Published in final edited form as:

J Community Health. 2017 April ; 42(2): 303–311. doi:10.1007/s10900-016-0256-9.

Medical Home Characteristics and Quality of Diabetes Care in Safety Net Clinics

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Abstract

We examined associations between patient-centered medical home (PCMH) characteristics and quality of diabetes care in 15 safety net clinics in 5 states. Surveys among clinic directors assessed PCMH characteristics using the Safety Net Medical Home Scale. Chart audits among 864 patients assessed diabetes process and outcome measures. We modeled the odds of the patient receiving performance measures as a function of total PCMH score and of PCMH subscales and covariates. PCMH characteristics had mixed, inconsistent associations with the quality of diabetes care. The PCMH model may require refinement in design and implementation to improve diabetes care among vulnerable populations.

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Prior Presentations:

The content of this paper was previously presented as an oral presentation at the Society of General Internal Medicine Midwest Regional Meeting, Chicago, Illinois, September 13, 2013 and as a poster at the meeting of the American Public Health Association, Boston, Massachusetts, November, 5, 2013.

Conflict of Interest:

The authors declare that they do not have a conflict of interest.

Keywords

patient-centered medical home; quality; primary care; safety net; diabetes

Diabetes requires extensive self-management by patients and coordinated care across health care settings. It has been difficult nationally to provide high quality care that leads to ideal patient outcomes and primary care providers across diverse settings struggle to provide diabetes care that is consistent with current recommended guidelines (Agency for Healthcare Research and Quality, 2012; Casagrande, Fradkin, Saydah, Rust, & Cowie, 2013; Ali et al., 2013; Solberg, Klevan, & Asche, 2007). Thus, clinics and providers have searched for improved ways to organize their practices and coordinate care.

The patient-centered medical home (PCMH) is characterized by comprehensive primary care, quality improvement, care management, and enhanced access in a patient-centered environment. With an emphasis on patient-centered and team-based care, the PCMH may provide promising approaches for diabetes care (Bojadzievski & Gabbay, 2011). While the principles of the PCMH would seem to support high quality diabetes care, existing literature on the PCMH provides mixed results. Several studies of PCMH implementation have reported improvements in glycemic control and improvement in the proportion of patients achieving an all-or-none “bundle” of diabetes quality measures (Rosenthal et al., 2013; Calman et al., 2013; Solberg et al., 2013). On the other hand, several studies have not found associations between PCMH characteristics and key measures for diabetes care (Clarke, Tseng, Brook, & Brown, 2012; Friedberg, Schneider, Rosenthal, Volpp, & Werner, 2014). Systematic reviews have found insufficient evidence to support whether the PCMH can improve chronic illness care and clinical outcomes (Jackson et al., 2013; Alexander & Bae, 2012). A recent study of medical home capability in 795 safety net health centers found mixed results between PCMH domains and several clinical performance measures, including HbA1c control (Shi et al., 2015).

Safety net clinics are increasingly adopting the PCMH model and constitute an ideal setting to understand opportunities to provide high quality care for vulnerable populations. Federally qualified health centers (FQHCs) and other safety net health centers provide primary care for underserved patients who are largely minority, of low income, and more likely to have a chronic illness (Adashi, Geiger, & Fine, 2010; Doty, Abrams, Hernandez, Stremikis, & Beal, 2010; Cook et al., 2007). Following the implementation of the Affordable Care Act, clinic leaders have anticipated increased numbers of patients seeking primary care in safety net clinics and health centers around the country have looked to the PCMH as a new care delivery model to drive improvements in care (Katz, 2010; Ku et al., 2011; Centers for Medicare and Medicaid, 2010; Health Resources and Services Administration). As few studies have been able to substantiate the role of the PCMH in improving the quality of care, there are outstanding questions about the relationship between PCMH capability and the quality of diabetes care. Previous studies of diabetes care within the PCMH have occurred within a single city, county, or state setting, have examined a narrow range of outcomes for diabetes care, or have used a PCMH measurement tool which was not designed specifically for safety net settings (Rosenthal et al., 2013; Calman et al., 2013; Solberg et al., 2013;

Stevens, Shi, Vane, & Peters, 2014; Clarke, Tseng, Brook, & Brown, 2012; Shi et al., 2015). Therefore, we investigated a variety of diabetes process and outcome measures and used the Safety Net Medical Home Scale to assess PCMH capability among clinics in 5 states and examined whether PCMH characteristics are associated with high quality diabetes care in safety net clinics.

Methods

Study design, subjects, and setting

Our cross-sectional study uses baseline data on clinics prior to the start of intervention activities in the Safety Net Medical Home Initiative (SNMHI). The SNMHI was a national demonstration project (2009–2013) supported by the Commonwealth Fund to implement and evaluate the PCMH model in 65 clinics in five states (Massachusetts, Pennsylvania, Colorado, Idaho, Oregon) (Sugarman et al., 2014). As a baseline data analysis, our study is not an evaluation of the SNMHI activities per se, but rather we use this sample of clinics to assess whether the variation we observed in clinics' initial PCMH capabilities was associated with diabetes quality.

We randomly selected a subset of 20 SNMHI clinics (with four clinics from each state) to participate in this study of PCMH characteristics and the quality of diabetes care. We used a stratified sampling method to identify health centers and clinic sites for this study. Within each of the 5 states in the SNMHI, the health centers were randomly ordered and the first four health centers in the randomly ordered list were selected for each state. For health centers with more than one clinic site, individual clinic sites were randomly ordered within each of the health centers and we selected the first clinic site in the randomly ordered list. Although we aimed to include 4 clinics from each of the 5 participating states, only 15 clinics were able to complete the data collection due to administrative, personnel, and technology barriers among 5 clinics.

Using administrative records, each clinic generated a list of all non-pregnant adult patients ages 18–75 with a primary or secondary diagnosis of diabetes (International Classification of Diseases, Ninth Revision, ICD-9 diagnostic code 250.xx) seen between June 1, 2008 and May 31, 2009. We randomly selected 60 patients from each site for chart review, based on a power calculation to determine sample size. The University of Chicago Institutional Review Board approved this study.

Medical home characteristics

To assess PCMH characteristics we conducted a mailed, self-administered organizational survey among executive directors and chief executive officers between July and December 2009 (months 2–7 of the intervention). The survey was administered to assess the level of PCMH capability present in individual clinics prior to substantive PCMH support under the SNMHI. Additional details of survey administration and the survey instrument have been described previously (Birnberg et al., 2011).

Fifty one survey questions generated the Safety Net Medical Home Scale (SNMHS), a validated scale of medical home capability with six subscales: Access/Communication,

Patient Registry/Tracking, Care Management, Test/Referral Tracking, Quality Improvement, and External Coordination (Birnberg et al., 2011; The Commonwealth Fund, 2011). The access/communication subscale includes questions on whether patients can contact their clinician, receive information in a timely manner, and access translation services when necessary. The patient registry/tracking subscale assesses the clinic's ability to create lists of patients for population management. The care management subscale assesses routine and proactive efforts to manage population of patients through reminders, patient education, and care coordination. The test/referral tracking subscale assesses tasks such as the ability to monitor tests and referrals. The quality improvement subscale assesses the clinic's ability to systematically collect measures of clinician and practice performance and set goals to improve care based on these measures. Finally, the external coordination subscale assesses the providers' ability to secure outside referrals for their patients and receive care updates from external providers. The SNMHS provides 0 (worst) to 100 (best) scores for each subscale as well as a total PCMH score, calculated as the mean of the six subscales.

Process and outcome measures

To assess the quality of diabetes care, designated staff members at each site performed a chart review to collect patient demographics, process measures, and laboratory values. Each site was instructed in the procedures for data collection via individual conference call and received training with a data collection manual and chart review instrument.

Process measures for diabetes care were documentation of blood pressure screening, HbA1c screening, and LDL cholesterol screening between June 1, 2008 and May 31, 2009, the year prior to the start of the intervention in June 2009. Outcome measures were patients' most recent blood pressure value, HbA1c value, and LDL value during office visits between June 1, 2008 and May 31, 2009. We evaluated these measures according to specified thresholds for HbA1c control ($<8.0\%$), LDL control (<100 mg/dL), and blood pressure control ($<130/80$ mmHg). In addition to the individual outcome measures, we also used a bundled measure of meeting all 3 individual outcome measures simultaneously (e.g., HbA1c $<8.0\%$ and LDL <100 mg/dL and blood pressure $<130/80$ mmHg), modified from the HealthPartners Optimal Diabetes Care measure and adopted by MN Community Measurement (MN Community Measurement, 2009). The bundled measure is determined by applying an all-or-none rule at the patient level and generates more stringent criteria to evaluate the quality of care (Nolan & Berwick, 2006; Bloom & Graf, 2010).

Analytic methods

We generated descriptive statistics to identify clinic and patient characteristics. We calculated the mean and standard deviation, range, median, and inter-quartile range (IQR) for descriptive information on PCMH scores and diabetes quality measures. To evaluate associations between PCMH characteristics and the quality of care, we used generalized estimating equations with an exchangeable correlation structure to adjust for the clustering of patients within clinics. We conducted bivariate and multivariate analyses to model the odds of a patient receiving care that met each of the six diabetes quality measures. We ran two sets of multivariate models for each quality measure: first, each quality measure was modeled as a function of total PCMH score and covariates; then in a second set of models,

each quality measure was modeled as a function of all six PCMH subscales and covariates. Covariates included state of the clinic and patient-level characteristics for gender, race/ethnicity, age, and type of health insurance. All analyses were performed using SAS, version 9.3 (SAS Institute).

To interpret the results, we display the effects of a 10-point higher PCMH score on process and outcome measures. To illustrate an example of a 10-point difference in PCMH scores, consider a scenario that compares hypothetical clinics A and B. The combined differences in responses from the following three survey questions would yield a 10-point higher total PCMH score for clinic A: clinic A is usually able to accommodate a same- or next-day appointment compared with never for clinic B; clinic A usually sends care reminders to patients compared with never for clinic B; and clinic A reports patient satisfaction surveys at the provider and group level, whereas clinic B does not (Birnberg et al., 2011; Nocon et al., 2012).

Results

Characteristics of clinics and patients

Among the participating clinics (n=15), 73% were in urban areas, 47% had greater than 8 physician full time equivalent employees, and 67% had electronic medical records (Table 1). The 5 non-participating sites had similar distributions for these characteristics. Four clinics were located in Massachusetts and 4 were in Oregon, and 3 clinics were located in Idaho. Only 2 clinics from Colorado and 2 clinics from Pennsylvania were able to participate in this study of diabetes care. Additionally, 11 clinics were FQHCs and 2 clinics were within critical access hospitals. A total of 864 charts were eligible for inclusion in the study. Among the patients, 54% were female, 55% were non-Hispanic white, and 25% of the patients were uninsured.

Medical home characteristics

Among the 15 clinics, the mean total PCMH score was 60 (standard deviation, SD=13), with mean subscales scores ranging from 52 (SD=16) in care management to 70 (SD=18) in external coordination (Table 2).

Process and outcome measures

Among process measures, 89% of patients received HbA1c screening, 68% received LDL screening, and 98% received blood pressure screening within the study period. Among outcome measures for diabetes care, 66% had HbA1c control<8.0%, 49% had LDL control<100 mg/dL, and 36% had blood pressure control<130/80 mmHg. Only 8.5% of patients achieved the bundled measure of diabetes care.

Bivariate association of medical home characteristics and quality of diabetes care

In bivariate analyses the total PCMH score was not associated with process or outcome measures (Table 3). Among subscales, a higher score for the patient tracking and registry subscale was associated with higher odds of LDL screening (odds ratio, OR=1.25, 95% confidence interval, CI 1.02–1.53). A higher score for the external coordination subscale was

associated with lower odds of HbA1c screening (OR=0.64, 0.52–0.78), LDL screening (OR=0.78, CI 0.68–0.91), and blood pressure control (OR=0.91, CI 0.84–0.99). A higher score for the quality improvement subscale was associated with lower odds of HbA1c control <8.0% (OR=0.81, CI 0.71–0.93). The remaining subscales were not significantly related to any process or outcome measures.

Multivariable association of medical home characteristics and quality of diabetes care

In multivariate analysis of each quality measure as a function of total PCMH score and covariates, a higher total PCMH score was associated with higher odds of LDL control (OR=1.12, CI 1.02–1.23) (Table 4). Among process measures, there was only one statistically significant association for the PCMH subscales; a higher access and communication score was associated with lower odds of HbA1c screening (OR=0.41, CI 0.19–0.90).

Among outcome measures, two subscales were positively associated with diabetes quality. A higher access and communication score was associated with higher odds of HbA1c control (OR=1.98, CI 1.14–3.47) and blood pressure control (OR=1.53, CI 1.18–1.99). A higher care management score was associated with higher odds of HbA1c control (OR=1.61, CI 1.03–2.50) and blood pressure control (OR=1.21, CI 1.04–1.40).

Two subscales were negatively associated with outcome measures. A higher patient registry/tracking score was associated with lower odds of HbA1c control (OR=0.72, CI 0.60–0.87) and blood pressure control (OR=0.65, CI 0.58–0.73). A higher test/referral tracking score was associated with lower odds of blood pressure control (OR=0.86, CI 0.80–0.92). Finally, the quality improvement subscale showed mixed statistically significant results. A higher quality improvement score was associated with higher odds for two outcome measures: blood pressure control (OR=1.62, CI 1.45–1.80) and achieving the bundled measure (OR=1.71, CI 1.18–2.47); however, it was also associated with lower odds of HbA1c control (OR=0.78, CI=0.62–0.98).

Discussion

Overall, we did not find strong evidence of an association between PCMH characteristics and the quality of diabetes care prior to an intervention to implement the medical home. Our total PCMH score was significantly associated with LDL control, only one of four outcome measures. We also did not observe consistent associations between PCMH subscales and diabetes process and outcome measures. None of the subscales showed a consistent direction of association (regardless of statistical significance) across all process and outcome measures.

Recent studies of the PCMH in safety net clinics have generated a mixed picture for the potential of the medical home model in diabetes care. Similar to our study, a study used the SNMHS to assess PCMH capability in health centers and found that a higher score in the access/communication subscale was positively associated with the percent of patients with diabetes control (HbA1c <9%) whereas a higher score in the patient tracking/registry subscale was negatively associated with the percent of patients with diabetes control (Shi et

al., 2015). A study of 540 Los Angeles county Medicaid patients used the Primary Care Assessment Tools Adult Expanded to assess patient-reported PCMH features (Stevens, Shi, Vane, & Peters, 2014). This study found that higher PCMH performance was associated with patient-reported receipt of diabetes care process measures (Stevens, Shi, Vane, & Peters, 2014). On the other hand, a study of 30 safety net health centers who had not yet applied for NCQA recognition in Los Angeles used the 2008 NCQA Physician Practice Connections-Patient Centered Medical Home tool to assess PCMH capability. This study found no significant relationship between medical home capability and performance on diabetes process or outcome measures (Clarke et al., 2012).

Our study adds to the current literature that examines the association between PCMH characteristics and the quality of diabetes care. While other studies have examined diabetes care in PCMHs within a single geographic setting or with a limited set of outcome measures, we studied a comprehensive set of process and outcome measures for diabetes care, including a bundled measure of diabetes care, within the setting of a 5-state safety net PCMH demonstration project (Rosenthal et al., 2013; Calman et al., 2013; Solberg et al., 2013; Stevens, Shi, Vane, & Peters, 2014; Clarke, Tseng, Brook, & Brown, 2012; Shi et al., 2015).

The lack of a strong association between PCMH characteristics and the quality of diabetes care – in our study and others - suggests that, as implemented, the PCMH may not provide all the necessary tools to achieve optimal outcomes for patients with diabetes. In order to improve diabetes quality measures, implementation of the PCMH may require greater focus on tailored aspects of care that are important for diabetes. Our results may also suggest areas where the PCMH may be bolstered or modified to improve diabetes care. For example, we found some positive associations between our care management subscale and diabetes quality measures. Implementation of the PCMH model may benefit from including a more intensive focus on care management, which requires designated staff who coordinate services across a range of providers and provide targeted care to patients (e.g., patient education, self-management support). As PCMH clinics designate tasks and distribute shared responsibility for care among staff, these human elements of the PCMH model are key to providing care for patients with chronic conditions such as diabetes. Implementation of the PCMH in the context of diabetes care may also require more patient-targeted interventions which have been demonstrated to be successful in diabetes care, such as culturally tailored care, peer support groups, and community health workers and patient navigators who bridge the divide between the patient's world and the healthcare system (Peek, Cargill, & Huang, 2007).

Limitations

Our study has several limitations. First, due to the cross-sectional design we cannot report information on clinic change in PCMH capabilities over time and any association with outcome measures. Second, our survey of PCMH characteristics, along with most instruments currently used in research and practice, primarily measures organizational aspects of care, such as a clinic's capacity for performance reporting and the degree to which care is accessible to patients. The National Committee for Quality Assurance's Physician

Practice Connections—Patient-Centered Medical Home (NCQA PPC-PCMH) tool is another example of a widely used PCMH measure that assesses organizational features such as access and communication, patient tracking and registries, and care management (National Committee on Quality Assurance, 2008). Measurement of practice structure alone cannot necessarily provide adequate tools to assess the quality of care within a PCMH (Holmboe, Arnold, Weng, & Lipner, 2008; Solberg et al., 2011). Other measures should be included to capture features of the PCMH that offer key resources to patients with chronic conditions, such as enabling services or non-medical services (e.g., transportation, benefit counseling, outreach), particularly in safety net settings (Hochman, Chen, & Serota, 2013). Non-medical services demonstrate promise for chronic disease care and improvements in patient outcomes (Norris et al., 2006). Notably, our survey does not assess aspects of care such as shared decision-making and patient-centered communication, which may be beneficial for diabetes care.

Conclusions

The medical home is a complex intervention that involves significant structural changes at the clinic level. Several studies have cast doubt on whether the PCMH - as currently implemented and measured – contributes to improved quality of care. These studies have been accompanied by reminders that broad adoption of the PCMH in primary care is a relatively recent phenomenon. However, the model does seem to include valuable components for building a holistic approach towards high quality diabetes care. Studies should continue to examine ways in which the PCMH can yield patient-centered activities to support high quality diabetes care.

Acknowledgments

Funders:

Financial support for the study was provided by The Commonwealth Fund. Dr. Chin was supported by the National Institute of Diabetes and Digestive and Kidney Diseases (K24 DK071933 and P30 DK092949). Mr. Nocon was supported by an Agency for Healthcare Research and Quality training grant (T32 HS000084).

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Table 1

Clinic and Patient Characteristics

Clinic Characteristics (n=15)	Number	Percentage
Location		
Urban	11	73.3
Other	4	26.7
Provider FTEs (Full Time Equivalent Employees)		
<4	5	33.3
4–8	3	20.0
>8	7	46.7
Have an EMR (Electronic Medical Record)	10	66.7
Federally Qualified Health Center	11	73.3
Patient Characteristics (n=864)	Number	Percentage
Age group		
18–44	229	26.5
45–64	473	54.8
65–75	162	18.8
Female	460	53.6
Race/ethnicity		
White, non-Hispanic	475	55.3
Black, non-Hispanic	171	19.9
Hispanic/Latino	168	19.6
Other, non-Hispanic	45	5.2
Insurance		
Private	123	14.5
Medicare	168	19.7
Medicaid	210	24.7
Dual eligible	74	8.7
Other	66	7.8
Uninsured	210	24.7

Table 2

Clinic Patient-Centered Medical Home (PCMH) Total and Subscale Scores (n=15)

PCMH Measures (0–100) ^a	Mean (SD)	Range	Median (IQR)
PCMH total score	59.8 (13.2)	41.7–81.5	57.2 (49.2–75.1)
PCMH SUBSCALES (0–100)			
Access/communication	63.1 (13.7)	45.8–83.3	58.3 (50.0–75.0)
Patient registry and tracking	60.0 (24.1)	20.0–100	58.6 (43.3–83.3)
Care management	52.2 (15.5)	27.5–75.0	50.0 (37.5–70.0)
Test referral and tracking	58.3 (25.4)	16.7–100	58.3 (33.3–75.0)
Quality improvement	55.4 (19.8)	15.0–80.0	55.0 (46.7–70.0)
External coordination	69.9 (17.6)	43.8–97.9	68.8 (56.3–81.3)

Abbreviation: SD, standard deviation; IQR, interquartile range.

^aThe PCMH measures are derived from the Safety Net Medical Home Scale. The Safety Net Medical Home Scale is a validated measure that provides scores for each subscale, with a potential range of 0 (worst) to 100 (best). The scale also provides a total PCMH score from the mean of the 6 subscale scores with a potential range of 0 (worst) to 100 (best) (Birnberg et al., 2011)

Table 3

Bivariate associations of medical home characteristics and process and outcome measures for diabetes care (n=864)

Odds ratio (95% confidence interval) associated with 10-point higher PCMH score ^a	Process Measures		Outcome Measures			
	HbA1c screening	LDL screening	HbA1c < 8.0%	LDL < 100 mg/dL	Blood Pressure < 130/80 mmHg	Bundled Measure ^b
TOTAL PCMH SCORE	0.97 (0.62, 1.52)	1.12 (0.80, 1.59)	0.92 (0.78, 1.08)	1.02 (0.89, 1.17)	0.94 (0.80, 1.10)	1.10 (0.85, 1.44)
PCMH SUBSCALES						
Access/communication	1.15 (0.75, 1.77)	1.28 (0.94, 1.75)	0.90 (0.74, 1.09)	1.00 (0.89, 1.11)	1.02 (0.91, 1.14)	1.15 (0.90, 1.46)
Patient tracking and registry	1.18 (0.99, 1.40)	1.25 (1.02, 1.53) *	0.94 (0.84, 1.05)	1.04 (0.96, 1.13)	0.98 (0.92, 1.05)	1.09 (0.94, 1.27)
Care management	1.01 (0.73, 1.39)	1.13 (0.85, 1.50)	1.13 (0.97, 1.32)	0.98 (0.85, 1.13)	0.95 (0.84, 1.08)	1.07 (0.84, 1.37)
Test referral & tracking	0.90 (0.74, 1.10)	0.92 (0.76, 1.12)	1.02 (0.92, 1.12)	1.00 (0.93, 1.08)	0.97 (0.89, 1.05)	1.03 (0.89, 1.19)
Quality improvement	1.14 (0.89, 1.46)	1.14 (0.93, 1.40)	0.81 (0.71, 0.93) **	1.06 (0.98, 1.16)	1.00 (0.93, 1.08)	1.09 (0.89, 1.34)
External coordination	0.64 (0.52, 0.78) ***	0.78 (0.68, 0.91) **	1.02 (0.87, 1.19)	0.95 (0.87, 1.03)	0.91 (0.84, 0.99) *	0.88 (0.75, 1.03)

* p < .05,

** p < .01,

*** p < .001

^aThe PCMH measures are derived from the Safety Net Medical Home Scale. The Safety Net Medical Home Scale is a validated measure that provides scores for each subscale, with a potential range of 0 (worst) to 100 (best). The scale also provides a total PCMH score from the mean of the 6 subscale scores with a potential range of 0 (worst) to 100 (best) (Birnborg et al., 2011)

^bThe bundled measure includes individuals who met all of the following goals: glycated hemoglobin (HbA1c) < 8.0%, low-density lipoprotein (LDL) cholesterol < 100mg/dL, and blood pressure < 130/80 mmHg.

Abbreviation: PCMH, Patient-centered medical home

Table 4

Multivariate associations of medical home characteristics and process and outcome measures for diabetes care (n=864)^a

Odds ratio (95% confidence interval) associated with 10-point higher PCMH score ^b	Process Measures		Outcome Measures			
	HbA1c screening	LDL screening	HbA1c < 8.0%	LDL < 100 mg/dL	Blood Pressure < 130/80 mmHg	Bundled Measure ^c
TOTAL PCMH SCORE	0.79 (0.57,1.10)	0.97 (0.74,1.26)	0.89 (0.78,1.02)	1.12 (1.02,1.23) *	0.90 (0.77,1.05)	1.10 (0.996,1.22)
PCMH SUBSCALES						
Access/ communication	0.41 (0.19,0.90) *	0.81 (0.32,2.05)	1.98 (1.14,3.47) *	1.10 (0.65,1.87)	1.53 (1.18,1.99) **	0.84 (0.27,2.60)
Patient tracking and registry	1.30 (0.89,1.89)	1.39 (0.78,2.49)	0.72 (0.60,0.87) ***	0.97 (0.78,1.21)	0.65 (0.58,0.73) ***	0.85 (0.54,1.34)
Care management	0.98 (0.53,1.83)	0.81 (0.39,1.67)	1.61 (1.03,2.50) *	1.31 (0.91,1.88)	1.21 (1.04,1.40) *	0.97 (0.44,2.13)
Test referral & tracking	1.08 (0.90,1.29)	0.87 (0.69,1.10)	0.97 (0.83,1.13)	0.99 (0.85,1.13)	0.86 (0.80,0.92) ***	0.96 (0.73,1.25)
Quality improvement	1.14 (0.73,1.79)	1.02 (0.58,1.79)	0.78 (0.62,0.98) *	1.03 (0.73,1.45)	1.62 (1.45,1.80) ***	1.71 (1.18,2.47) **
External coordination	0.90 (0.50,1.61)	1.06 (0.58,1.93)	0.68 (0.46,1.001))	0.78 (0.54,1.13)	0.93 (0.82,1.05)	1.26 (0.66,2.41)

* p < .05,

** p < .01,

*** p < .001

^a Covariates include: gender, race/ethnicity, age, type of health insurance, state of the clinic

^b The PCMH measures are derived from the Safety Net Medical Home Scale. The Safety Net Medical Home Scale is a validated measure that provides scores for each subscale, with a potential range of 0 (worst) to 100 (best). The scale also provides a total PCMH score from the mean of the 6 subscale scores with a potential range of 0 (worst) to 100 (best) (Birnberg et al., 2011)

The bundled measure includes individuals who met all of the following goals: glycated hemoglobin (HbA1c) <8.0%, low-density lipoprotein (LDL) cholesterol <100mg/dL, and blood pressure <130/80 mmHg.

Abbreviation: PCMH, Patient-centered medical home