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IMPLEMENTING
PATIENT-CENTERED
MEDICAL HOME

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Research Article

Hawai'i Patient-Centered Health Care Home Project:

A Collaborative Partnership between
Four Hawai'i Federally Qualified
Health Centers, AlohaCare, and the
Hawai'i Primary Care Association

Mary Frances Oneha,
Robert Hirokawa, and Cristina Vocalan

Abstract

Four Hawai'i Federally Qualified Health Centers, a Managed Care Organization, and the Hawai'i Primary Care Association established a partnership to pilot a unique Patient-Centered Health Care Home model.

All sites were successful in implementing care coordination and a patient registry. A cohort of 432 patients with a diagnosis of diabetes and/or depression was activated into the program. Sixty percent of the cohort was Native Hawaiian, Other Pacific Islander, or Asian.

Patients with uncontrolled diabetes lowered their HbA1c by one point ($p < .05$), and patients with severe depression lowered their PHQ-9 scores by 4.6 points ($p < .05$).

Background

Transforming the delivery system is an essential component of health care reform. Patient-centered care is a central part of that delivery system transformation.

Recognizing this, four Hawai'i Federally Qualified Health Centers (FQHCs), a Medicaid Managed Care Organization (AlohaCare), and the Hawai'i Primary Care Association (HPCA) established a collaborative partnership to pilot a unique Patient-Centered Health Care Home (PCHCH) model.

A PCHCH steering committee was assembled to oversee the pilot project. Committee members included representatives from the four FQHCs, AlohaCare, and the HPCA. A vision statement, PCHCH definitions, and core values were established through a consensus-building process.

Vision Statement

The project partners sought to build sustainable, vibrant, and healthy communities in which patients and their families have personal relationships with community providers who, working in partnership, strive for the patients' total wellness.

Patient-Centered Health Care Home

The pilot project partners defined the PCHCH as an approach to providing comprehensive primary care for children, youth, and adults. The PCHCH was further defined as a health care setting that facilitates partnerships between individual patients, their personal primary care providers, FQHCs, and where appropriate, the patients' families.

PCHCH Core Values

Project partners identified and agreed on four core values: patient- and family-centered care, barrier-free access, team-based delivery of care, and integrated and holistic care. Patient-driven and family-centered care emphasizes the importance of self-management, involvement of the family, and consideration of group visits. Barrier-free access ensures open access to patients, including the use of web-based or online services / access through a patient portal and the delivery of culturally appropriate services. Team-based delivery is based on care provided through team pods and partnerships with other health care and community organizations. The integration of primary care, behavioral health, oral health, and complementary and alternative medicine, as well as traditional healing represents the last core value.

PCHCH Pilot Project

Introduction

During the conceptual phase of the PCHCH project, a core group of "champions" were identified to spearhead the effort, which included the leadership of the partner FQHCs, key HPCA staff, and representation from AlohaCare. The ICSI was contracted

to provide clinical systems improvement consultation and coaching to the project partners. HPCA and AlohaCare provided project support through facilitation, consultation, and tracking the progress of the PCHCH project. HPCA led the program evaluation. The project period extended from September 2010–June 2012. The goal of the project was to implement the PCHCH model within the four FQHCs, while allowing for some flexibility in design but with standard program evaluation metrics.

The PCHCH model was chosen as the mechanism to promote transformational change within Hawai'i's FQHC primary care delivery system and strengthen its capacity in providing comprehensive primary care services to the communities it serves. The pilot project was modeled after the standards created by the National Committee for Quality Assurance (NCQA) and the Patient-Centered Primary Care Collaborative (PCPCC) seven joint principles (Patient-Centered Primary Care Collaborative, 2007).

Pilot Project Structure

The steering committee, guided by ICSI, determined a pilot project structure that would facilitate efforts of the FQHCs to efficiently move through the components of PCHCH, identify disease conditions and accompanying metrics to focus on, and provide support through a transformational change. The following describe the elements of the project structure.

Project Site Selection

Four FQHCs chose to participate in the PCHCH project based on internal assessments of their facility quality structure, experience with quality improvement activities, interest, and readiness for change. Three FQHCs that participated in moving the project forward are on the island of Oahu (Honolulu County): Kalihi-Pālana Health Center (KPHC), Waianae Coast Comprehensive Health Center (WCCHC), and Waimānalo Health Center (WHC). The fourth FQHC, West Hawai'i Community Health Center (WHCHC), is located on Hawai'i Island (Hawai'i County).

Consultant

Consultative services by ICSI included monthly advisory consultation to various project committees. Additionally, ICSI worked with project partners in creating data collection plans. ICSI also coordinated data submission, analysis, and quarterly reporting to pilot

teams and the steering committee. Facilitation and coaching services were provided to the four pilot FQHCs in the form of three Collaborative Learning Sessions. The topics of learning and discussion focused on findings from the initial gap analysis and centered on team culture, value stream mapping, and role clarification; patient- and family-centered care; and collaborative care through care coordination and care planning. In addition to a face-to-face learning session, the project sites also participated in an initial readiness assessment and follow-up assessment, coaching and facilitation during conference calls and site visits, two learning webinars, and accessibility to a listserv for peer-to-peer collaboration.

Steering Committee

Project partners created a steering committee to govern over the pilot project. Executive directors, representatives from the four FQHCs, and representatives from AlohaCare and HPCA were members of this committee. The committee was chaired by an FQHC executive director. The purpose of the committee was to guide the work of the project sites and spread the successes and best practices to other Hawai'i FQHCs over time.

Metrics Subcommittee

A subcommittee of the steering committee tasked with identifying key areas for program evaluation, including standard metrics, met on a monthly basis throughout the entire length of the project with advisory consultation provided by ICSI. Disease condition (diabetes and depression process and outcome measures) and patient experience metrics were identified by the metrics subcommittee.

Gap Analysis/Assessment

A number of implementation activities occurred throughout the project period (September 2010–June 2012). These activities consisted of an initial gap analysis followed by achievement assessments at six months after the initial gap analysis and six months post-implementation. In general, the most significant progress made by the four FQHCs (six-month follow-up) included achieving leadership engagement and support, empanelment, creating workflows and protocols for diabetes care, hand-offs, and care transitions (Jaeckels et al., 2012).

Educational Support/Coaching

Additional activities included synchronous learning via face-to-face interactions, webinar-based learning sessions, and conference calls; site visits that included coaching and facilitation; and a listserv that provided a venue for asynchronous learning. The initiative concluded with a post-implementation conference call and quarterly data submissions, analyses, and reports.

Methods

Inclusion Criteria into Pilot Project

The project partners decided to focus PCHCH efforts on patients with uncontrolled diabetes and significant depression. Patients with an HbA1c of eight or greater or patients with a PHQ-9 of ten or greater, who agreed to participate, were activated into the PCHCH pilot project. Inclusion criteria (HbA1c of eight or greater and/or PHQ-9 of ten or greater) were chosen for their clinical significance. For example, an HbA1c of less than eight percent is considered to be in control (Agency for Healthcare Research and Quality, 2013). In addition, Kroanke and Spitzer (2002) found that patients within a primary care setting with major depression were seven times more likely to have a PHQ-9 score of ten or greater than patients without major depression.

Enhanced Care through PCHCH

Patients activated into the PCHCH pilot project received enhanced care through the PCHCH model of care delivery. All of the pilot sites reviewed current workflow processes and created new workflows to support the PCHCH model and improve efficiencies. Staff roles were reviewed in order to reassign tasks appropriately to ensure staff members were working to the top of their licensure. Each clinic worked on creating or enhancing a patient registry or tracking system to support the work of the care coordinator. Primary activities included intensive care coordination, warm hand-off or referral to behavioral health, motivational interviewing to support behavioral change, multidisciplinary team-based care, frequent monitoring of patient indicators, patient education, medication reconciliation, and adherence.

Many creative activities were implemented to engage and educate staff on the elements of a PCHCH and transform the clinic culture. For example, one pilot site had each department create a poster

that reflected its answer to the question, “What does the Patient-Centered Health Care Home mean to you?” Another pilot site used the words “E Ola Pono” (living well) to define its PCHCH. Another pilot site created the message, “Our patients, our ‘Ohana” (family) to identify its PCHCH. One pilot site created, piloted, and implemented its own patient complexity tool to identify and risk-stratify their patient population. Finally, one pilot site created a care team model consisting of a nurse practitioner, two medical assistants, a team care coordinator, and a licensed clinical social worker. At the six-month post-implementation phase, all four pilot sites were successful in implementing care coordination and care planning activities.

Metrics

Data collection for program evaluation occurred from January 1, 2011 to May 31, 2012. Data was collected on only those patients diagnosed with diabetes and/or depression who were activated to the PCHCH. Demographic information included race/ethnicity, age, gender, English proficiency, health insurance coverage/type, activation and deactivation date, and site location. Reasons for deactivation included patient noncompliance (missing appointments, not engaged in his/her care, etc.), transferring care to another facility, passing away, or “graduating” from the PCHCH due to significant and lasting improvements in his/her condition.

Patient clinical information included ICD-9 diagnosis codes (250.xx for diabetes and 296.2x, 296.3x, or 300.4 for depression), frequency of pre-/post-PCHCH activation process of care measures (HbA1c and PHQ-9 tests), and pre-/post-PCHCH activation outcome measures (blood lipids, HbA1c, PHQ-9).

Those patients activated into the PCHCH completed a brief patient experience survey. Although the four pilot sites used different instruments, all surveys contained four common questions. Four domains related to patient experience were captured: access, communication, coordination, and whole person care. Two questions were on a four-point Likert scale (Poor to Very Good), and two questions were dichotomous (Yes/No). The four common questions were:

- 1) Are you able to make same-day appointments when sick or hurt? (one to four: Poor, Fair, Good, Very Good)
- 2) The provider(s) who took care of you listened to you. (one to four: Poor, Fair, Good, Very Good)

- 3) Did someone talk with you about your goals for your health? (Yes/No)
- 4) You may need other services that we do not provide. Have we helped you find other services you need? (Yes/No)

Data Analysis

Mean HbA1c levels and PHQ-9 scores were calculated for each patient before and after activation into the PCHCH. Nonparametric, paired-student t-tests (two-tailed) on mean of means were used to determine if differences between pre- and post- HbA1c levels and PHQ-9 scores were statistically significant ($P < .05$).

Results

Patient Demographics

A total of 432 patients were activated into the PCHCH pilot project. Table 1 provides the patient characteristics of the entire pilot project patient population, the diabetes subgroup, and the depression subgroup. Only patients (254 total) with at least one pre- and post-measure (HbA1c, PHQ-9) were included in the diabetes or depression subgroup for analysis. There was an overlap of 20 patients that were in both diabetes and depression subgroups. A total of 178 patients in the initial cohort were not part of the subgroup analysis because they did not have at least one pre- and post-HbA1c and/or PHQ-9 measure. This group also included those who were unenrolled for the following possible reasons: the patient opted out of the program, the patient transferred care to another facility, provider discretion, or the patient was lost to follow-up.

About sixty-two percent (269) of the cohort identified themselves as Native Hawaiian, Other Pacific Islander, or Asian. About fifty-one percent (221) of the cohort were insured through the State Medicaid system (MedQuest).

Diabetes Subgroup HbA1c Outcomes

Table 2 depicts the pre- and post-HbA1c mean values of patients activated (and who had at least one pre- and post-HbA1c test) into the PCHCH. Mean differences (with p-values) between pre and post HbA1c mean values within demographic strata are shown. Mean differences in pre- and post-HbA1c values across all demographic strata (where the n was large enough to measure

Table 1. Patient Demographics

Demographic Characteristics	Grouping	All patients	Diabetes subgroup ^a	Depression subgroup ^a
Total patients	NA	432	154	120
Gender	Female	235 (54.4%)	83	76
	Male	197 (45.6%)	71	44
Race	Asian	65 (15%)	36	14
	Black/African American	Not Reported (NR)	NR	NR
	Caucasian	94 (21.8%)	24	38
	Hispanic/Latino	NR	NR	NR
	Native Hawaiian	142 (32.9%)	46	36
	More than one race	50 (11.5%)	17	16
	Other Pacific Islander	62 (14.4%)	27	NR
	Unknown	NR	NR	NR
Language Spoken	English speaking	383 (88.7%)	121	116
	Limited English proficiency	49 (11.3%)	33	NR
Health Insurance	Medicaid	221 (51.2%)	84	66
	Medicare	107 (24.8%)	36	34
	Commercial	62 (14.4%)	23	13
	Other Government	39 (9%)	11	NR
	Uninsured	NR	NR	NR
Pilot Sites	Site 1	53 (12.2%)	33	NR
	Site 2	158 (36.6%)	32	55
	Site 3	62 (14.4%)	35	NR
	Site 4	159 (36.8%)	54	47

Source: Patient demographic data provided by the four FQHC sites; secondary data analysis performed by HPCA

^a Only patients with at least one pre- and post-measure (HbA1c, PHQ-9) were included in the diabetes or depression subgroup for analysis.

Table 2. Pre- and Post-HbA1c Outcomes

Demographic Characteristic	Group	Mean pre-activation HbA1c	Mean post-activation HbA1c	Mean difference	Statistical significance	N
All patients	NA	9.91	8.98	0.94	p < .01	154
Gender	Female	9.69	8.97	0.72	p < .01	83
	Male	10.17	8.98	1.19	p < .01	71
Race	Asian	9.86	8.46	1.41	p < .01	36
	Black/African American	Not reported (NR)	NR	NR		NR
	Caucasian	9.27	9.12	0.15	Not Significant	24
	Hispanic/Latino	NR	NR	NR		NR
	Native Hawaiian	10.04	8.93	1.1	p < .01	46
	More than one race	10.71	9.81	0.9	p < .05	17
	Other Pacific Islander	10.04	9.07	0.97	p < .05	27
	Unknown	NR	NR	NR		NR
Language Spoken	English speaking	9.95	9.07	0.89	p < .01	121
	Limited English proficiency	9.77	8.64	1.12	p < .01	33
Health Insurance	Medicaid	10.18	9.28	0.9	p < .01	84
	Medicare	9.22	8.57	0.66	p < .05	36
	Commercial	9.49	8.6	0.89	p < .05	23
	Other Government	10	8.8	2.19	p = .05	11
	Uninsured	NR	NR	NR		NR
HbA1c Range	HbA1c 8 to <10	8.93	8.54	0.39	p < .05	73
	HbA1c > 10	12.18	9.9	2.28	p < .01	58
Pilot Site	Site 1	9.74	8.65	1.08	p < .01	33
	Site 2	10.03	8.41	1.62	p < .01	32
	Site 3	10	9.35	0.65	Not Significant	35
	Site 4	9.89	9.27	0.63	p < .05	54

Source: Patient clinical data provided by the four FQHC sites; secondary data analysis performed by HPCA.

differences) reached statistical significance, except for Caucasians (mean difference 0.15, $p > .05$). Interestingly, the largest mean difference occurred in the group that had pre-activation HbA1c values equal to or above ten (mean difference 2.28, $p < .01$).

Depression Subgroup PHQ-9 Outcomes

Table 3 depicts the pre- and post-PHQ-9 mean values of patients activated (and who had at least one pre- and post-PHQ-9 score) into the PCHCH. Mean differences (with p-values) between pre- and post-PHQ-9 mean values within groupings are also shown. Mean differences in pre- and post-PHQ-9 scores across all demographic strata (where the n was large enough to measure differences) reached statistical significance, except for patients who reported being more than one race (mean difference 0.56, $p > .05$).

LDL Outcomes

Table 4 depicts the pre- and post-LDL mean values of patients activated into the PCHCH (and who had at least one pre- and post-LDL test). Mean differences in pre- and post-LDL levels for the cohort reached statistical significance (mean difference 13.31, $p < .05$).

Patient Experience

There were over 200 responses per question on the patient experience survey. Overall, patients rated their experience positively. About eighty-one percent of respondents agreed that they were able to make appointments on the same day they were sick. About ninety percent of respondents felt that their provider listened to them. In addition, ninety-four percent of respondents felt that someone talked to them about their goals for their health. Finally, ninety-five percent of respondents felt that their health care home helped them find other services they needed.

Practice Transformation

While the process for understanding the transformational change that the four sites went through was methodical and standardized (gap analysis/assessment, face-to-face meetings, site visits), the steps taken by each site were individualized and tailored to meet their unique needs and situations. Although comprehensive information was gathered throughout the transformational process by the ICSI consultant, it was not included here. Instead, Table 5 provides a summary of the assessment findings, improve-

Table 3. Pre- and Post-PHQ-9 Outcomes

Demographic Characteristic	Group	Mean pre-activation PHQ-9	Mean post-activation PHQ-9	Mean difference	Statistical significance	N
Total patients	NA	15.27	10.72	4.54	p < .01	120
Gender	Female	15.53	10.55	4.98	p < .01	76
	Male	14.81	11.016	3.79	p < .01	44
Race	Asian	14.8	11.74	3.05	p < .05	14
	Black/African American	Not Reported (NR)	NR	NR		NR
	Caucasian	16.094	10.11	5.99	p < .01	38
	Hispanic/Latino	NR	NR	NR		NR
	Native Hawaiian	14.57	9.15	5.42	p < .01	36
	More than one race	14.47	13.91	0.56	Not Significant	16
	Other Pacific Islander	NR	NR	NR		NR
	Unknown	NR	NR	NR		NR
Language Spoken	English speaking	15.15	10.65	4.5	p < .01	116
	Limited English proficiency	NR	NR	NR		NR
Health Insurance	Medicaid	15.25	10.61	4.64	p < .01	66
	Medicare	14.74	10.3	4.44	p < .01	34
	Commercial	15.7051	10.63	5.06	p < .05	13
	Other Government	NR	NR	NR		NR
	Uninsured	NR	NR	NR		NR
Pilot Sites	Site 1	NR	NR	NR		NR
	Site 2	14.26	8.52	5.74	p < .01	55
	Site 3	NR	NR	NR		NR
	Site 4	15.73	12.22	3.51	Not Significant	47

Source: Patient clinical data provided by the four FQHC sites; secondary data analysis performed by HPCA.

Table 4. Pre- and Post-LDL Outcomes

Demographic Characteristic	Group	Mean pre-activation LDL	Mean post-activation LDL	Mean difference	Statistical significance	N
All patients	NA	119.72	106.4	13.31	p < .05	55

Source: Patient clinical data provided by the four FQHC sites; secondary data analysis performed by HPCA.

Table 5. Pilot Site Transformation Characteristics

	Areas for Development	Improvements Made	Barriers	Challenges
Site One	<p>Team culture and workflows. Patient- and family-centered care.</p> <p>Care processes regarding shared decision-making and patient involvement.</p> <p>Further development of care coordination roles, communication, and processes was strongly recommended.</p>	<p>Developed workflows for patients living with diabetes.</p> <p>Defined PCHCH care team roles.</p> <p>Developed processes for identifying and documenting level of patient eligibility and need for participation in the PCHCH.</p> <p>Developed processes for systematic review, tracking, and coordination of care through an electronic, searchable method.</p> <p>Identified care coordinator roles.</p> <p>Developed a process for identifying and documenting level of eligibility.</p>	<p>Workforce shortage creating barriers to hiring the right fit.</p> <p>Limitations with EMR. Initially, a lack of shared understanding of what is a PCHCH.</p> <p>Slow provider buy-in.</p>	<p>Difficulty with EMR, especially with embedding the PHQ-9.</p>
Site Two	<p>Clearly defined team roles for the PCHCH model.</p> <p>The use of protocols and creation of work flows for identifying and managing patients with complex/chronic conditions.</p>	<p>Defined team roles.</p> <p>Created a process for identifying and documenting patient level of eligibility.</p> <p>Created a process for educating patients about PCHCH.</p> <p>Created a process for systematic review, tracking, and coordination of care through electronic, searchable method.</p> <p>Created work flow/process for communication between care team to address follow-up with patients with chronic conditions.</p> <p>Identified work flows/processes for assisting patients with care transitions.</p>	<p>A lack of payment for coordinating care.</p> <p>Workforce shortage/staff time.</p> <p>Patients not meeting criteria for activation.</p> <p>Patient refusal.</p> <p>Limited provider referral.</p> <p>Communication and huddles were being held inconsistently at six-month post-implementation.</p>	<ul style="list-style-type: none"> • Introducing and identifying funding for new positions related to care coordination. • Balancing supply and demand for patient visits. • Process is slow, hope to improve in next few months. • Created automated search process to activate patients. However, there was a delay in starting automated process.

<p>Site Three</p>	<p>Culture work around PCHCH and team approach. Team roles and work flows. Communication processes. Patient-centered care innovations. Some ongoing registry connection and standardization. Further development of care coordination, communication and processes, and care plan standardization.</p>	<p>Leadership support. Diabetes workflow. Process for hand-off/transitions. Process for documenting patient's primary care provider. Work flow/process for communication between care team to address follow-up with chronic conditions.</p>	<p>Workforce shortage and staff time. Start-up and organizing cost. Lack of payment for coordination of care.</p>	<p>Stopping and finding patients to meet with care coordinator or behavioral health when at clinic for short time. Difficult to get patients in after seeing multiple other providers.</p>
<p>Site Four</p>	<p>Team roles and work flows. Communication processes. Access and efficiency protocols and processes. Patient-centered care innovations. Some ongoing registry connection and standardization, as well as further development of care coordination, communication and processes, and care plan standardization.</p>	<p>Created workflows for diabetes. Created a process for identifying and documenting level of eligibility. Created a process for hand-offs/transitions Began the involvement of patients/families on teams, etc. Created a process for documenting patient's primary care provider. Created a process for systematic review, tracking, and coordination of care through electronic, searchable method. Created a protocol/workflow for identification and development of care plans.</p>	<p>Workforce shortage/staff time. • Lack of understanding about PCHCH. • Lack of infrastructure/tools to support a PCHCH, such as registries. • Awareness and training in the PCHCH model. • Providers would forget who could be enrolled.</p>	<p>Time to meet with everyone to build awareness and create engagement. Keeping providers engaged. Providers forgetting who could be enrolled.</p>

Source: Jaeckels et al., 2012.

ments, barriers, and challenges each site encountered through their transformational journeys.

Discussion

The pilot project demonstrated that FQHC patients with diabetes and/or depression, the majority of which were Asian Americans, Native Hawaiians, or Other Pacific Islanders (AANHPI) and insured through the Medicaid system, when provided with enhanced services provided through the FQHC PCHCH approach, showed statistically significant improvement in primary diabetes and depression outcomes (HbA1c, PHQ-9), LDL levels, and positive patient experiences. In addition, preliminary results of data analysis (insurance claims) of a subset of the PCHCH participants (those insured through AlohaCare) showed a decrease in emergency room visits, hospital stays, and cost of care (data not shown). These findings are in keeping with the Institute for Health Care Improvement (IHI) Triple Aim: improved patient experience, improved population health, and reduced cost (Institute for Healthcare Improvement, 2014).

The evaluation results of this pilot project are important, given the fact that Honolulu County leads the nation with the highest Native Hawaiian Pacific Islander (NHPI) population (Look et al., 2013). Look et al. describe in their “Assessment & Priorities for Health & Well-Being in Native Hawaiians & Other Pacific Peoples” that Native Hawaiians and Pacific Islanders continue to bear a disproportionate burden of chronic medical conditions, including diabetes, and Native Hawaiians have higher rates of death due to diabetes and other leading causes compared to the state’s population. Despite this, recent trends indicate that there is increased diabetes awareness and access to diabetes self-management by Native Hawaiians.

FQHCs in Hawai’i provide primary care to approximately ten percent of the state’s population, and many FQHCs in Hawai’i are located in communities with a majority AANHPI population. The PCHCH implemented by Hawai’i’s FQHCs has demonstrated promising results as an approach to addressing the significant burden of diabetes and depression present in this vulnerable population. For example, of the 144,000 patients served by Hawai’i’s FQHCs in 2012, seventy-three percent of those patients reported household incomes at or below the Federal Poverty Level (FPL). Over forty-four percent

were Native Hawaiian or Other Pacific Islander, and another thirty percent were Asian. About fifty percent were enrolled in the state's Medicaid system for health insurance, and another twenty-four percent were uninsured. In addition, about eight percent preferred a language other than English as a means for communication (U.S. Department of Health and Human Services, 2012).

Sustainability and Spread

Although the HPCA had grant funds to hire the ICSI consultants, the four pilot sites implemented the project without additional resources. For example, Site 3 shifted funds within its operating budget to accommodate the hiring of a nurse care coordinator. Site 2 chose not to fill medical provider vacancies and used the salary savings to fill care coordinator positions. Sites 1 and 4 used existing providers and staff to carry out the roles and responsibilities of the PCHCH. The pilot sites were able to institutionalize and sustain the changes beyond the project's conclusion and were able to leverage their practice transformation efforts toward NCQA Patient-Centered Medical Home (PCMH) recognition.

The pilot project culminated in a learning collaborative that was designed to share and spread the experiences, outcomes, and lessons learned to the rest of Hawai'i's FQHCs that were not part of the pilot project. At that time, Hawai'i did not have any FQHCs recognized by NCQA as a PCMH. As of June 2014, eight of fourteen CHCs have attained 2011 NCQA PCMH recognition.

Limitations

Data analysis did not take into account factors other than the exposure of interest (receiving enhanced care through the PCHCH), which potentially could have explained the pre-/post-PCHCH activation observed changes. For example, data analysis did not include multivariate methods to control for covariates or possible confounders.

Patients activated into the PCHCH pilot followed a two-step process. First, patients were identified as eligible if they met the eligibility criteria ($HbA1c \geq$ eight, $PHQ-9 \geq$ ten). Second, patients who met the eligibility criteria were given an explanation of the PCHCH program and asked if they were interested in enrolling (activation) into the program. Ultimately, patients self-selected into the program (as opposed to probability sampling).

A total of 178 patients were not included in the diabetes or depression subgroup analysis (did not have at least one pre- and post-HbA1c or PHQ-9 measure). In addition, a significant portion of this group included those who were unenrolled from the program. A comparative analysis between the two groups (254 patients in the diabetes/depression subgroups versus the 178 not in the analysis) was not completed. As such, it is not known whether these two groups differed demographically or whether the patients who were part of the subgroup analysis represented a more highly motivated group. It could be argued that patient motivation and readiness for change contributed to the improved outcomes as opposed to the program intervention itself. On the contrary, it could also be argued that participation in the program contributed to the patient's level of motivation and readiness for change, which enhanced patient outcomes. Motivation and readiness for change were not measured or tracked as part of this pilot project. As such, insight into this issue cannot be addressed. In summary, patients who enrolled and remained in the program may have inherently differed from those who unenrolled, and those differences as opposed to the program intervention itself may have contributed to the outcomes achieved. As such, the findings of this pilot project cannot be generalized. While results look promising, collected data represented only an eighteen-month period of follow-up. Future studies need to consider a longer longitudinal approach to determine if resultant changes in the identified health outcomes can be sustained for the long term.

Conclusions

This multifaceted collaboration was a great learning experience for all project partners. The results reflected promising steps towards improving population health, as each participating FQHC, serving distinct geographic communities, developed its PCHCH approach to align with the culture and assets of its community. There was significant knowledge transfer and sharing, structural design changes, and an experience-based transformation across the pilot sites. The pilot project provided a strong foundation for a self-sustaining collaborative between the pilot sites, HPCA, and AlohaCare. The process and results also informed the state plan for health care transformation in Hawai'i and will help to facilitate efforts for payment reform, particularly in adjusting for risk.

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