The Pacific Innovation Collaborative Health Information Technology

A report highlighting the development of the PIC data repository and report manager

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THE PACIFIC INNOVATION COLLABORATIVE HEALTH INFORMATION TECHNOLOGY PROJECT

Project Description

The Pacific Innovation Collaborative (PIC) Health Information Technology Project is a Department of Health & Human Services, Health Resources and Services Administration funded network of eight community health centers and two health plans in Hawaii and Washington. The intent of the network is to design and develop an electronic infrastructure for community health centers in separate states to exchange patient information based on performance measures important to the network. These measures include rates and percentages of childhood immunization, diabetes, primary care visits, ER visits, maternal care, and well child visits. The overall aim of the project is to utilize electronic medical record systems to reduce health disparities by improving the safety, quality, efficiency, timeliness, and effectiveness of health care delivery.

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The Pacific Innovation Collaborative
Health Information Technology

Table of Contents

Executive Summary

The implementation of health care reform combined with the growing and aging population in America signals a need for changes in health care that integrate the latest advancements in health and technology. Efforts to improve America's health care system began prior to the passage of the Affordable Care Act of 2010 with the enactment of the Health Information Technology Economic and Clinical Health (HITECH) Act of 2009. The latter provides funding to health care providers who appropriately adapt and utilize electronic health records (EHRs) in their clinical settings and daily operations. According to Dr. David Blumenthal, the National Coordinator for Health Information Technology, "Congress apparently sees HIT – computers, software, Internet connection, telemedicine – not as an end in itself but as a means of improving the quality of health care, the health of populations, and the efficiency of health care systems."[1] This report provides an overview of the PIC project and its role in building the capacity of community health centers to use shared patient data to improve health care for medically underserved populations.

The number of low-income, uninsured Americans and the significant health disparities that affect these vulnerable populations continues to grow. Facing this fact, eight community health centers and two health plans in Hawaii and Washington joined the PIC project to utilize technologies that improve the quality and cost-effectiveness of health care to their predominantly low-income and high-risk Asian American, Native Hawaiian and other Pacific Islander (AA&NHOPI) populations. By developing an electronic infrastructure, health center staff and clinicians are given the technical capacity to effectively and efficiently exchange patient health information amongst partners and providers. The aim of this project is to build a sustainable and user-friendly electronic health care system whereby health centers can use and compare data while demonstrating their commitment to quality improvement and population health.

In order to adapt to the technological changes in health care, PIC began developing the necessary health IT infrastructure to meet the network's data needs. This initial process involved the creation and expansion of a data repository at individual health centers followed by two concurrent regional data repositories in Hawaii and Washington. Data from each health center is sent securely to the regional data repository and then to the central data repository at AAPCHO. By establishing a shared data repository, users within the network can access and compare clinical and process measures. Project members could then view the data in a user-friendly online reporting system (PIC Report Manager).

For this project, six primary performance measures and four secondary measures were chosen and tracked for four consecutive years. The PIC process and outcome measures include rates of childhood immunization, diabetes, primary care visits, ER visits, maternal care, and well child visits. The array of health measures allows the project to make assessments regarding the safety, quality, efficiency, timeliness, effectiveness, and risk management of patient care at health centers throughout Hawaii and Washington.

An evaluation was conducted to assess the effectiveness of the project's HIT infrastructure in monitoring patient care, and the project's ability to serve as a foundation for AAPCHO's future HIT projects. Overall, the findings show that the project has met the expectations of PIC network members. However, there were also barriers and limitations that were identified as a result of this project. Financial pressures, budgetary cuts, and staffing at health centers resulted in some delays and setbacks during the implementation of an online reporting system (PIC report manager) and various other electronic health record (EHR) features. Members wanted to continue the project's long-term goal of improving quality of care and population health among vulnerable populations. AAPCHO's hope is to expand the project to include new partners, and to seek additional funding to support project activities. In doing so, PIC members can continue to exchange best practices, and the project infrastructure can eventually be incorporated into a nationwide Health Information Exchange.

Introduction and Background

Increasingly Community Health Centers (CHCs) across the nation are implementing health information technology* into their day-to-day operations. Under the Health Information Technology Economic and Clinical Health (HITECH) provision of the 2009 American Recovery and Reinvestment Act (Recovery Act or ARRA), Federally Qualified Health Centers (FQHCs) are required to fully incorporate HIT systems into health center activities. The unfortunate reality is that health centers face severe financial barriers sufficiently implementing HIT. Agencies such as the Centers for Medicare & Medicaid Services have provided financial incentives for CHCs to improve on their HIT capabilities, and have made substantial funding available to improve, expand, and develop new HIT infrastructures. However challenging it may be for CHCs to develop full-functioning HIT systems, they must still abide by new government policies that guide the way FQHCs operate and deliver quality health care to their patients.

HIT systems are also beneficial for more clear communication between CHC teams of providers to best serve their patients. CHCs emphasize team-based care through the practice of a Patient-Centered Medical Home (PCMH) model. This approach requires enhanced communication between providers and their patients. More proficient use of electronic medical/dental/health records and other electronic systems would ensure health centers provide efficient, timely, and effective quality care to their patients. In addition, health center professionals seeking incentive payments will need to provide quantitative and qualitative evidence of compliance, which means training providers and decision support staff on the meaningful use[3] of certified-EHR technology. HIT, particularly EHRs provide a much clearer view of the processes followed by medical providers in addressing particular health conditions than the picture captured by conventional paper practices employed at clinics.

*Health Information Technology (HIT)[2]

Health Information Technology is the use of computer applications to record, store, protect, retrieve, and transfer clinical, administrative, and financial information electronically within and among various health care settings.

Health Information Technology (HIT) refers to a wide variety of computer applications, which includes:

- Electronic Medical, Health, and Dental Records Systems (EMR, EHR, EDR)
- Patient Portals
- Personal Health Records
- Chronic Disease Management Systems
- Data Warehouse and Reporting Systems
- Digital Imaging Systems

AAPCHO'S EFFORTS IN HEALTH INFORMATION TECHNOLOGY

The growing Asian American, Native Hawaiian, and other Pacific Islander (AA&NHOPI) population is diverse and represents over 49 ethnic groups with more than 100 languages.[4] By nature of the het-

erogeneity within the AA&NHOPI population, there are significant health disparities across this community that represents approximately 5% of the nation's residents.[5] Compared to non-Hispanic whites, AA&NHOPIs are socioeconomically and linguistically disadvantaged due to higher levels of poverty (14% vs. 8%), uninsured (18% vs. 11%) and limited English proficiency (50% vs. 2%).[6] With a rapidly growing population of underserved AA&NHOPIs with low socioeconomic and poor health status, more care and attention must be provided to these vulnerable populations. Moreover, these underserved communities lack financial, language, and cultural resources that are necessary to access care for early diagnosis and comprehensive treatments.

In response to the CHCs' needs to provide quality care and service to these AA&NHOPI populations, the Association of Asian Pacific Community Health Organizations (AAPCHO) created the Pacific Innovation Collaborative (PIC) Health Information Technology Project with the basic aim of utilizing and expanding upon the technological capacity established at our member health centers to serve as Patient-Centered Medical Homes and improve the quality and cost-effectiveness of health care to low income, high-risk and underserved patient populations. The main intent of the project was to design and create a method for community health centers to utilize their existing EMR systems and exchange patient information. The information exchanged is based on six performance measures identified as important to those CHCs. A network of eight community health centers and two health plans in Hawaii and Washington formed and developed a repository to share data and provide technical assistance and facilitation of shared care management (team-based care). The major functions and services provided by the PIC network include:

- Data repository infrastructure for reporting measures to health plans, health centers, and funding agencies.
- A secure method of aggregating data between participating sites, utilizing virtual private network (VPN) connections and firewalls.
- An interface linking together health plan and health center sites.
- A documentation of methods to minimize the transmission of protected health information (PHI) and patient identifying information.
- Methods to protect the privacy of patient identifying information stored at the data repository.
- Development of summary and detailed reports.
- A user interface for running and displaying reports.
- Access to data based on users' roles and membership in health plans, health centers, and systems administration responsibilities.
- Auditing of report and data access.
- Training for end users generating reports.
- Project oversight and management for planning, testing, implementation, maintenance, and administration.
- Evaluation of services provided by health centers, process outcomes, and related risk adjustment/health disparities issues.

This report describes the development of PIC's infrastructure to address the need for improved HIT capabilities at CHCs, stakeholder discussions that influenced project implementation, and lastly conclusions and recommendations to sustain HIT projects that utilize the PIC model. We first examine the processes and outcomes of the data repository and user interface including development of the repository, data collection, and storage. We then discuss the development of a user interface where individuals at health centers and health plans can access comparative information about their providers, patients, and project measures. Second, we analyze results of our evaluations that address the nature and future sustainability of PIC. Lastly, we provide recommendations and strategies for new and existing HIT initiatives, and AAPCHO's national efforts in building capacity within CHC HIT systems.

Sharing Data and Building Infrastructure

In order to fully participate in implementing the project infrastructure, members met the following set of basic criteria. Each organization was required to be a member of AAPCHO, serve a patient population of AA&NHOPIs, and have an existing electronic medical record (EMR) system in place.[7] The following section discusses the development and functionalities of the PIC repository and the user interface to access health center information.

THE PIC DATA REPOSITORY

The PIC data repository was created to securely house health center patient information collected from individual health centers and health plans. Once collected, data from all sites are filtered to database repositories on Oahu, HI and Seattle, WA. Figure 1 illustrates the aggregation and flow of data collected from each CHC and health plan into the main repository. Project sites are categorized under two regions. The Hawaii region is comprised of the CHCs Kalihi-Palama Health Center (KPHC), Waianae Coast Comprehensive Health Center (WCCHC), Waimanalo Health Center (WHC), and the Hawaii health plan, AlohaCare. These sites submit project measure data through a secure virtual private network (VPN) connection to the state repository located at Hawaii Patient Accounting Services (HPAS). The Washington region is comprised of Community Health Centers of King County (CHCKC), HealthPoint, Family Health Centers (FHC), International Community Health Services (ICHS), NeighborCare Health, and Community Health Plan of Washington. These sites submit project measure data through a secure VPN connection to the state repository located at PTSO of Washington. Patient protected health information (PHI) and direct identifiers are removed from the data and sent securely to the central repository located at AAPCHO. The overall aim of the data repository is to store information that health centers can use to facilitate patient/provider communication, and improve their performance. Health centers can compare their data with that of other project sites, and in addition, learn about the processes and methods that other CHCs use to improve patient outcomes.

IMPACT OF INNOVATION

With improving health center performance in mind, project members carefully selected six primary process and outcome performance indicators and four secondary indicators to track through a combination of claims, practice management system, and electronic health record data (Table 1). These measures include rates and percentages of childhood immunization, diabetes, primary care visits,

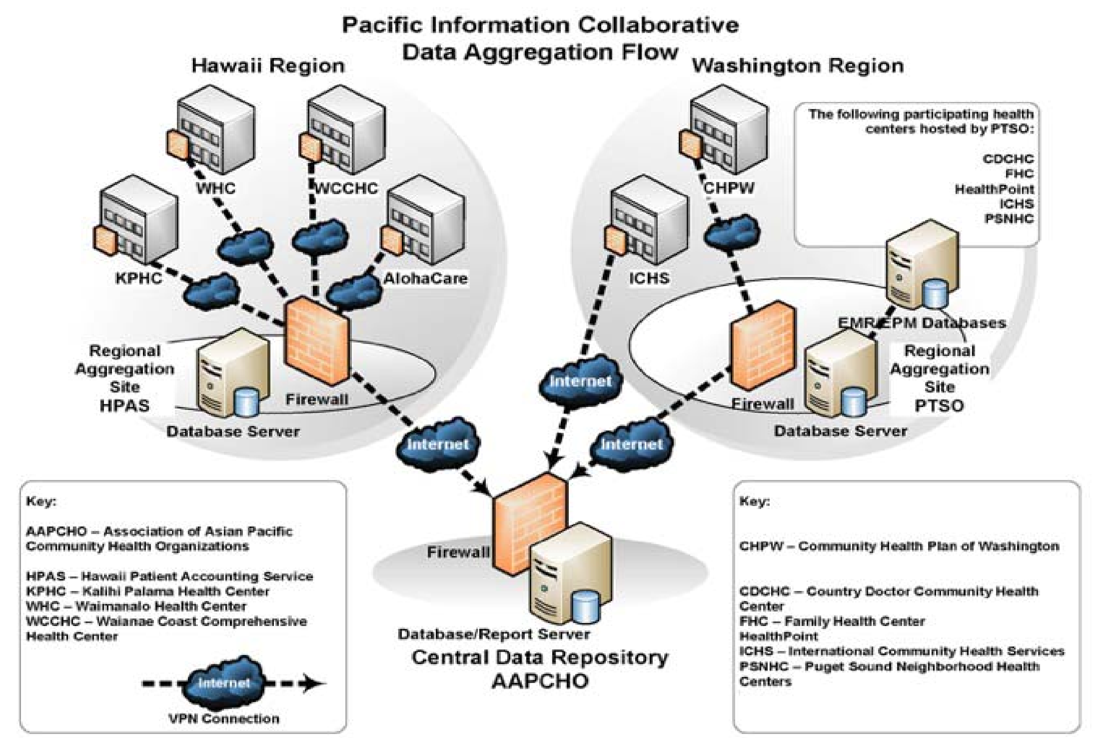


Figure 1. An illustration of the PIC Project's flow of data

ER visits, maternal care, and well-child visits. These indicators were selected to address the needs of the health plans and health centers, particularly to influence the timeliness; effectiveness; efficiency; and the safety, risk management, and quality of care provided to patients. Tracking the measures outlined in Table 1 allow project sites to determine best ways to improve overall health center performance and provision of care. For example, capturing data for patients with Type 1 or Type 2 diabetes whose hemoglobin levels are greater than 9% (Measure 2a) would allow a health center to better track the progress of these patients over time, and tailor its diabetes management strategies to improve its patients' health outcomes.

Effectiveness

This project defines effectiveness as the adequateness of care provided during a given period of time. This is measured in the following ways:

- CHCs and health plans send identified data to a common data repository
- Reports on performance indicators can be retrieved from repository and generated by provider/clinic team for monitoring and improvement
- Reports illustrating improvement on performance indicators demonstrated by each participating CHC through computation of percentage increases over time
- Identification of deficiencies and recommendations for improving EMR data capture, data validation, and business rules
- Identification of inefficiencies in reporting and improvements toward accuracy of report queries

Measure	Impact of Innovation
1. Percent by 2-years-old with 4 DTaP, 3 OPV/IPV, 1XMMR, 3XHepB, 3XHib (and Varicella)	Effectiveness & Safety, Risk Management, & Quality
2a. Percent of patients with either Type 1 or Type 2 diabetes whose HBA1c is > 9	Effectiveness & Efficiency
2b. Percent of diabetic patients with a behavioral health (mental health or substance) diagnosis whose HBA1c is > 9	Effectiveness
3a. Percent of patients younger than 7-years-old who had a primary care visit within the last 12 months	Effectiveness & Timeliness
3b. Percent of patients younger than 6-years-old who had a primary care visit within the last 24 months	Effectiveness & Timeliness
3c. Third next available appointment	Effectiveness & Timeliness
4a. Percent of patients seen in the ER with low complexity problems	Effectiveness
4b. Percent of patients seen in ER who follow up with primary care.	Effectiveness
5. Percent of patients with well child visits: a) In first 15 months; b) At 3-6 years; c) At 12-21 years	Effectiveness
6. Percent of patients on whom early notification of pregnancy was made to the Health Plan.	Timeliness & Efficiency

Table 1. A list of project process and clinical measures and the impact they have on community health center performance.

Timeliness

Timeliness is measured in the following ways and often goes hand-in-hand with effectiveness:

- Claims data on target population (sent to the repository electronically by health plan electronically)
- Data for identified target population sent to common data repository
- Reports on performance indicators retrieved from repository by CHC
- Identification of inefficiencies in reporting and improvements toward accuracy of report queries

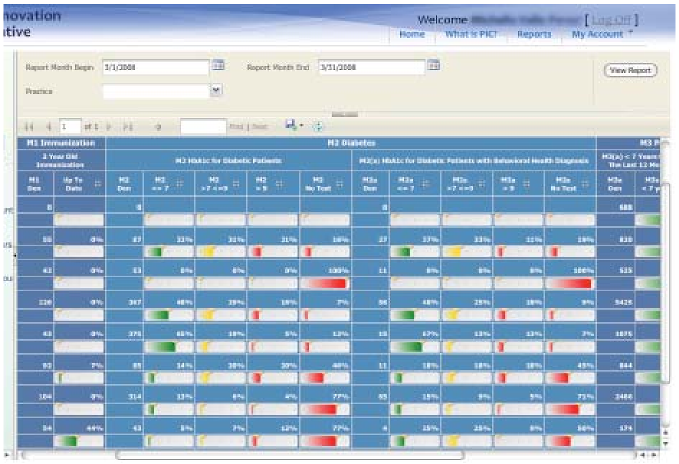
Efficiency

Efficiency can oftentimes go hand-in-hand with timeliness and effectiveness. This project measures efficiency through the following:

- Development of mechanism to electronically notify health plans of pregnancy
- Improvement on performance indicators demonstrated by each participating CHC through computation of percentage increases over time
- Percentage of women who continued benefit coverage for the duration of their pregnancy (specific to measure 6)

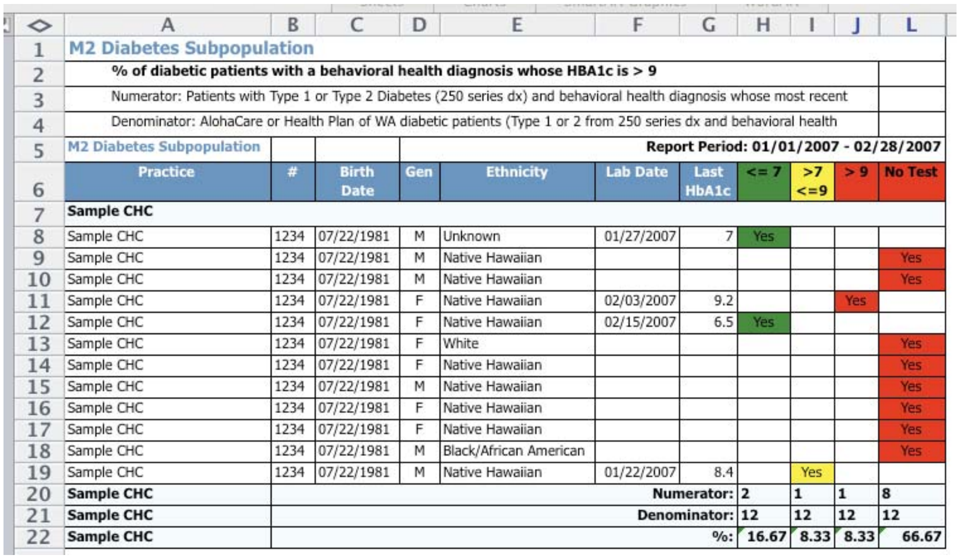
PIC USER INTERFACE

A user interface using Microsoft SQL Reporting Services 2008, known as the PIC Report Manager, was developed to give individual health centers and staff access to information collected from multiple CHCs. This information is stored in individual state and in central repositories. Program members can access the user interface via web browser at any project site location.[8] This interface features a comparative dashboard that displays aggregated data for CHC and health plan patients. This allows users to compare project measure data between sites and by individual CHCs. The dashboard was de-



Report Month Begin 3/1/2008
Report Month End 3/31/2008
Practice

Figure 2.



M2 Diabetes Subpopulation

% of diabetic patients with a behavioral health diagnosis whose HBA1c is > 9

Numerator: Patients with Type 1 or Type 2 Diabetes (250 series dx) and behavioral health diagnosis whose most recent

Denominator: AlohaCare or Health Plan of WA diabetic patients (Type 1 or 2 from 250 series dx and behavioral health

M2 Diabetes Subpopulation — Report Period: 01/01/2007 - 02/28/2007

Practice	#	Birth Date	Gen	Ethnicity	Lab Date	Last HbA1c	<= 7	>7 <=9	> 9	No Test
Sample CHC										
Sample CHC	1234	07/22/1981	M	Unknown	01/27/2007	7	Yes			
Sample CHC	1234	07/22/1981	M	Native Hawaiian						Yes
Sample CHC	1234	07/22/1981	M	Native Hawaiian						Yes
Sample CHC	1234	07/22/1981	F	Native Hawaiian	02/03/2007	9.2			Yes	
Sample CHC	1234	07/22/1981	F	Native Hawaiian	02/15/2007	6.5	Yes			
Sample CHC	1234	07/22/1981	F	White						Yes
Sample CHC	1234	07/22/1981	F	Native Hawaiian						Yes
Sample CHC	1234	07/22/1981	M	Native Hawaiian						Yes
Sample CHC	1234	07/22/1981	F	Native Hawaiian						Yes
Sample CHC	1234	07/22/1981	F	Native Hawaiian						Yes
Sample CHC	1234	07/22/1981	M	Black/African American						Yes
Sample CHC	1234	07/22/1981	M	Native Hawaiian	01/22/2007	8.4		Yes		
Sample CHC						**Numerator:**	**2**	**1**	**1**	**8**
Sample CHC						**Denominator:**	**12**	**12**	**12**	**12**
Sample CHC						**%:**	**16.67**	**8.33**	**8.33**	**66.67**

Figure 3.

signed to provide easy-access summaries for users to securely view and download. The PIC Report Manager also contains individual measure reports providing summaries of patient information for health centers and health plans. The report manager also features drill-downs or drop-down menus that make it easier for users to navigate through reports. Users also have the ability to create customized ad-hoc reports of CHC project measure databased on specific procedure and diagnosis codes using a Report Builder tool. Figure 2 illustrates a sample of the comparative dashboard among all sites for which the PIC repository contains data. Users can select which reporting periods and health centers they would like to view. Lastly, through the subscriptions feature, individuals can initiate scheduled reports to be e-mailed for regular updates and download. Numerous trainings on how to generate reports and navigate the various features of the PIC Report Manager were held during the duration of the project.

Figure 3 illustrates a sampling of extracted and exported data. The table in Figure 4 displays diabetes outcome data at AAPCHO member health centers (Measure 2a). Tables with detailed information can also be illustrated through bar graphs or pie charts. All data in the form of tables and graphs/charts can be exported as a PDF, an image, or through editing programs such as Excel and Word.

Findings: Lessons Learned from the Pacific Innovation Collaborative (PIC)

The Pacific Innovation Collaborative (PIC) Health Information Technology (HIT) project is a partnership among health plans, community health centers (CHCs), PTSO of Washington, and AAPCHO. More specifically, the PIC project is designed to improve clinical process and outcomes measures at CHCs in separate states. By developing an electronic infrastructure and shared data repository, various health centers in Hawaii and Washington will be able to reduce health disparities and provide better quality care to their patient populations.

Planning, testing, implementation, and evaluation of the PIC project occurred over the course of four years:

- Phase 1: Planning/Testing (2007-2008)
- Phase 2: Expansion of Infrastructure (2008-2009)
- Phase 3: Implementation (2008-10)
- Phase 4: Final Evaluation & Review (2010-11)

For four consecutive years (2008-2011), members of the PIC project have convened at annual strategic planning meetings to discuss project updates, lessons learned and future goals. Meeting members consisted of representatives from AAPCHO and the various health centers and health plans. As a result of the face-to-face meetings, participants were provided with a forum in which to discuss and share their different perspectives. In addition, attendees were able to engage in the exchange of evidence-based practices and HIT resources. Meeting participants were also asked to provide feedback on project and PIC user interface evaluations. This section will examine the results from the discussions and evaluations from the annual meetings.

General Themes	Subtheme
Data Utilization	• Comparative data • Building the infrastructure • Analytics • Usability
Quality Improvement	• Sharing best practices • Incentives • Demonstrating quality • Patient/population health care
Leadership & Support	• Organizational guidance from AAPCHO • Individual support (i.e. experts and IT staff) • Building relationships
Resources	• Building relationships • Technical support • Time and adjustment • Staff capacity and ability

Table 2. Summary of Project Themes

To summarize the major points of discussion, an analysis of meeting notes and evaluation reports was conducted at the end of each project year. Recurring themes and issues regarding the nature and future of PIC were identified through the analysis. For example, the issue of funding to sustain the project in the long-term is a common concern amongst members. Additional issues are discussed in further detail below.

Theme 1: Data Utilization

The PIC Report Manager tracks clinical and process-based measures as a means of improving health center performance. In particular, a fundamental feature of the PIC project is the collection and submission of data from the regional data repositories in Hawaii and Washington to the central data repository at AAPCHO. Through the documentation and standardization of patient data in an electronic format, providers at health centers can better utilize the information to identify problem areas; and therefore improve health process and outcome measures for their patient population. Generally speaking, data utilization as a theme contains other issue areas that are worth highlighting.

First, a commonly cited and cardinal component of the PIC project is the comparative analysis feature that allows PIC network members to juxtapose patient data from their health center with other health centers using the online dashboard. Sharing data across the network is central to the idea of collaboration amongst AAPCHO, CHCs and state health plans. In 2008, a project member representing Waimanalo Health Center refers to the positive aspects of the shared repository: "In addition, AAPCHO added the evaluation component and networking with Washington state with their FQHCs and safety-net health plan made our proposal more robust. Specifically, having the ability to share and exchange health information with other health organization (ER's or other clinics) regarding patients' care is a big plus." There is hope that more network partners and health centers can participate in the exchange of health information for better health outcomes.

> *"What we're looking for out of this project is to see the CHCs gain more expertise[in] data collection and... comparative analysis, then therefore how to use that data to improve and out of that...get better care..."*

The comparative dashboard could not be made possible without building a sound framework that supports intricate data needs. In the long-term, additional data measures covering a larger population may prove beneficial to increase research capacity of health centers and make the project more appealing to future funders. PIC currently encompasses six main performance measures, including, but not limited to well-child visits, primary care visits, diabetes, and maternal care data.

With regard to usability, the term itself implies a need to simplify the reporting process so reports are user-friendly. Usability of the PIC Report Manager and system has garnered much attention as a focus area because of its potential to present data that justifies the need for additional funding to support these services, as well as the need for CHC staffing. To increase its usefulness, members have suggested the inclusion of other measures and data elements (i.e. more health plan patients). By augmenting the type and amount of information gathered in the data repository, providers and health centers will gain a better overview of their patient population.

An issue and limitation that was identified at PIC meetings is the need for more analytics or tools to know how to navigate the data repository. CHC IT staff noted that the PIC dashboard needs to be "infused with the sense of usability" by everyone who accesses the user interface. A general aim is for health center staff, providers, and other members to become their own experts when using the PIC dashboard reports. Understanding and utilizing HIT at CHCs will depend on users ability to access and navigate a system such as the PIC data repository and online Report Manager.

In summary, project members suggested that the ability to capture, compare, and utilize data across health centers is a useful mechanism for quality improvement. A health plan quality improvement staffer confirmed the need for knowledgeable end users when he noted, "What we're looking for out of this project is to see the CHCs gain more expertise[in] data collection and... comparative analysis, then therefore how to use that data to improve and out of that...get better care." By keeping in mind quality improvement, health centers can work towards meaningful use of health information technology.

> *"Specifically, having the ability to share and exchange health information with other health organization (ER's or other clinics) regarding patients' care is a big plus."*

Theme 2: Quality Improvement

Another overarching goal of the PIC project is to improve the safety, quality, efficiency, and effectiveness of health care delivery. With the recent passage of the Patient Protection and Affordable Care Act in 2010, the health care law places emphasis on quality improvement and system redesign. The concepts grounding the Pacific Innovation Collaborative project align with the vision of health

reform because both strive to improve standards of care. The concept of best practices has been stated as a desirable outcome of this PIC project. If project members can share and exchange best HIT practices, then health centers can be better equipped with a range of methods to achieve quality improvement goals.

Before quality improvement can be fully achieved, having adequate information technology (IT) support and increased efficiency in clinical workflow are basic prerequisites, albeit difficult to achieve in such a resource-challenged environment. Federally Qualified Health Centers are known to be resource-challenged and at times struggle to meet basic needs such as IT support and adequate funding. One solution has been for health centers to participate in state and federal incentive programs that award health centers or their physicians for reporting quality improvement data. A major stipulation for incentive payments is demonstrating improvement in services and care to patients and acquiring additional resources.

PIC evaluation meetings about quality improvement have resulted in productive discussions on how best to move forward with the project. A motivational force driving members to continue with PIC is the opportunity to build relationships between CHCs and health plans, and share best practices. Communication and collaboration have proven invaluable to the success of this project.

Project members also viewed the potential for quality improvement as an underlying factor driving their commitment to this project. The collaborative and regional approach to this project has the potential to analyze health outcomes across patient populations. Lastly, according to project sites, the idea of building an electronic infrastructure at health centers is key and is most applicable to the IT staff at the health centers. One CHC clinical provider highlighted the benefits of PIC when she said, “I can see the potential of participating in terms of…regularly reviewing the data that you provide and then going over it with the providers and then making suggestions as to how to improve…I can totally see that working into our regular workflow.”

“I can see the potential of participating in terms of…regularly reviewing the data that you provide and then going over it with the providers and then making suggestions as to how to improve…I can totally see that working into our regular workflow.”

Theme 3: Leadership & Support

The successful completion of PIC was made possible through the teamwork and contributions of individuals from AAPCHO and the various health centers and health plans. For example, AAPCHO staff has made it easy for members to participate in the project, and the meetings have been helpful in keeping project partners on track. From meetings to surveys to interviews, the consistent check-ins by AAPCHO with project members ensured accountability and transparency every step of the way. The execution of the project in its entirety is attributed to the collaborative effort of multiple stakeholders.

Remarkably, the project has achieved a considerable amount in its four-year period despite having members geographically dispersed across the nation. The individual support, especially the IT staff at the participating health centers, played a significant role in directing the project at their respective locations. For instance, a fellow member wrote, "it was great to have an expert practitioner and researcher, to help us define the measures that we would be reporting and [knowledgeable IT staff] to set up the technology needed for this project," on a 2008 PIC project evaluation form.

Another vehicular force behind the completion of the basic infrastructure is the network and relationships that materialized between project sites over the years. The opportunity to collaborate with other CHCs and health plans is seen as a positive for many participating members. To be a part of a network and to learn from other CHCs is the epitome of a community-based practice. In a sense, proper support and leadership is an important facilitator for any project involving many tasks and members.

Theme 4: Resources

Finally, a frequently stated concern of the PIC project was the lack of resources. The lack of sustained resources, including time, funding, or staffing at health centers is a barrier. This is a major point of discussion for many project participants because the general idea of integrating health information technology into health centers is fairly new to some member centers and not others. Building the infrastructure and adapting to electronic medical/health records takes much time, expertise, funding and support.

One type of resource involves funding and money to finance the development, expansion, implementation and evaluation of the PIC project. If the maintenance of the PIC project is to continue, additional funding (e.g. grants, donors, government, etc.) will be integral to maintain such a large project. The potential to advance HIT activities through external sources of funding and support, particularly from payors and health plans in each state would be ideal. Yet another avenue is to negotiate with state government and Medicaid agencies to cover and reduce the cost of services.

While monetary resources are critical, technical support and expertise is also invaluable. PIC relies on trained and educated team members who have experience working with database systems and other technologies. In reality, the technical aspect of creating a data repository requires much time, expertise, and IT support. One project member from Waianae Coast Comprehensive Health Center (WCCHC) expressed that, "Both a barrier and facilitator has been the data… either not having the resources or taking the time to design the data or not being able to get the data, but once we have the data… it paints a whole different picture." Some health centers were equipped with ample IT staff, while others struggled to find experts in the health IT field. Thus, more training and recruitment is needed to oversee the data repository at health centers.

If there is one certain barrier that is difficult to come by, it is the time and adjustment required to adapt to the rapidly changing health care environment. Closely related to time and adjustment is staff capacity issues, which are sometimes compromised by high turnover rate in the staffing of health centers. PIC will continue to build its health IT infrastructure and looks forward to integrating HIT practices into a health center's daily workflow practices.

Conclusions and Recommendations

As a result of the HITECH provision of the Recovery Act, community health centers are increasing their capacity to develop and maintain electronic systems to help better serve their patient populations. The Pacific Innovation Collaborative Health Information Technology Project emerged as a response to the need of AAPCHO's member CHCs to enable "meaningful use" of new and existing technology and to strengthen their capacity to serve as Patient-Centered Medical Homes. A data repository aggregating AA&NHOPI patient information and measures, and a user interface was developed for health centers to share and exchange collected information about their similar patient populations. Best practices of EMR implementation were also developed. However, despite the major impact of the project on member sites, more work needs to be done to successfully integrate new and existing HIT systems at community health centers.

The Pacific Innovation Collaborative (PIC) Health Information Technology (HIT) project was designed to build, improve, and expand the electronic infrastructure at community health centers (CHCs) in the states of Hawaii and Washington. The network of health centers and health plans have worked together to exchange data, resources, and best practices to improve clinical performance and population health. By developing a shared data repository, CHCs and project partners are given the opportunity to efficiently and effectively compare data and thus work towards quality improvement and patient-centered health care.

BARRIERS AND LIMITATIONS

A majority of the work for the Pacific Innovation Collaborative (PIC) project has been performed by the IT staff, whereas the non-IT Staff see PIC as an independent project that does not affect health center activities and workflow. In order to improve the PIC project and Report Manager, the system needs to be user-friendly so that non-IT staff can access the dashboard and easily perform their own data analysis (improved analytics). Also, members suggest adding all CHC patients in the system.

Lessons learned from the project include the difficulty in obtaining data, which is partially due to the lack of sustaining resources. Nonetheless, this opportunity and AAPCHO's expert guidance, facilitation, and coordination have provided numerous lessons for CHCs.

Limitations

- Resources (time, funding, staffing, etc)
- Patient Population is only AlohaCare and Community Health Plan of Washington (CHPW)
- Data is only from electronic medical records (EMR) and claims
- Personal Health Records (PHR) not transferred to electronic health records
- At the time of study, data from certain project sites were missing.

RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

Based upon member evaluations and discussions on the development and maintenance of the repository and user interface, we developed the following recommendations:

- Seek out alternate sources of funding to help sustain the PIC network.
- Expand the PIC network to include other states, health centers, and health plans.
- Recruit and retain qualified staff and providers who are committed to the quality improvement and use of health information technology at health centers nationwide.
- Continue the exchange of best practices and resources for the betterment and advancement of the PIC project.
- Move toward the government's definition of a Health Information Exchange, which entails the real-time exchange of up-to-date health data for patients in the system.

FUTURE DIRECTIONS

As part of our strategic plan for the upcoming years, AAPCHO has established HIT as a priority area with three main objectives as follows.

1. We hope to engage at least 70% of our members with EMR to build expertise in meaningful use. Currently, of AAPCHO's 29 member organizations, 21 are FQHCs, and 14 of those FQHCs have implemented HIT at their sites. However, this does not mean that the 14 sites have successfully integrated these systems. The PIC model would be shared among AAPCHO CHCs to help fully integrate their electronic systems into everyday practice. Activities and measures related to this objective include developing (a) learning teams to share and improve best practices for integrating meaningful use and Patient-Centered Medical Home, (b) a communications plan to nationally promote awareness and benefits of member best meaningful use and Patient-Centered Medical Home-related practices, and (c) secure funding meaningful use and Patient-Centered Medical Home in order to expand project activities.

2. We hope to expand AAPCHO's enabling services data collection to at least 75% of AAPCHO member CHCs by 2014. We also hope to work toward partnerships with NACHC, Homeless Health Center, and Migrants Health Center to assist another 50 to 100 health centers to collect enabling services data. We currently work with five Federally Qualified Health Centers to collect enabling services data electronically through EMR systems. Our goal is to utilize PIC model methods to systematically collect and track this data. Activities and measures related to this objective include (a) providing technical assistance to increase the number of AAPCHO member centers submitting enabling services data, (b) strengthening AAPCHO's information technology capacity by securing full time IT staff to optimize support and collaboration among members' staff, and (c) developing a partnership with NACHC, Homeless Health Center, and Migrants Health Center to clarify technical assistance and support roles to health centers nationally.

3. We hope to develop and implement a plan to engage at least 25% of our member health centers to build expertise in patient-centered outcomes research (PCOR) and conduct at least one PCOR study. Activities and measures related to this objective include (a) developing an on-line information and resource center, (b) developing learning teams, and (c) securing PCOR funding with AAPCHO members.

With member recommendations and the guidance of its strategic plan, AAPCHO is continuing its efforts to utilize and build upon the PIC model. The repository and dashboard serve as cornerstones to collect and access data across health centers and has been utilized at AAPCHO's member health centers to share best practices and electronic infrastructure. As such, three coinciding projects have come into fruition: The Pay-For-Performance Project (P4P), the Pacific Innovation Collaborative Enabling Services (PIC ES) projects, and the Partnership in AA&NHOPI Comparative Effectiveness Community Health Applied Research Network (PACE CHARN) Project.

The Robert Wood Johnson Foundation-funded "Incentivizing the Outcome: Paying for Population Health at Hawaii Federally Qualified Health Centers" (P4P) project utilizes the PIC repository and online reports to track process and outcome measures of high-risk diabetic patients at four Hawaii health centers. If improvements are made in these measures, then provider teams receive monetary incentives provided by a Hawaii Medicaid payer health plan. Overall, this project aims at helping the CHCs assess the effectiveness of pay-for-performance incentives on health outcomes for low-income AA&NHOPI populations they serve.

The HRSA-funded "Enabling Services Health Information Exchange at Hawaii Health Centers" (PIC ES) project tracks enabling services provided to diabetic patients. Project CHCs developed an electronic patient monitoring system and decision support tool that enables clinical and enabling services staff to readily access and monitor diabetic patient information and follow-up with appropriate care. Building off PIC member feedback, this project also includes all patients from all project CHCs.

Lastly, the HRSA-funded PACE CHARN project is an opportunity to develop patient-centered outcomes research (PCOR) infrastructure, support, and capacity to develop community-comparative initiated PCOR protocols based on the data network and access to diverse populations of AAPCHO's member centers. Together, the partnership between AAPCHO, its member centers, and New York University will allow us to engage in the development of PCOR projects using existing data collected through a PIC Health Information Exchange (HIE) and within participating member centers' electronic health records (EHR) system. Ultimately, the project will expand upon the technology and infrastructure at the CHCs to improve the effectiveness, efficiency, safety and quality of the CHCs' delivery system and improve outcomes for their diverse, low-income, high-risk and underserved patients.

BECOMING INVOLVED

Community health centers are making large strides towards complete integration of health information technology. With the enactment of the Recovery Act and aid from federal agencies, such as the Centers for Medicare and Medicaid Services, health centers can continue to integrate HIT into their day-to-day practice. Yet, significant progress still must be made in order for complete integration into a full functioning electronic-based infrastructure. Health centers' technical, sociological, cultural, and financial practices need to be assessed and considered when creating and changing existing electronic systems. AAPCHO's PIC project is a response to that assessment and consideration and promotes the improvement of services, knowledge, communication, quality, efficiency, and outcomes at health centers. With the aim of integrating more health centers outside of the AAPCHO sphere of influence, we are able to promote a more systematic method for using health information technology at community health centers.

If you are a member of a community health center and would like further information about joining the PIC network or have general questions about AAPCHO's HIT initiatives please contact:

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8. To view the user interface, visit https://www.pichit.org. Dashboard data can only be viewed by authorized personnel at project health centers and health plans. For more information on how you or your health center can participate, visit the toolkit on the AAPCHO website.

Appendix

Glossary of Terms

Association of Asian Pacific Community Health Organizations (AAPCHO): a national, non-for-profit organization that represents community health centers (CHCs) that deliver accessible, high quality, and affordable primary and preventative care to medically underserved AA&NHOPI populations.

AA&NHOPI: an AAPCHO defined acronym referring to the collective population consisting of Asian Americans, Native Hawaiians, and other Pacific Islanders.

Health and Human Services (HHS): a departmental and cabinet agency of the United States Government. The goal of HHS is to protect the health of all Americans and provide essential human services.

American Recovery and Reinvestment Act (ARRA): a legislative act passed in 2009 as a direct response to the economic crisis. The primary goals of ARRA aimed to: create new jobs and save existing ones; spur economic activity and invest in long-term growth; and foster unprecedented levels of accountability and transparency in government spending.

Health Resources and Services Administration (HRSA): the federal and primary governmental agency aimed at improving access to health care services for people who are uninsured, isolated, or medically vulnerable.

Center for Medicaid and Medicare Services (CMS): a U.S. government agency that administers Medicare, Medicaid, and the Children's Health Insurance Program.

Health Information Technology & Economic and Clinical Act (HITECH): enacted as part of the American Recovery and Reinvestment Act (ARRA) to create financial incentives, in the form of additional reimbursement, for providers who demonstrate "meaningful use" of health information technology (HIT).

Meaningful Use: the use of Electronic Health Records (EHR) by providers to achieve significant improvements in care.

Electronic Health Records (EHR): a longitudinal collection of electronic health information that serves as a legal medical record, which includes documentation, vital signs, and assessments. In addition, it is an electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization.

Electronic Medical Records (EMR): sometimes used interchangeably with Electronic Health Records (EHR), but EMRs may not be interoperable outside of the "home" enterprise. In other words, EMRs may not be transferrable to other EMR systems, whereas the term EHR implies a level of interoperability with other EMRs. The implication of "Health" rather than "Medical" record in the term EHR is that it is a longitudinal record across time and providers. The EHR is generally not considered "owned" by any one physician because the information is not generally sourced by a single provider.

Health Information Technology (HIT): technology used to maintain health information in an electronic format.

Health Information Exchange (HIE): electronic movement of health-related information among organizations.

Electronic Prescribing (E-Prescribing): Medications that are electronically entered and transmitted by prescriber directly to a pharmacy.

Decision Support: Computer application to assist in clinical decisions by providing evidence-based knowledge in the context of patient-specific data.

Certification Commission for Healthcare Information Technology (CCHIT): a recognized certification body (RCB) for electronic health records and their networks.

Interoperability: The ability of clinical or patient data to transfer between providers in various settings and their various software packages. If a physician's EMR is not interoperable, physicians would only be able to access information within their own EMR application's database.

Computerized Physician Order Entry (CPOE): Software used by physicians to electronically submit requests for diagnostic exams/tests and receive test results electronically. Can be used in an inpatient setting or an outpatient setting, assuming the clinical departments conducting the exams/tests are capable of transmitting electronic messages to the physician's system.

Pay for Performance: Pay for Performance programs are incentive programs that provide monetary bonuses or non-financial benefits to physician practices that make progress in achieving or attaining specific quality and/or efficiency (cost of care) benchmarks or standards that are established by the program.

Pay for Use: Some health payors will reward physicians for adopting Health IT such as E-prescribing or EMRs. These programs are less common than Pay for Performance.

Personal Health Records (PHR): The PHR includes data such as critical current health and medical history information. It also includes information that is tracked by the patient such as personal health maintenance and over the counter medications. For example, it would include daily tracking of insulin levels for diabetics.

Regional Health Information Organization (RHIO): RHIOs provide the organizational and technical infrastructure to exchange data among health care providers in a geographic region.

[Sources]

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PIC Membership Criteria

The following outlines requirements for project membership. These requirements can be found at https://pictoolkit.aapcho.org.

- AAPCHO membership
- Health organization serving Asian Americans, Native Hawaiians, and/or Other Pacific Islanders
- Electronic medical record in place at prospective health organization
- Commitment of in-kind services from prospective health organization
- Commitment to the mission and vision of the Pacific Innovation Collaborative
- Approval from project Chief Information Officer John Williams
- Approval from at least 50% of other PIC member health organizations
- Approval from AAPCHO Executive Committee Board of Directors

Useful Resources

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