

Comparative Effectiveness of Two Models of Depression Services Quality Improvement in Health and Community Sectors

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Objective: The effectiveness of community coalition building and program technical assistance was compared in implementation of collaborative care for depression among health care and community sector clients.

Methods: In under-resourced communities, within 93 programs randomly assigned to coalition building (Community Engagement and Planning) or program technical assistance (Resources for Services) models, 1,018 clients completed surveys at baseline and at six, 12, or 36 months. Regression analysis was used to estimate intervention effects and intervention-by-sector interaction effects on depression, mental health-related quality of life, and community-prioritized outcomes and on services use.

Results: For outcomes, there were few significant intervention-by-sector interactions, and stratified findings suggested benefits of coalition building in both sectors. For services use, at 36 months, increases were found for coalition building in primary care visits, self-help visits, and appropriate treatment for community clients and in community-based services use for health care clients.

Conclusions: Relative to program technical assistance, community coalition building benefited clients across sectors and shifted long-term utilization across sectors.

Psychiatric Services 2017; 68:1315–1320; doi: 10.1176/appi.ps.201700170

Depressive disorders have been associated with increased morbidity and mortality (1), and racial and ethnic disparities have been reported in access to, quality of, and outcomes of depression services (2). Studies have documented the effectiveness of collaborative care for depression in primary care, which may reduce racial-ethnic disparities in outcome (3). Such programs have often been unavailable in under-resourced communities, where individuals may seek help outside of health care (4). To address such disparities, Community Partners in Care (CPIC) compared two approaches to implement an expanded model of depression collaborative care across health care (primary care, public health, mental health, and substance abuse programs) and community sectors (homelessness and social services, faith-based services, hair salons, park senior centers, and exercise clubs) (5).

One model, Resources for Services (RS), used expert technical assistance to provide training and resources to individual programs for improving depression services based on collaborative care models that also supported nonlicensed

staff (4,6,7). The other model, Community Engagement and Planning (CEP), supported coalitions across health care and community sectors to collaborate in expanded collaborative care for depression. For depressed clients largely from racial-ethnic minority groups and from all sectors, those in programs with CEP compared with RS were less likely to have poor mental health-related quality of life (MHRQL) (at six and 12 months), were more likely to be at least fairly physically active (six months) and have improved physical health-related quality of life (PHRQL) (36 months), were less likely to have multiple homelessness risk factors (six months) and any behavioral health hospitalization (six and 12 months), had fewer hospitalization nights (36 months), had fewer specialty medication visits and more use of faith-based and park-based or senior center depression services (six months), and were more likely to use any community sector depression services at 36 months. There were no significant intervention effects on depressive symptoms, but both were active interventions (no usual-care group was included for comparison).

Studies of depression collaborative care focus on health care patients, rather than on similar individuals in social-community settings who may not use health services but who have similar levels of depression. We have not previously reported intervention effects separately for clients from these two different sectors. Overall intervention effects could be largely limited to health care clients with greater treatment access, or effects could differ, with health care clients having health gains and community clients having social gains. Evidence of benefits of the coalition model across sectors could suggest that a communitywide approach drawing clients from diverse sectors may be beneficial for addressing disparities. There are few available data on coalition compared with technical-assistance approaches to collaborative care for communities with a largely racial-ethnic minority group populations (8).

This study examined intervention-by-sector interaction effects on outcomes and long-term services utilization and explored stratified findings on outcomes to confirm whether there is evidence for CEP benefits within each sector. We anticipated that some initial benefits (at six and 12 months) of CEP compared with RS in the whole sample would apply to each sector. We expected that by three years, due to greater emphasis on collaboration, CEP compared with RS would lead to greater use of services outside of the sector where clients were identified (that is, health care use by community clients and community service use by health care clients). The study was considered exploratory to inform future research on how coalitions relative to technical support may affect clients in different sectors.

METHODS

Data were from CPIC, a group-randomized trial using community-partnered participatory research to promote equal leadership of community and academic partners (5). South Los Angeles and Hollywood-Metro were selected as under-resourced communities. Institutional review boards of RAND and participating agencies approved procedures, and the study was registered with ClinicalTrials.gov after enrollment of participants. Informed consent was obtained from clients.

CPIC's interventions encouraged but did not require use of depression services quality improvement toolkits (4,6,7) (www.communitypartnersincare.org/community-engagement-and-planning/).

In the RS approach, free technical assistance was provided to individual programs for these toolkits by using a "train-the-trainer" model offered to program representatives by means of 12 telephone or on-line webinars over two months. Representatives were encouraged to share toolkits with staff. A physician offered one site visit on medication management and clinical assessment per primary care site. Referrals were made for supervision in cognitive-behavioral therapy.

In the CEP approach, participating programs in each community were supported in developing a coalition for developing

and implementing a training plan and monitoring depression services based on the same toolkits. Program liaisons met bimonthly for four months, supported by intervention experts and \$15,000 per coalition for innovations in toolkit adaptations, and then met monthly for a year for monitoring and developing innovations. Lists of participating clients were provided to CEP but not RS administrators for safekeeping in a locked file.

As described elsewhere (5), from November 2008 to August 2010, health and community-based programs serving adults or parents of child clients were identified. Within eligible and recruited agencies, eligible programs were enumerated, including programs serving four community-prioritized groups: homeless persons, seniors, African Americans, and substance abuse program participants. Eligible programs were those that provided services to 15 or more clients each week, had two or more staff members (or one or more staff members for small programs), identified a liaison, and were not focused on psychotic disorders or home services. From 60 agencies, 133 programs were paired into units based on community, sector, size, and funding sources and were randomly assigned to each intervention. At follow-up visits to confirm eligibility, 95 programs from 50 agencies enrolled. Participating and nonparticipating programs had comparable neighborhood characteristics (5).

Staff members who were blinded to intervention assignment screened clients for eligibility during a period of two to three days for each program. Eligible clients were age 18 years or older, spoke English or Spanish, provided contact information, and were depressed and not grossly cognitively impaired. Presence of depression was indicated by a score of 10 or higher on the eight-item Patient Health Questionnaire (PHQ-8), on which possible scores range from 0 to 24, with a score of 10 or more indicating at least moderate depression. Of 4,649 adults approached from March 2010 to November 2010, 4,440 (96%) agreed to screening in 93 programs, 1,322 (30%) were eligible, 1,246 (94%) consented, and 981 (79%) completed baseline telephone surveys, which were conducted between April 27, 2010 and January 2, 2011. Participants who did not refuse follow-up were invited to complete six-month and 12-month surveys. Enrollees with any survey data who had not refused follow-up or were known not to have died were invited for 36-month surveys (5,9,10). Our analytic sample comprised 1,018 individuals who completed one or more surveys at baseline and at six, 12, or 36 months.

Covariates included age, community, education, race-ethnicity, 12-month major depressive or dysthymic disorder (11), and baseline measure of each outcome.

Prespecified primary outcomes were poor MHRQL (score of ≤ 40 on the mental component of the 12-item Short-Form Health Survey [MCS-12] [12]) and probable depression (PHQ-8 score of 10 or higher ([13])). Possible scores on the MCS-12 range from 0 to 100, with a score of ≤ 40 indicating poor MHRQL. Outcomes prioritized by community stakeholders were mental wellness (at least "a

good bit of the time in the prior four weeks” feeling calm or peaceful, having energy, or being happy [5]), PHRQL (score on the physical component of the 12-item Short-Form Health Survey [PCS-12] [12]), homelessness risk (being homeless or living in a shelter or having two or more risk factors, such as having no place to stay for two or more nights, eviction from a primary residence, financial crisis, or food insecurity in the past six months), and behavioral health hospitalization nights.

Secondary outcomes included outpatient visits in the prior six months to health agencies (such as primary care, emergency or urgent care, specialty medication and counseling visits, any health care visit) and community agencies (such as social services for depression and any community depression services, including social services, faith-based services, parks, telephone hotline, and other places for information, referral, counseling, or medication management for depression or mental health) (5). Depression services were defined by participant report of receiving assessment, treatment, or referral services. We summed “depression” visits and mental health self-help or family support visits. Treatment indicators included use of antidepressants (5,6) and probable appropriate treatment (6), defined as not depressed (PHQ-8 score <10) or having two or more months of antidepressant use or four or more specialty or primary care depression visits.

We compared baseline characteristics by intervention status within sector for the 1,018-client analytic sample, with item-level imputation for missing data (14), wave-level imputation for missing surveys, adjusting to the analytic sample, and weights to account for nonenrollment and attrition. [Further details are available in an online supplement to this report.] Main analyses used Taylor series linearization with SUDAAN, version 11.1 (<http://www.rti.org/sudaan/>), accounting for clustering, weighting, and multiple imputations.

We conducted intent-to-treat analyses and estimated intervention-by-sector interaction models. Screening sector was categorized as “health care” (primary care or/public health, mental health, or substance abuse program) or “social-community” (homelessness services, social services, faith-based services, park-based or senior center, hair salon, exercise, or other program). With attrition noted as a limitation (8), we conducted analyses at each follow-up separately (six months, 12 months, and three years) as main analyses, which permits using both multiple imputation and response weights to optimally address attrition. We included unweighted longitudinal models as sensitivity analyses. [Further details are available in the online supplement.]

We used linear regression for continuous variables, logistic regression for binary variables, and Poisson regression for count variables, adjusted for baseline status of dependent variable and covariates. Although our main focus was on effects of interventions within subgroups (health care and social-community), we included a test for the sector-by-intervention interaction. Results are presented from linear models as between-group differences, from logistic models

as odds ratios (ORs), and from Poisson models as incidence rate ratios (IRRs), with 95% confidence intervals (CIs), illustrated by standardized predictions from fitted regression models. Because we conducted exploratory analyses, we did not adjust for multiple comparisons but discuss implications.

RESULTS

Of the analytic sample, 715 were from health care and 303 were from social-community sectors. Baseline factors did not differ significantly by intervention status within sector, except in the social-community sector, where CEP clients were on average six years older than RS clients ($p=.03$). Most participants were African American or Latino and had family income below the federal poverty level. [Further details are available in the online supplement.]

Intervention-by-sector interactions were not significant except that CEP was associated with greater reduction compared with RS in behavioral health hospitalization nights at six months for community clients compared with health care clients ($IRR=.3$, $CI=.1-1.0$, $p=.04$). In stratified analyses, CEP was associated with a lower likelihood compared with RS ($OR=.7$, $CI=.5-.9$, $p=.015$) of poor MHRQL for health care clients at six months and for social-community clients at 12 months ($OR=.6$, $CI=.3-1.0$, $p=.045$). Compared with RS, CEP was associated with a higher likelihood of mental wellness at six months ($OR=1.9$, $CI=1.0-3.3$, $p=.039$) and greater PHRQL at 36 months (between-group difference=1.6, $CI=.2-3.0$, $p=.025$) among health care clients and with less homelessness risk at six months among social-community clients ($OR=.4$, $CI=.2-.9$, $p=.018$).

There were few significant interactions of intervention by sector or within-sector intervention effects for outpatient services use (secondary outcomes) at six or 12 months (Table 1). Among health care clients there was reduced use of mental health specialty medication visits at six months ($IRR=.4$, $CI=.2-.6$, $p<.001$ [see online supplement]) and of antidepressants at 12 months for CEP clients compared with RS clients. At 36 months, significant interactions showed greater increases under CEP compared with RS for social-community clients in primary care visits, mental health self-help or family support-group days, use of antidepressants and antipsychotics, probable appropriate treatment, and a trend for any health care visits; yet greater increases for health care clients in social-service depression visits and any community-program depression visit (each $p<.01$). Longitudinal analyses confirmed these interactions as significant. [Further details are available in the online supplement.]

DISCUSSION

We found no consistent, significant intervention-by-sector interactions on outcomes, suggesting results for the combined sample largely apply across clients identified in health care and community sectors. In addition, stratified findings, confirmed by longitudinal sensitivity analyses, reinforced

TABLE 1. Secondary outcomes among 1,018 clients with depression in social-community sector or health care sector programs at six-, 12-, and 36-month follow-ups after programs' implementation of a technical assistance intervention (Resources for Services [RS]) or a community coalition building intervention (Community Engagement and Planning [CEPI]) for quality improvement in collaborative care for depression^a

Outcome at follow-up	Social-community sector								Health care sector											
	RS estimate				CEP vs. RS				RS estimate				CEP estimate				CEP vs. RS			
	M	95% CI	%		IRR	95% CI	p		M	95% CI	%		M	95% CI	OR	95% CI	p	Interaction (p)		
Health services																				
Visits to a primary care physician																				
6 months	4.0	2.7–5.8	3.9	2.9–5.2	1.0	.6–1.6	.944	4.5	3.1–6.4	3.9	3.3–4.6	.9	.6–1.3	.484	.709					
12 months	3.0	2.3–3.9	3.7	2.7–5.1	1.2	.8–1.9	.338	3.2	2.3–4.4	3.5	3.0–4.2	1.1	.8–1.6	.580	.671					
36 months	2.4	2.0–2.9	4.5	3.1–6.4	1.9	1.3–2.8	.003	4.5	3.0–6.7	4.0	3.2–4.9	.9	.6–1.4	.578	.035					
	%	95% CI	%	95% CI	OR	95% CI	p	%	95% CI	%	95% CI	%	95% CI	p	Interaction (p)					
Any health care sector visit (reference: none)																				
6 months	87	80.5–91.1	84	75.5–90.8	.8	.4–1.8	.646	91	86.6–94.0	89	84.0–92.9	.8	.4–1.6	.533	.950					
12 months	80	70.4–87.3	84	77.6–89.4	1.4	.7–2.7	.375	83	78.6–87.5	84	78.6–89.0	1.1	.7–1.8	.770	.592					
36 months	75	67.4–81.9	86	76.0–92.0	2.0	.9–4.5	.082	88	79.5–93.0	84	73.1–91.1	.7	.3–1.6	.402	.025					
Community services																				
Any social service for depression (reference: none)	19																			
6 months	19	14.0–25.4	14	8.8–20.6	.7	.3–1.3	.203	17	12.4–22.9	19	14.5–24.5	1.2	.7–1.9	.578	.126					
12 months	13	8.2–19.7	9	3.9–17.9	.6	.2–1.9	.376	10	5.8–14.9	13	9.2–17.2	1.4	.7–2.8	.315	.133					
36 months	19	11.0–29.9	9	3.8–20.3	.4	.1–1.3	.122	11	7.0–15.5	21	13.3–31.2	2.3	1.1–4.8	.030	.034					
Any community sector visit for depression (reference: none)	28																			
6 months	28	21.4–36.1	29	22.3–37.7	1.1	.6–1.8	.813	30	24.4–35.8	32	25.1–39.6	1.1	.7–1.7	.633	.892					
12 months	21	15.3–27.5	22	14.1–31.8	1.1	.5–2.2	.859	20	16.1–25.5	24	19.5–29.3	1.2	.8–1.9	.285	.640					
36 months	31	22.1–41.5	25	17.1–36.0	.8	.4–1.4	.337	27	21.9–33.4	40	32.2–47.9	1.8	1.2–2.8	.009	.036					
Community or health care services																				
M	95% CI	M	95% CI	IRR	95% CI	p		M	95% CI	M	95% CI	IRR	95% CI	p	Interaction (p)					
Days attended self-help or family support groups ^b																				
6 months	2.6	1.1–6.2	4.3	2.0–9.0	1.6	.5–5.1	.395	6.4	3.5–11.2	4.4	2.8–6.9	.7	.4–1.3	.262	.180					
12 months	2.6	.8–7.8	6.5	3.0–14.0	2.6	.7–10.0	.169	8.8	6.1–12.6	5.0	2.8–8.9	.6	.3–1.0	.060	.046					
36 months	2.1	1.0–4.3	6.4	3.5–11.4	3.1	1.2–8.1	.024	7.9	5.1–12.1	5.3	2.8–9.7	.7	.3–1.6	.301	.033					
Outpatient contacts for depression in both sectors (mean)																				
6 months	17.2	9.4–30.9	21.2	14.5–30.8	1.2	.6–2.6	.541	24.9	17.8–34.7	22.2	16.7–29.4	.9	.5–1.5	.628	.350					
12 months	9.8	5.6–16.9	17.0	10.5–27.5	1.7	.8–3.7	.147	21.9	17.0–28.2	17.2	12.2–24.3	.8	.5–1.1	.190	.047					
36 months	10.7	6.9–16.5	17.2	10.9–26.9	1.6	.8–3.0	.144	25.8	19.7–33.6	21.3	13.5–33.2	.8	.6–1.2	.305	.054					
Treatment																				
%	95% CI	%	95% CI	OR	95% CI	p		%	95% CI	%	95% CI	OR	95% CI	p	Interaction (p)					
Use of any antidepressant (reference: none)																				
6 months	31	24.4–39.2	31	21.0–42.2	1.0	.5–2.0	.894	44	34.7–53.7	35	28.3–43.4	.6	.4–1.2	.131	.300					
12 months	28	19.6–39.2	31	22.0–41.0	1.1	.5–2.5	.743	39	32.0–47.0	29	24.3–34.4	.6	.4–.9	.016	.143					
36 months	14	9.2–21.2	33	24.7–42.6	3.2	1.6–6.4	.002	35	27.4–42.3	24	15.8–35.3	.6	.3–1.2	.135	.011					

continued

continued

TABLE 1, continued

Outcome at follow-up	Social-community sector						Health care sector					
	RS estimate			CEP estimate			RS estimate			CEP estimate		
	M		95% CI	M		95% CI	M		95% CI	M		95% CI
			p			p			p			p
Use of any antipsychotic (reference: none)												
6 months	20	13.7–27.1	.22	14.0–31.7	1.2	.5–2.8	.710	26	20.7–32.7	25	19.8–31.3	.9
12 months	21	12.9–32.1	.21	14.7–30.2	1.0	.4–2.5	.928	27	21.2–33.9	25	19.3–31.9	.9
36 months	10	4.9–20.2	.29	18.3–43.3	4.0	1.8–9.0	.001	26	20.0–33.5	21	14.4–29.1	.7
Probable appropriate treatment (reference: none)												
6 months	74	65.0–81.0	.76	67.2–82.3	1.1	.6–2.1	.802	78	69.6–84.5	79	74.1–83.6	1.1
12 months	71	57.1–81.3	.74	63.0–82.0	1.2	.5–2.5	.693	77	71.7–80.9	73	64.8–79.6	.8
36 months	60	43.9–75.2	.77	65.7–85.4	2.2	1.1–4.5	.033	73	65.1–79.4	66	57.4–72.9	.7

^a Intervention-by-sector interaction models used multiply imputed data, weighted for the eligible sample for enrollment; logistic regression models for binary variables (presented as ORs) or Poisson regression models for count variables (presented as incidence rate ratios [IRRs]), adjusted for baseline status of the dependent variable, age, education, race/ethnicity, 12-month depressive disorder, and community and accounted for the design effect of the cluster randomization.

^b For a mental health problem

potential benefits of CEP relative to RS within each sector at some time point in this largely racial-ethnic minority group sample. Thus, inclusion of community-sector depressed clients, unusual for a collaborative care study, may be a promising way to extend the reach of depression interventions otherwise largely limited to health care clients and sectors.

Findings on long-term outpatient service use suggested that CEP's network approach relative to RS's technical support, two years after study intervention support ended, may over time have increased community clients' use of health care depression services and health care clients' engagement in community depression services. Whether this pattern reflected clients' learning from initial exposure or effects of persistent network ties is an issue for future research, as is whether these shifts in utilization improve later outcomes. The level of significance, consistency across models, and effects on multiple utilization indicators suggested that, despite multiple comparisons, the effects may be real and merit potential replication in future studies.

Limitations included use of self-report measures, program-level randomization within two communities, multiple outcomes with few significant interactions, and an exploratory approach.

CONCLUSIONS

This study may inform future studies of community health homes seeking to reduce disparities. Findings suggested that it is feasible to include in such efforts not only clients from traditional health care sectors but those with similar needs from social-community sectors and that including clients from both sectors may expand the reach of collaborative care (15).

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This Community Partners in Care (CPIC) outcome study was supported by Patient Centered Outcomes Research Institute (PCORI) contract

1845 for the three-year extension study and R01MD007721 from the National Institute on Minority Health and Health Disparities for subgroup analyses. The parent CPIC study was funded by R01MH078853, P30MH082760, and P30MH068639 from the National Institute of Mental Health and by 64244 from the Robert Wood Johnson Foundation, CMCH-12-97088 from the California Community Foundation, G08LM011058 from the National Library of Medicine, and UL1TR000124 from the National Institutes of Health/National Center for Advancing Translational Science UCLA Clinical and Translational Science Institute. The RAND Corporation, UCLA Semel Institute, and the Los Angeles County Department of Mental Health, Department of Public Health, and Department of Health Services provided institutional support. The study is registered with ClinicalTrials.gov (NCT01699789). The authors thank the 95 participating health care and community-based agencies, the CPIC Council, and members of the Association of Clinical and Translational Science Team Science Award for CPIC (2014) and Campus-Community Partnerships for Health 2015 Annual Award. They acknowledge the contributions of Rev. Ron Wright and Rev. Terrance Stone, who passed away during preparation of the manuscript, and of Erika Orellana.

The authors report no financial relationships with commercial interests.

Received April 10, 2017; revision received June 21, 2017; accepted July 11, 2017; published online November 1, 2017.

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