Published in final edited form as:

Adm Policy Ment Health. 2018 January ; 45(1): 163–173. doi:10.1007/s10488-016-0781-y.

Bridges to Better Health and Wellness: An Adapted Health Care Manager Intervention for Hispanics with Serious Mental Illness

Leopoldo J. Cabassa,

School of Social Work, Columbia University and the New York State Center of Excellence for Cultural Competence, New York State Psychiatric Institute, New York, NY, USA

Yamira Manrique,

School of Social Work, Columbia University, New York, NY, USA

Quisqueya Meyreles,

New York State Psychiatric Institute, New York, NY, USA

David Camacho,

School of Social Work, Columbia University, New York, NY, USA

Lucia Capitelli,

New York State Psychiatric Institute, New York, NY, USA

Richard Younge,

Columbia Center for Family and Community Medicine, Columbia University Medical Center, New York, NY, USA

Dianna Dragatsi,

Department of Psychiatry, Columbia University Medical Center, New York, NY, USA

Juana Alvarez, and

New York State Psychiatric Institute, New York, NY, USA

Roberto Lewis-Fernández

Department of Psychiatry, Columbia University Medical Center and the New York State Psychiatric Institute, New York, NY, USA

Abstract

Address correspondence to: Leopoldo J. Cabassa, Ph. D., Columbia University School of Social Work, 1255 Amsterdam Avenue, New York, NY 10027, ljc2139@columbia.edu.

Compliance with Ethical Standards

Conflict of interest: Leopoldo J. Cabassa declares that he has no conflict of interest. Yamira Manrique declares that she has no conflict of interest. Quisqueya Meyreles declares that she has no conflict of interest. David Camacho declares that he has no conflict of interest. Lucia Capitelli declares that she has no conflict of interest. Richard Younge declares that he has no conflict of interest. Dianna Dragatsi declares that she has no conflict of interest. Juana Alvarez declares that she has no conflict of interest. Roberto Lewis-Fernández declares that he has no conflict of interest.

Disclaimer: The content of this article is solely the responsibility of the authors and does not represent the official views of the National Institutes of Health.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

This study examined the feasibility, acceptability, and initial impact of Bridges to Better Health and Wellness (B2BHW), a culturally-adapted health care manager intervention for Hispanics with serious mental illness (SMI). Thirty-four Hispanics with SMI and at risk for cardiovascular disease were enrolled. Mixed-linear models were used to examine changes over 12-months on patient activation, self-efficacy, patient-rated quality of care, receipt of preventive primary care services, and quality of life. The majority of participants completed the intervention (85%) with high satisfaction. Significant improvements were found for patient activation, self-efficacy, patients' ratings of quality of care, and receipt of preventive primary care.

Keywords

Hispanics; Latinos; serious mental illness; health care disparities; health care management; patient-centered care; cultural adaptation

Improving the health care of Hispanics with serious mental illness (SMI; e.g., schizophrenia) is an important public health priority since this population experiences persistent health disparities. People with SMI have mortality rates that are 2 to 3 times higher than the general population largely due to preventable medical conditions (e.g., cardiovascular disease [CVD]) (Colton & Manderscheid, 2006). Racial and ethnic minority status can confer additional health risks. Compared to non-Hispanic whites with SMI, Hispanics with SMI tend to be at increased risk of experiencing cardiovascular-related mortality, negative metabolic abnormalities (e.g., weight gain) associated with antipsychotic treatments, and higher prevalence of diabetes mellitus and metabolic syndrome (Carliner et al., 2014).

These health needs are worsened by the structural barriers (e.g., fragmented care) faced by people with SMI when using primary care services (Lord, Malone, & Mitchell, 2010). Hispanics with SMI also have to contend with additional obstacles to care related to their minority status, including language barriers and mistrust of the health care system due to discrimination toward minorities and immigrants in the United States (Cabassa et al., 2014). These health needs and deficiencies in medical care indicate that Hispanics with SMI would benefit from health care manager interventions. A recent study found that, compared to the usual care provided to adults with SMI in an outpatient mental health clinic, the Primary Care Referral and Evaluation (PCARE) program – a health care manager intervention delivered by registered nurses (RNs) – significantly increased the rates of preventive primary care and significantly improved the quality of cardiometabolic care and mental health-related quality of life (Druss et al., 2010). PCARE is a 12-month intervention in which health care managers (e.g., registered nurses) work individually with clients at an outpatient mental health clinics to coach, connect, and coordinate their primary care services (Druss et al., 2010).

Despite the positive results of health care manager interventions for people with SMI, limited attention has been paid to developing and evaluating health care manager interventions aimed at improving the health care of Hispanics with SMI. In a previous article, we described the rationale and process for adapting PCARE to Hispanic patients and social workers using the collaborative intervention planning framework. These adaptations were conducted to increase the relevance of PCARE to Hispanic patients since the original

intervention was not designed for this population and included a limited number of Hispanics in the original trial. We also expanded the use of PCARE to a new provider group, masters-level social workers, since this a growing workforce that delivers most of the mental health care in the U.S. (Proctor, 2004). The aims of this study are to examine the acceptability and feasibility of delivering Bridges to Better Health and Wellness (B2BHW), a cultural adaptation of PCARE for Hispanics with SMI, and to explore its initial impact on patient activation, self-efficacy, patient-rated quality of care, receipt of preventive primary care services, and quality of life.

Methods

Study Setting

This study was conducted at a public outpatient mental health clinic in a northern Manhattan that serves predominantly Hispanic patients. No primary care is delivered at this clinic, and clients are referred to a variety of primary care clinics in the community.

Recruitment and Procedures

Participants were recruited through clinicians' referrals. Eligible participants were age 18 or older, self-identified as Hispanics who spoke English or Spanish, and had a chart diagnoses of SMI - defined as mental disorders (e.g., schizophrenia) associated with substantial functional impairment interfering with major life activities – and at least one CVD risk factor, including body mass index [BMI] ≥ 25 , diabetes mellitus, current smoking, hypertension, or hyperlipidemia. Participants were excluded if they required detoxification, were acutely suicidal or homicidal, failed a capacity-to-consent questionnaire (Zayas, Cabassa, & Pérez, 2005), and for those age 65 or older, screened positive for cognitive impairment using the Mini-Cog Examination (Palmer & Meldon, 2003). All eligible participants provided written informed consent. A trained bilingual research assistant conducted a baseline interview before participants' first visit with their health care manager and follow-up interviews at 6 and 12 months post-baseline. The study was approved by the Institutional Review Boards of Columbia University and the New York State Psychiatric Institute.

Between October 2013 and October 2014, 54 Hispanic patients were referred to the study. Eight refused to participate citing that they were too busy or were not interested in participating, 2 were lost to follow-up, and 10 met an exclusionary criterion (3 did not meet eligibility criterion and 7 failed the capacity-to-consent questionnaire or screened positive for cognitive impairment). Thirty-four patients were enrolled and completed a baseline interview. Before the 6-month follow-up interview, four participants dropped out of the study and one was lost to follow-up. Twenty-nine (85%) remained engaged in the B2BHW intervention and participated in all interviews.

Bridges to Better Health and Wellness (B2BHW)

This manualized health care manager intervention consisted of monthly individual 60-minute sessions delivered by two trained bilingual Hispanic masters-level social workers over the course of 12 months. One of the social workers was employed at the study site with

over 15 years of clinical experience and had a caseload of 15 participants throughout the study. The other social worker was a doctoral student with an MSW with more than 2 years of clinical experience and had a caseload of 14 participants throughout the study.

Consistent with PCARE, B2BHW focuses only on physical health and its core elements include care coordination of primary care services between mental health and primary care providers and patient activation for physical health issues. For patients, the health care manager serves as an advocate and coach connecting them to primary care services, and helping them develop the knowledge and skills to actively participate in their own health care. For primary care and mental health providers, the health care managers serve as a bridge to reduce fragmentation of care by making sure patients' medical information, including patients psychiatric disorders and treatments, is shared across providers, monitoring patients' health (e.g., weight), and alerting providers when preventive primary care is needed following treatment guidelines (American Diabetes Association, 2004; United States Preventive Services Task Force, 2010). Appendix A presents B2BHW phases of work.

Intervention Fidelity

Several strategies were used to ensure intervention fidelity. First, an intervention manual specifying each element of the intervention was developed. Second, research staff trained health care managers using a standardized curriculum consisting of didactic modules, review of the intervention manual, role-playing activities with performance feedback, and discussion groups administered over four 3-hour sessions. Third, health care manager sessions were audiotaped and coded by a trained research assistant using a fidelity checklist. These ratings were used in monthly supervision to give feedback to health care managers about their performance.

Data Collection

All data were collected by trained bilingual study staff. Participants received \$15 and a metro card for each completed assessment. No compensation was provided to participants for attending health care manager visits. Three types of data were collected: process measures, structured-quantitative interviews, and chart abstractions.

Process Measures—Process measures, including recruitment rates, session attendance, and assessment completion rates, were collected to evaluate feasibility.

Structured Interviews—Interviews were conducted at baseline, 6 and 12 months post-baseline. The majority of interviews (94%) were conducted in Spanish. The baseline interview included participants' demographics, acculturation (Marin & Gamba, 1996), health literacy (Baker, Williams, Parker, Gazmararian, & Nurss, 1999), and self-reported use of health and mental health services, including number of psychiatric hospitalizations and number of visits to primary care, emergency departments and urgent care in the past 12 months. Several standardized measures were used to examine study outcomes at each assessment period. Patient activation was measured using the Patient Activation Measure (PAM), a 13-item instrument that assess knowledge, skills, and confidence related to self-management with scores ranging from 0 (no activation) to 100 (high activation) (Hibbard,

Mahoney, Stockard, & Tusler, 2005). Self-efficacy was measured with 3 items derived from the Chronic Disease Scales that inquired about participants' confidence communicating with their primary care provider (Lorig et al., 1996) and with the Self-Efficacy for Managing Chronic Disease, a 6-item scale that assesses participants' confidence in general self-management behaviors (Lorig, Sobel, Ritter, Laurent, & Hobbs, 2001). Both scales use a 10-point scale ranging from 1 (not at all confident) to 10 (totally confident). The Patient Assessment of Chronic Illness Care (PACIC) scale was used to assess participants' perspectives on the quality and patient-centeredness of chronic illness care received during the past 6 months from their primary care provider (PACIC: PCP) and from their health care manager (PACIC: HCM) (Glasgow, Whitesides, Nelson, & King, 2005). Both instruments are divided into five subscales corresponding to the five dimensions of the chronic care model (patient activation, delivery system design and decision support, goal setting, problem solving, and care coordination) (Wagner et al., 2001), and each item is scored on a 5-point scale ranging from 1 (almost never) to 5 (almost always). Health-related quality of life was assessed using the 12-item Short-Form Health Survey (SF-12) which generates two summary scores for physical and mental health-related quality of life that range from 0 to 100 with higher scores reflecting better quality of life (Salyers, Bosworth, Swanson, Lamb-Pagone, & Osher, 2000). Participants' perceptions of the acceptability of B2BHW was assessed using the Client Satisfaction Questionnaire (CSQ), an 8-item instrument scored on a series of 4-point Likert type scales that examines aspects of patient satisfaction (Roberts, Atkinson, & Mendías, 1984). We dichotomized the CSQ items at the mid-point into low or high scores. All outcome measures had good internal consistency in our sample with Cronbach's α ranging from 0.71 to 0.95.

Chart Abstractions—A trained research assistant reviewed and abstracted medical information from participants' medical records at their primary care clinic and at the study site at baseline and 12-month follow-up. The following data were abstracted: primary mental health diagnosis, physical health conditions, smoking status, and receipt of preventive primary care services. Twenty-nine preventive primary care indicators derived from the U. S. Preventive Services Task Force Guidelines (2010) were abstracted to calculate the rates of receiving preventive primary care services over the course of the study. Indicators were grouped into 6 categories: physical examinations (e.g., blood pressure), screenings for women (e.g., pap smear), screenings for men (e.g., prostate exam), laboratory tests (e.g., cholesterol), vaccinations (e.g., influenza), and education (e.g., exercise). Similar to Druss et al. (2010), an aggregate preventive primary score representing the proportion of services for which each participant was eligible depending on their age and gender was calculated.

Data Analysis

Linear mixed models adjusting for health care manager assignment were used to examine how intervention outcomes changed over the course of 12-months. Linear mixed models are commonly used in health services research to examine variations within individuals on repeated measures (Davidson, Bellamy, Guy, & Miller, 2012; Davis, 2002). Effect sizes for changes between baseline and 6 months and baseline and 12 months were calculated using the following equation: $r = [t^2/(t^2 + df)]$, and the following thresholds were used to

determine if the effect sizes were low (0.20), moderate (0.50), or large (0.80) (Cooper, Hedges, & Valentine, 2009). SPSS version 23 was used for all analyses.

Results

Sample Characteristics

Table 1 presents sample characteristics at baseline. Thirty-four participants were enrolled in the study with an average age of 54. Most were female, Dominican, monolingual Spanish speakers, and on average had lived in the U.S. for three decades. The most common psychiatric diagnoses were schizoaffective disorder, bipolar disorder, and major depression. On average, participants had 2.8 medical conditions with hypercholesterolemia, hypertension, and diabetes mellitus being the most frequent. At baseline, all but one participant had visited a primary care physician in the past year. Overall, participants received primary care services from 17 different primary care clinics throughout northern Manhattan and the Bronx.

Feasibility

Most enrolled participants (85.3%) completed the intervention. On average, participants attended 10.1 (sd =1.8) out of 12 health care manager sessions. Four participants discontinued the study, all by the second visit. The main reasons for discontinuation were moving out of state or losing interest in the study. One participant was lost to follow-up after the third visit.

Acceptability

CSQ responses at 12 months indicated that participants found B2BHW acceptable. Ninety-three percent rated the quality of B2BHW services as good/excellent; 86% indicated that B2BHW met most/all of their health needs, and 97% were mostly/very satisfied with the amount of help they received from B2BHW. All participants reported that B2BHW helped them deal more effectively with their physical health and would recommend the intervention to a friend.

Patient-Centered and Quality of Life Outcomes

Patient-centered and quality of life outcomes are presented in table 2. Statistically significant improvements from baseline to 12 months were reported for patient activation, self-efficacy for communicating with the primary care physician, and self-efficacy for managing their chronic disease with moderate effect sizes (0.56, 0.49, and 0.55, respectively). Participants reported statistically significant improvements from baseline to 12 months on their overall assessment of the PACIC: HCM with a moderate effect size (0.63), and for each of the PACIC: HCM subscales. No statistically significant changes were reported from baseline to 12 months on the PACIC: PCP and on the two health-related quality of life indicators.

Preventive Primary Care Outcomes

Preventive primary care outcomes are reported in table 3. The overall rate of receiving preventive primary care services increased significantly from 29.87% at baseline to 54.86%

at 12 months with a large effect size (0.89). Statistically significant increases from baseline to 12 months were observed for the following indicators of preventive primary care services: physical examinations, screenings for women, laboratory tests, vaccinations, and health education.

Discussion

This study found encouraging evidence that B2BHW, an adapted version of PCARE, is a feasible and acceptable health care manager intervention for Hispanics with SMI. Most enrolled participants completed the intervention with high levels of satisfaction. B2BHW was associated with significant improvements on patient activation, self-efficacy, patients' assessments of chronic illness care, and receipt of preventive primary care services over a 12 month period. These results are important given the paucity of intervention research addressing the health care needs of Hispanics with SMI. The few studies that have examined the health care experiences of Hispanics with SMI have found that this population receives low rates of care for chronic conditions, experiences multiple obstacles to care related to their minority status, and reports low levels of patient activation, self-efficacy, and patient-centered care from primary care providers (Cabassa et al., 2014; Nasrallah et al., 2006). B2BHW addressed these health care factors.

Similar to the PCARE study findings, participating in B2BHW was associated with significant increases in the receipt of preventive primary care services over a 12-month period (Druss et al., 2010). Although we observed a lower increase of 24.9% in preventive primary care services in a one-year period compared to a 37.2% increase reported in the PCARE trial intervention group, both studies reported that over half of their samples were receiving the indicated preventive primary care services by the end of the intervention (54.9% for B2BHW and 58.7% for PCARE). Improvements in preventive primary care is a significant finding since we know of no other study that has documented an increase in the rates of preventive service use among Hispanics with SMI as a result of a health care intervention. Lower rates of receiving preventive primary care services are prevalent in the SMI population, particularly for cervical cancer, cholesterol monitoring, lifestyle counseling, and blood pressure checks (Lord et al., 2010; Weinstein et al., 2016). B2BHW was associated with significant increases in all of these preventive services.

No significant improvements were observed in patients' assessment of the chronic illness care received from their primary care physicians. This finding is not surprising since no direct intervention was offered to these providers. Future efforts to improve primary care among people with SMI could include training and skills development specifically for primary care clinicians (Bartels et al., 2013). We also found that B2BHW was not related to improvements in health-related quality of life. These results differ from the PCARE trial which reported significant improvement in the SF-12 mental health summary score from baseline to 12 month in the intervention group, but not in the SF-12 physical health summary score (Druss et al., 2010). Our small sample may have limited the ability to detect significant changes these indicators.

Several study limitations need to be noted. The single-group design prevented any inference about the effectiveness of B2BHW due to the lack of a comparison group. Given the pilot nature of this study, our intent was to collect preliminary data about the feasibility, acceptability, and initial impact of this intervention, a critical step in the intervention development process to prepare for a more rigorous study in the future (Campbell et al., 2000). We cannot generalize our findings to other populations and sites since our sample was small and drawn from one public outpatient mental health clinic in New York City. Our small sample size also prevented us from exploring subgroup analyses (e.g., bilingual vs. monolingual Spanish speakers). Lastly, health care manager interventions like PCARE and B2BHW were not designed to improve health outcomes associated with CVD (e.g., BMI). Augmenting health care manager interventions with behavioral and/or pharmacological treatments that directly address health outcomes could strengthen the health impact of these interventions.

Given the current impetus for improving the health care of people with SMI through the implementation of the Affordable Care Act and patient-centered medical homes (Alakeson, Frank, & Katz, 2010), interventions like PCARE and its adaptation are relevant and timely. B2BHW expands the repertoire of existing interventions that can help address the health care disparities faced by Hispanics with SMI, a population that is often overlooked in the literature and in the health care system. This study represents an initial but important step in the generation of empirically-supported interventions needed to combat the health and health care inequities impacting Hispanics with SMI.

Acknowledgments

Funding: This study was funded by the National Institute of Mental Health (NIMH) K01 MH091108.

The authors would like to acknowledge all of the people who worked on this project including Arminda P. Gomes, Lorena Maldonado, Seth Thompson, Analis Lopez, and Marina Soto.

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Appendix A. Bridges to Better Health and Wellness Phases of Work

Table 1

Sample Characteristics

Sample Characteristics	Total Sample (N = 34)	
	Mean (SD)	%
<u>Demographics</u>		
Age	54.1 (14.9)	
Years of Education	10.4 (3.9)	
Female		67.6
Marital Status		
Married		2.9
Single		47.1
Widow/Divorced/Separated		50.0
Annual Income		
\$0–\$9,999		91.2
\$10,000 – \$29,999		8.8
Social Benefits		
Supplemental Security Income (SSI)		70.6
Social Security Disability Insurance (SSDI)		23.5
Supplemental Nutrition Assistance Program (SNAP)		85.3
Health Insurance		
Medicare		50
Medicaid		97.1
Dually Insured Medicare/Medicaid		47.1
Latino Group		
Dominican		79.4
Puerto Rican		8.8
Other (e.g., Costa Rican, Panamanian, Cuban)		11.8
Place of Birth		
U.S. (Mainland)		11.8
Dominican Republic		73.5
Puerto Rico		2.9
Other (Costa Rica, Cuba, Panama)		11.8
Years living in the U.S.	31.3 (13.9)	
Language Preference		
Spanish Only		73.5
Bilingual		26.5
<u>Physical Health</u>		
Perceived Health Status (Fair/Poor)		64.7
Chart-reported Medical Conditions *		
Asthma		15.6
Arthritis		21.9
Diabetes Mellitus		46.9

Sample Characteristics	Total Sample (N = 34)	
	Mean (SD)	%
Hypertension		50.0
Hypercholesterolemia		75.0
Obesity (BMI ≥ 30)		62.5
Average Body Mass Index (BMI)	31.9 (7.7)	
Average Number of Medical Conditions	2.8 (1.6)	
Current Smoking		32.3
Functional Healthy Literacy		
Inadequate		44.1
Marginal		20.6
Adequate		35.3
Use of services for physical health		
Used primary care services in past 12 months		97.1
Average number of visits to primary care in past 12 month	3.7 (2.5)	
Used emergency departments in the past 12 month		32.4
Average number of emergency department visits in past 12 months	0.6 (1.1)	
Used urgent care services in the past 12 months		5.9
Average number of urgent care visits in past 12 months	0.1 (0.2)	
<u>Mental Health</u>		
Chart Diagnosis *		
Schizophrenia		6.3
Schizoaffective disorder		40.6
Major depressive disorder		25.0
Bipolar disorder		25.0
Major depressive disorder with psychotic features		18.8
Use of mental health services		
Used psychiatric inpatient services in past 12 months		35.3
Average number of psychiatric hospitalizations in past 12 months	0.6 (1.3)	
Used psychiatric emergency services in the past 12 months		38.2
Average number of psychiatric emergency department visits	0.7 (1.3)	

* N = 32, health and mental health conditions were not mutually exclusive as participants could have more than one condition therefore percentages add up to greater than 100

Table 2

Patient-Centered and Quality of Life Outcomes from Baseline to 12 Months

Outcomes	Mean	SE	Estimate ^a	SE	p-value	ES ^b
Patient Activation						
Baseline	56.80	36.15	Ref	-	-	-
6 month	60.37	37.19	3.57	3.03	0.25	0.17
12 month	72.03	37.62	15.23	3.04	0.00	0.56
Self-efficacy: Communication with MD						
Baseline	7.62	0.31	Ref	-	-	-
6 month	8.17	0.35	0.55	0.39	0.16	0.20
12 month	8.89	0.27	1.27	0.37	0.00	0.49
Self-efficacy: Managing Chronic Disease						
Baseline	5.57	0.34	Ref	-	-	-
6 month	6.01	0.34	0.44	0.32	0.17	0.24
12 month	6.88	0.35	1.31	0.37	0.00	0.55
PACIC: HCM Total						
Baseline	2.81	0.20	Ref	-	-	-
6 month	3.75	0.19	0.94	0.25	0.00	0.50
12 month	4.08	0.19	1.27	0.25	0.00	0.63
PACIC: HCM: Patient Activation						
Baseline	2.75	0.24	Ref	-	-	-
6 month	3.87	0.20	1.12	0.27	0.00	0.52
12 month	4.03	0.22	1.28	0.30	0.00	0.52
PACIC: HCM: Delivery/Practice Design						
Baseline	3.01	0.20	Ref	-	-	-
6 month	4.00	0.21	0.99	0.26	0.00	0.50
12 month	4.15	0.21	1.14	0.26	0.00	0.70
PACIC: HCM: Goal Setting						
Baseline	2.84	0.19	Ref	-	-	-
6 month	3.99	0.21	1.43	0.24	0.00	0.55
12 month	4.27	0.18	1.16	0.26	0.00	0.70

Outcomes	Mean	SE	Estimate ^a	SE	p-value	ES ^b
PACIC/HCM: Problem Solving						
Baseline	2.66	0.25	Ref	-	-	-
6 month	3.76	0.23	1.09	0.30	0.00	0.51
12 month	4.13	0.22	1.46	0.30	0.00	0.65
PACIC/HCM: Care Coordination						
Baseline	2.80	0.21	Ref	-	-	-
6 month	3.26	0.21	0.46	0.28	0.10	0.24
12 month	3.84	0.19	1.04	0.26	0.00	0.53
PACIC PCP: Total						
Baseline	2.41	0.16	Ref	-	-	-
6 month	2.63	0.16	0.22	0.16	0.16	0.19
12 month	2.64	0.19	0.23	0.22	0.28	0.10
PACIC PCP: Patient Activation						
Baseline	2.88	0.23	Ref	-	-	-
6 month	2.90	0.25	0.02	0.29	0.93	0.01
12 month	2.67	0.26	-0.21	0.30	0.49	0.12
PACIC PCP: Delivery/Practice Design						
Baseline	3.21	0.19	Ref	-	-	-
6 month	3.39	0.21	0.18	0.22	0.41	0.11
12 month	3.20	0.23	-0.13	0.26	0.96	0.01
PACIC PCP: Goal Setting						
Baseline	2.31	0.18	Ref	-	-	-
6 month	2.62	0.18	0.31	0.18	0.09	0.23
12 month	2.63	0.23	0.33	0.26	0.20	0.11
PACIC PCP: Problem Solving						
Baseline	2.16	0.21	Ref	-	-	-
6 month	2.48	0.19	0.32	0.20	0.11	0.20
12 month	2.77	0.25	0.61	0.29	0.04	0.18
PACIC PCP: Care Coordination						
Baseline	1.95	0.19	Ref	-	-	-
6 month	2.16	0.16	0.22	0.19	0.26	0.18

Outcomes	Mean	SE	Estimate ^a	SE	p-value	ES ^b
SF-12: Mental Health Summary Score						
12 month	2.20	0.20	0.25	0.25	0.32	0.13
Baseline	42.82	2.01	Ref	-	-	-
6 month	43.62	2.14	0.80	2.19	0.71	0.05
12 month	47.55	2.16	4.73	2.63	0.08	0.19
SF-12: Physical Health Summary Score						
Baseline	35.90	1.90	Ref	-	-	-
6 month	38.59	1.39	2.68	1.61	0.11	0.29
12 month	36.65	1.82	0.74	1.10	0.71	0.06

Note: PACIC: HCM; Patient Assessment of Chronic Illness Care: Health Care Manager version. PACIC: PCP; Patient Assessment of Chronic Illness Care: Primary Care Provider version.

^aEstimates derived from linear mixed models adjusting for health care manager assignment. SE: Standard Error.

^bES: Effect Size: $r = [t^2/(t^2 + df)]$ calculated for changes between baseline and 6 month and baseline and 12 month

Table 3

Receipt of Preventive Primary Care Service from Baseline to 12 Months

Outcomes	Mean	SE	Estimate ^a	SE	p-value	ES ^b
Preventive Primary Care: Total Score ^c						
Baseline	29.87	1.70	Ref	-	-	-
12 month	54.86	2.36	24.10	2.39	0.00	0.89
Preventive Primary Care: Physical Examination						
Baseline	54.61	2.25	Ref	-	-	-
12 month	79.79	3.26	25.18	3.63	0.00	0.78
Preventive Primary Care: Screenings for Men						
Baseline	21.73	12.45	Ref	-	-	-
12 month	48.65	17.86	26.91	16.48	0.15	0.55
Preventive Primary Care: Screenings for Women						
Baseline	44.76	7.76	Ref	-	-	-
12 month	76.10	7.14	31.34	9.82	0.01	0.58
Preventive Primary Care: Lab Tests						
Baseline	37.47	4.01	Ref	-	-	-
12 month	52.52	4.50	15.05	5.97	0.02	0.41
Preventive Primary Care: Vaccinations						
Baseline	15.72	3.92	Ref	-	-	-
12 month	42.09	6.51	26.38	6.34	0.00	0.61
Preventive Primary Care: Health Education						
Baseline	20.29	4.49	Ref	-	-	-
12 month	43.53	3.93	23.24	4.68	0.00	0.69

Note:

^aEstimates derived from linear mixed models adjusting for health care manager assignment. SE: Standard Error.^bES: Effect Size: $r = [t^2/(t^2 + df)]$ calculated for changes between baseline and 6 month and baseline and 12 month.^cPreventive Primary Care services receive at baseline and 12 month