engaging site-level stakeholder representatives to develop and implement the VA-adapted collaborative care program.³⁸

Sampling

We identified 397 PCPs from databases provided by each participating site. We sampled all 346 eligible PCPs identified. We administered the survey by e-mail and by paper-and-pencil upon request. We also attended site PC meetings to hand out additional survey copies and encourage participation. Resident physicians not enrolled in an internal medicine residency, providers who had moved away from the site, or without clinical duties, or invalid contact information, or on maternity leave were ineligible for the study. To incentivize voluntary survey participation, a smart phone was raffled off to a randomly selected respondent.

Site-Level Data Collection

We used data from the 2007 VA Clinical Practice Organization Survey Primary Care Directors Module³⁹ to describe site characteristics related to depression care (i.e., depression-specific training, templates). *Facility size* was based on patient utilization data for FY 2007 from the VA National Patient Care Database⁴¹; *practice location in urban/rural settings* was from the Area Resource File⁴²; and *academic affiliation* was from the VA Office of Academic Affiliation website.⁴³ These site-level demographics were used for descriptive purposes only and were not included in the regression analyses.

Survey Development

We developed the survey based on literature review, previous provider surveys,^{44,45} and an expert panel pro-

cess.⁴⁶ Literature review identified the elements of coordination^{46–49} as critical for effective collaboration. The expert panel included regional and national leaders from the VA and Kaiser Permanente healthcare systems, and formed the basis for a subsequent meta-analysis.⁵⁰ From these sources, we identified the dimensions of comfort, difficulty, and experience with depression care behaviors, as potential key provider-level factors for implementing depression collaborative care. The expert panel also identified access to shared records, joint responsibility for outcomes, leadership support, written agreements between PC and specialty to delineate responsibilities, and adoption of a “stepped care” model as site-level factors; these are not included in the study here.

Measures

Survey and scale items are delineated in Appendix Table 1 (available online). For the conceptual model’s dependent variable of PCP depression care behavior, we assessed *PCP performance of depression management behaviors* in PC using a six-item scale with a six-point Likert response scale for each item. PCPs indicated the proportion of their patients with suspected or diagnosed depression during the previous 6 months for whom they carried out the behaviors: PC-based assessment, management, DSM-IV diagnosis, patient education/self management support, treatment with antidepressants, or treatment modification in non-responding patients.

We assessed components of the Theory of Planned Behavior to predict PCP depression management. We assessed PCP attitudes toward depression care behaviors using a five-item scale for PCP *comfort* with depression care behaviors. We assessed the provider’s perceived control of depression care using a six-item scale for PCP *difficulty* with depression care. We assessed the provider’s experience with collaboration for depression care using *experience co-managing with a DCM*, *experience co-managing with a MHS*, availability of a *collocated MHS*, and a four-item scale for *collaboration with MHS*. We also assessed CCM features, including *experience co-managing depression with a DCM* and *experience co-managing depression with a MHS*; these were based on the proportion of patients with depression that the PCP reported co-managing with a DCM or MHS, rated on a five-point ordinal scale ranging from “none” to “most/almost all/.” *Availability of a collocated MHS* was dichotomized as yes/no. We assessed experience with depression management using *number of patients with depression in the panel* and *length of time worked at the VA*. *Number of patients with depression*, or depression caseload, was rated on a four-point ordinal scale ranging from “0” to “> 8.” *Length of time worked in professional capacity at the VA* was assessed using a four-point ordinal scale ranging from “6 months or less” to “5 years or more.”

For covariates, we used self-reported gender (dichotomized as male/female), provider type, and number of clinics per week worked. Provider type was specified as resident physicians, attending physicians, or nurse practitioner (NP)/physician assistant (PA). Number of clinics per week worked was rated on a linear scale ranging from one to ten half-day sessions.

To develop survey scales, we included respondents who completed half or more of the scale items. We used Principal Components Analyses⁵¹ and exploratory factor analysis to refine our hypothesized scales for *comfort*, *difficulty*, and *experience*, and confirmatory factor analysis to confirm *collaboration with MHS*. Cronbach’s α , indicating scale reliability, was > 0.7 for each scale.⁵² Scale characteristics are further described in Appendix Table 2 (available online).

Model Development

We performed bivariate linear regression analyses with PCP *performance of depression care management behaviors* as the dependent variable, the predictors *PCP comfort*, *difficulty*, *availability of a collocated MHS*, *collaboration with MHS*, *length of time worked at the VA*, *number of patients with depression in panel*, and the covariates among the sample respondents ($n=180$). Then we used variables that had bivariate associations of $p<0.2$, along with the covariates (provider type, gender), to fit a mixed model regression analysis with sites treated as random effects. This model accounted for the intraclass coefficient (0.25) of providers within the VA sites. The variable *length of time worked* at the VA had multicollinearity with provider type ($r=0.7$) and was omitted from the final model. We weighted the final model for provider type (i.e., attending physicians, resident physicians, NP/PAs) to account for non-response. For our final model, we included only cases with valid responses for all predictor variables. We found that data was missing completely at random, obviating the need for imputation of missing data.⁵³

Additionally, we conducted parallel exploratory analyses to predict PCP *experience co-managing patients with depression with DCMs*. We performed bivariate analyses and then a mixed model regression analysis weighted for nonresponse, as above. All data analyses were conducted using STATA 11.0/IC.

RESULTS

Site Characteristics

Seven of the eight sites were located in urban settings, each serving 30,000–66,000 patients. One of the sites was rural, serving 6,558 patients. Six of the sites were academically

affiliated. Two sites had developed computerized templates for depression screening and treatment. Seven had provided PC training in depression treatment or guidelines. None of the sites offered incentives (e.g., financial, protected time, perks) or performance profiling and feedback to promote adherence to clinical practice guidelines for depression treatment.

Response Rate

Figure 1 details eligibility and non-response rate. Of the 346 eligible PCPs, 180 responded (response rate =52 %); 85 were attending physicians (47 %), 61 residents (34 %), and 34 NPs/PAs (19 %); 30 % from the study's three comparison sites. Responders were significantly different from non-responders by provider type, with fewer internal medicine residents and more attending physicians.

Of the 180 respondents, 119 (34 %) had sufficient data for the multivariable analysis due to missing items or scales. Because analyses showed that data were missing completely at random, we present provider characteristics on the 119 cases in the final model as representative of the full sample.

Sample Characteristics

The 180 respondents and the 119 with complete survey data are described in Table 1. Proportions of provider characteristics are similar for complete versus incomplete surveys, except for resident physicians. We report here on the 119 with no missing data; results for the 180 are similar. As

planned, the majority of respondents had a MHS collocated in the PC clinic (61 %, 72/119), and most had co-managed depressed patients with a DCM (73 %, 87/119) and/or with a MHS (86 %, 102/119).

Description of PCP Attitudes and Behaviors. Among the 119 respondents, 64 (54 %) felt moderately or very comfortable with managing depression. In terms of perceived control over depression treatment, 89 (75 %) PCPs reported some or no difficulty diagnosing depression and 98 (82 %) reported some or no difficulty prescribing antidepressants. However, only 35 (29 %) referred to psychotherapy groups with some or no difficulty.

In terms of depression management behaviors, about one-third of PCPs (41/119, 34 %) reported proceeding with PC-based care rather than MHS-based care for most or all of their patients who screened positive for depression in the past 6 months. One-quarter (30/119, 25 %) reported assuming primary responsibility for managing most or all of their veterans with depression. Slightly more (46/119, 39 %) reported prescribing antidepressants themselves. Over half (65/119, 55 %) reported not referring to psychotherapy.

Predicting PCP Depression Management Behaviors (Table 2)

In bivariate regression analyses, PCP attitudes towards depression care behaviors (comfort with depression

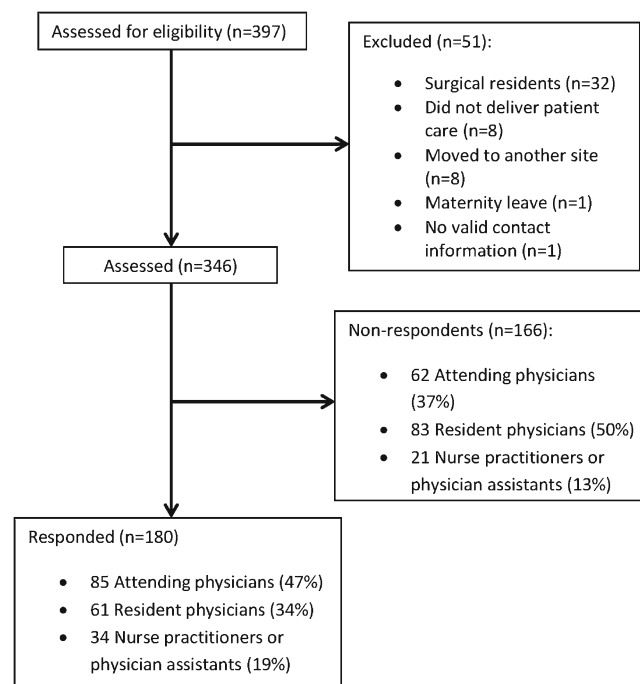


Figure 1. The VA Survey of Depression Care Practices in Primary Care response rate flow diagram.

Table 1. Primary Care (PC) Provider Respondent Characteristics from The VA Survey of Depression Care Practices in Primary Care

Provider characteristic	Frequency, based on overall sample of respondents (N=180) n (%) [*]	Frequency, based on sample with complete responses (N=119) n (%)
Gender, male	96 (54 %)	65 (55 %)
PC provider, by training status		
Attending primary care physicians	85 (47 %)	68 (57 %)
Internal medicine residents†	61 (34 %)	26 (22 %)
Nurse practitioners, Physician assistants	34 (19 %)	25 (21 %)
Years practiced at the VA:		
< 5 years	90 (50 %)	51 (44 %)
5 or more years	82 (46 %)	66 (56 %)
Number of clinics per week:		
0–2 clinics	80 (44 %)	53 (47 %)
3–7 clinics	49 (27 %)	29 (26 %)
8 or more clinics	37 (21 %)	31 (27 %)
Number of patients on panel that are depressed:		
None	7 (4 %)	5 (4 %)
1–4 patients	29 (16 %)	22 (19 %)
5–8 patients	15 (8 %)	11 (9 %)
> 8 patients	93 (52 %)	81 (68 %)
Reported having a colocated MHS in the PC clinic	90 (50 %)	72 (61 %)
Co-managed any depressed patients with a DCM	112 (62 %)	87 (73 %)
Co-managed any depressed patients with a MHS	141 (78 %)	102 (86 %)

MHS Mental Health Specialist; PC Primary Care; DCM Depression Care Manager

^{*} Percentages may not add up to 100 % due to missing data

[†] Proportion is significantly different between sample of N=180 and N=119 using two-sample proportion test

management), perceived control (difficulty with depression management), experience with collaboration (presence of colocated MHS, co-managing depressed patients with MHS, co-managing depressed patients with DCM, collaboration with MHS), and experience with depression care (length of time at VA, number of patients with depression in panel), were significantly associated with PCP depression management behaviors in the expected directions. Among covariates, residents were significantly less likely to carry out depression behaviors than attending physicians; NP/PA behaviors were similar to those of attending physicians. Neither gender nor number of clinics per week significantly predicted behaviors.

In a multivariable analysis adjusted for provider gender and type and weighted for non-response, significant predictors for PCP depression management behaviors included PCP comfort ($p=0.003$), difficulty ($p<0.001$), co-management with MHS ($p=0.01$), and number of patients with depression in panel ($p=0.001$).

Predicting PCP Co-Management with DCMs (Table 3)

In exploratory bivariate analyses, comfort with co-managing depression with DCM, presence of colocated MHS, and number of clinics worked per week were significantly associated with co-management with DCM. In a multivariable analysis adjusted for provider gender and type and weighted for non-response, comfort with co-managing depression with DCM ($p=0.001$) and number of clinics worked per week ($p=0.04$) were significant predictors of co-managing with DCMs.

DISCUSSION

Our quantitative findings confirm a largely qualitative body of research^{11–14} showing that PCP attitudes and behaviors can act as barriers or facilitators for successful collaborative care. Our study suggests that variations among PCP characteristics may partly be responsible for observed variations in achievement of collaborative care goals. PCPs who were more comfortable with depression management, had less difficulty with managing depression, had more experience co-managing patients with depression with MHS, and had more patients with depression on their panel were more likely to perform depression behaviors in the PC setting.

In agreement with previous qualitative work,^{11–14} this study highlights PCP discomfort with depression management as a key barrier. We found that only about half of PCPs were comfortable with carrying out necessary depression management activities, and even fewer reported actually performing the needed behaviors. Overall, only one in five PCPs reported assuming primary responsibility for managing most or all of their patients with depression at these eight study VA sites involved in depression care improvement.

While most PCPs treated depressed patients with antidepressants, we found that PCPs often did not refer patients with depression to psychotherapy. Psychotherapy is considered equally efficacious to antidepressants for uncomplicated depression,^{54,55} and most PC patients prefer psychotherapy over antidepressant medications.^{56–58} Further research may help us understand the barriers in PC-initiated referral for psychotherapy in the VA and in similar settings.

Table 2. Predictors of Primary Care Provider (PCP) Performance of Depression Management in Primary Care: Results of Bivariate Linear Regression and Mixed Model Regression Analysis*

Link to conceptual model	Independent variables	Results of bivariate linear regression (n=180)		Results of mixed model regression analysis† (n=119)	
		Regression coefficient (CI)	p value	Regression coefficient (CI)	p value
Attitude towards depression care behaviors	PCP comfort with depression management	0.59 (0.45–0.73)	< 0.001	0.23 (0.12–0.33)	< 0.001
Perceived control of depression care	PCP difficulty with depression management	0.63 (0.52–0.73)	< 0.001	0.46 (0.39–0.52)	< 0.001
Experience with collaboration for depression care	Experience with co-managing depression with MHS	3.29 (0.74–5.83)	0.01	2.12 (0.43–3.80)	0.01
	Presence of collocated MHS	9.47 (1.84–17.11)	0.02	−1.01(−10.22–8.20)	0.83
	Collaboration with a MHS	0.11 (0.02–0.20)	0.01	−0.03 (−0.13–0.06)	0.46
	Experience with co-managing depression with DCM	3.10 (0.35–5.86)	0.03	1.22 (−0.57–3.02)	0.18
Experience with depression management	Number of patients with depression in panel	8.16 (4.30–12.02)	< 0.001	5.87 (2.64–9.09)	< 0.001
	Length of time at VA > 5 years	12.5 (5.6–19.5)	< 0.001	−‡	−‡
Covariates	Gender, male	−5.45 (−12.59–1.70)	0.13	2.55 (−1.56–6.66)	0.22
	Training status: Resident	−11.0 (−19.0–3.0)	0.008	4.92 (−2.19–12.03)	0.18
	Training status: NP/PA	0.38 (−9.01–9.78)	0.94	5.70 (−1.52–12.92)	0.12
	Number of clinics per week	0.35 (−4.13–4.83)	0.88	−‡	−‡

* Data from The VA Survey of Depression Care Practices in Primary Care

† Model uses sites as random effect and weighted for non-response

‡ Variable was not included in the multivariable model

MHS Mental Health Specialist; PCP Primary Care Provider; DCM Depression Care Manager; NP Nurse Practitioner; PA Physician Assistant

Access to a collocated MHS and collaboration with MHS for patients with depression did not independently predict PCP depression management behaviors. Although collocated MHSs generally improve PCP satisfaction and comfort, previous studies also have not found outcome impacts of MHS collocation alone.^{59,60}

Co-management with a DCM also did not independently predict PCP depression management behaviors. However, the observed relationships between comfort with the DCM, having more half days in clinic (and thus presumably more exposure to the DCM), and co-management with DCM may signal the importance of developing strong relationships between PCPs and DCMs. Prior research indicates that availability of a DCM alone does not assure engagement with PCPs.⁶¹ Although clinicians value DCMs and believe that DCMs improve depression care, the success of the CCM depends upon a strong PCP relationship with, and confidence in, the DCM.⁶¹ Future research may be needed to identify modifications in the DCM role that promote more active and universal PCP engagement.

A strength of this study is the development and use of scales to conceptualize PCP comfort, difficulty, experience with depression management, collaboration

with MHS, and performance of depression management behaviors. Studies investigating provider-level barriers to depression management have been largely qualitative. Although our scales could not be validated against pre-existing surveys, our systematic survey development approach was based on prior surveys, expert panel consensus, and theory. The observed high reliability of our scales increases the validity and reliability of our results.

The study has limitations. First, this study is observational, cannot address causation, and is not designed to compare the benefits of any particular CCM element or approach. Second, our response rate was moderate, although comparable to published provider surveys.⁶² While nonrespondents were more likely to be resident physicians, we weighted our final analyses to account for response differences based on provider type. Third, our sample size was further reduced for multivariable regression by item-level missing variables. However, analysis showed missing data completely at random with a few missing items per respondent, making imputation of missing items unlikely to change results and therefore inadvisable. Fourth, unmeasured structural, organizational, and patient-level barriers may have shaped results.⁶³

Table 3. Predictors of Primary Care Provider (PCP) Co-Management with Depression Care Manager (DCM): Results of Bivariate Linear Regression and Multi-Level Multivariable Model*

Link to conceptual model	Independent variables	Results of bivariate linear regression (n=180)		Results of mixed model regression analysis† (n=123)	
		Regression coefficient (CI)	p value	Regression coefficient (CI)	p value
Attitude towards depression care behaviors	Comfort with co-managing depression with DCM	0.35 (0.14–0.57)	0.001	0.34 (0.14–0.53)	0.001
	PCP comfort with depression management	0.003 (–0.007–0.013)	0.58	— ‡	— ‡
Perceived control of depression care	PCP difficulty with depression management	0.007 (–0.002–0.015)	0.12	0.005 (–0.008–0.017)	0.43
Experience with collaboration for depression care	Presence of collocated MHS	0.43 (–0.02–0.88)	0.06	–0.23 (–0.58–0.11)	0.19
	Collaboration with a MHS	0.004 (–0.001–0.009)	0.13	0.001 (–0.004–0.006)	0.61
Experience with depression management	Number of patients with depression in panel	0.05 (–0.18–0.28)	0.67	— ‡	— ‡
	Length of time at VA > 5 years	–0.05 (–0.47–0.37)	0.81	— ‡	— ‡
Covariates	Gender, male	–0.16 (–0.59–0.26)	0.48	0.13 (–0.43–0.69)	0.65
	Training status: Resident	–0.07 (–0.56–0.43)	0.80	0.79 (–0.30–1.89)	0.16
	Training status: NP/PA	0.21 (–0.35–0.78)	0.45	–0.29 (–0.68–0.09)	0.14
	Number of clinics per week	0.30 (0.05–0.55)	0.02	0.51 (0.02–1.00)	0.04

* Data from The VA Survey of Depression Care Practices in Primary Care

† Model uses sites as random effect and weighted for non-response

‡ Variable was not included in the multivariable model

MHS Mental Health Specialist; PCP Primary Care Provider; DCM Depression Care Manager; NP Nurse Practitioner; PA Physician Assistant

Fifth, we had no measure in the survey for the subjective norms component of the Theory of Planned Behavior. We suspect norms may not be a major predictor, given providers’ lack of response to feedback on depression outcomes in multiple trials.^{64–67}

The positive effects of collaborative care on patients with depression in PC are well documented. The model is also consistent with innovative team-based PC approaches, such as the PCMH. However, the success of CCMs depends on PCP engagement in managing depression appropriately, including development of supportive co-management partnerships with DCMs or MHSs. New studies of PC depression improvement should focus on the potential barriers to PCP performance of depression management behaviors in PC. These include lack of PCP comfort with depression management, organizational impediments to some needed behaviors including referral to psychotherapy, and difficulties in establishing active partnerships between some PCPs and their collocated DCMs or MHSs for co-managing care for shared patients.

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