

Pacific Innovation Collaborative Functional Requirements

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1. Reporting

The reporting system will generate reports from the PIC central data repository, where data is aggregated from the regional aggregation sites (Washington and Hawaii). The primary purpose of the reporting system is to generate the key measures defined below (see Table 1 Key Measures below).

Reporting software, such as Business Objects or Microsoft's SQL Server Reporting Service, which provides web based access to reports, will be implemented on the central data repository server to allow users to generate reports themselves. PIC network users will be able to generate reports on demand from this website. See 2.3.2 below.

1.1. Key Measures

The following table summarizes the key measures for this grant project.

Table 1 Key Measures

					1/1/07-12/31/07	1/1/08-12/31/08	1/1/09-12/31/09							
No	Performance Indicator	Numerator	Denominator	Baseline	Year 1	Year 2	Year 3	Source of Measure	Impact of Innovation					
REQUIRED:									Effective-ness	Safety	Risk Mngmt	Quality	Efficiency	Timeliness
1	Immunizations: % by age 2 years, with 4 DTaP, 3 OPV/IPV, 1XMMR, 3XHepB, 3XHib (and Varicella)	Children who turn 2 years old within the measurement year with 4 DTaP, 3 OPV/IPV, 1 MMR, 3 HepB, 3 Hib, 1 Varicella	AlohaCare or Health Plan of WA 2 yo within the measurement year who had 3 managed care encounters within the reporting period.	x	x	x	x	CHC	x	x	x	x		
2	Diabetes: % of patients with either Type 1 or Type 2 Diabetes whose HbA1c is > 9	Patients with Type 1 or Type 2 Diabetes (250 series dx) whose HbA1c is >9	AlohaCare or Health Plan of WA diabetic patients (Type 1 or 2 from 250 series dx) who had 3 managed care encounters within the reporting period.	x	x	x	x	CHC	x				x	
ADDITIONAL INDICATORS														
2a	Diabetes Subpopulation: % of diabetic patients with a behavioral health (mental health or substance) diagnosis whose HbA1c is > 9					x	x	CHC	x					

3a	<u>Access to Primary Care:</u> % of pts < 7yo who had a primary care visit within the last 12 months	Children <7 years old within the measurement year, who had a primary care visit within the last 12 months.	AlohaCare or Health Plan of WA <7 yo within the measurement year.	x	x	x	x	Health Plan	x						x
3b	% of pts > 6 yo who had a primary care visit within the last 24 months	Individuals >6yo who had a primary care visit within the last 24 months.	AlohaCare or Health Plan of WA >6yo yo within the measurement year.	x	x	x	x	Health Plan	x						x
3c	Third next available appt					x	x	CHC	x						x
4a	<u>Emergency Room Utilization and Access to Primary Care:</u> % of patients seen in ER with low complexity problems	Patients seen in ER with low complexity problems (99281 or 99282).	AlohaCare or Health Plan of WA patients who had 3 managed care encounters within the reporting period.	x	x	x	x	Health Plan	x						
4b	% of patients seen in ER who f/u with primary care.						x	Health Plan	x						
5	<u>HEDIS WELL CHILD VISITS:</u> % of pts with well child visits: a) In first 15 months; b) At 3-6 years; c) At 12-21 years	Patients with 6 well child visits in first 15 months	AlohaCare or Health Plan of WA patients age 15 months within measurement year.	x	x	x	x	Health Plan	x						
-		Patients who are 3-6 years in the measurement period and received at least one well child visit in the 3rd, 4th, 5th, or 6th year of life during the measurement year.	AlohaCare or Health Plan of WA patients age 3-6 years within measurement year.	x	x	x	x	Health Plan	x						

	-	Patients 12-21 years who had at least one well-care visit during the measurement year.	AlohaCare or Health Plan of WA patients age 12-21 years within measurement year.	x	x	x	x	Health Plan	x						
6	Maternal Care: % of patients on whom early notification of pregnancy was made to the Health Plan.					x	x	CHC & Health Plan						x	x

DEFINITIONS

Primary care visit: E&M from a primary care provider (MD, DO, APRN, PA) 99201-99205; 99212-99215; 99381-99387; 99391-99397

Low complexity problem: CPT Codes of 99281, 99282.

Early notification: (Re-considering definition)

Reporting Period: Calendar Year
Baseline: Jan 1, 2006 - Dec 31, 2006
Year 1: Jan 1, 2007 - Dec 31, 2007
Year 2: Jan 1, 2008 - Dec 31, 2008
Year 3: Jan 1, 2009 - Dec 31, 2009

Diabetes: ICD-9 250 series

Immunizations: 90700 (DTaP); 90713 (IPV); 90707 (MMR); 90744 (HepB (ped/adol)); 90716 (Varicella); 90645-90648 (Hib); 90723 (Pediarix)

CHCs: International Community Health Services, Kalihi-Palama Health Center, Waianae Coast Comprehensive Health Center, Waimanalo Health Center, Puget Sound Neighborhood Health Centers, Country Doctor Community Health Centers, Yakima Neighborhood Health Services, Community Health Centers of King County, and Family Health Center.

Health Plan: AlohaCare & Community Health Plan of WA

Baseline Population: AlohaCare or Community Health Plan of WA Medicaid pts only at each participating CHC, **who have had 3 Medicaid managed care encounters within the reporting period.**

Age: #1: Children who turn 2 years old in the measurement year; #3a: children who turn 6 years old in the measurement year, the child will be considered 6 years old until the child turns 7 years old (#3b).

1.2. Report Types & Uses

The following types of reports will be developed and made available to PIC network members for reporting from the central data repository:

1.2.1. Measures summary report

- A summary report of all grant measures.
- For each measure, the denominator, numerator, and the ratio will be displayed, grouped by year and then by health center and health plan.
- Optional parameters used to filter output include: Measure(s), date range or reporting year, region, health center, health plan, and provider.
- Due to the significant amount of detail data used, this report will be scheduled for automatic generation at predetermined times.
- Report Uses
 - Fulfilling the report requirements of the grant
 - Reporting to federal, state, and funding agencies
 - Measures can be reported back to health center clinical staff and health plans for review and quality assessment

1.2.2. Measures trend/comparison report

- Summary report used to compare measures across multiple years.
- For each measure, the denominator, numerator, and the ratio will be displayed, grouped by health center and health plan, then by year.
- Optional parameters used to filter output include: Measure(s), reporting year, region, health center, health plan, and provider.
- This report will provide a separate graph for each measure by health center and health plan, and then by year.
- Due to the significant amount of detail data, this report will be scheduled for automatic generation at predetermined times.
- Report Uses
 - Compare and analyze measures trends
 - Reports can be sent back to health centers and health plans for review and quality improvement assessment

1.2.3. Detail measure report

- Detailed report for each measure, displayed in a tabular format where each line item represents a patient and a field on the report will indicate whether each patient was included in the numerator. The report footer will include a count of records (denominator), numerator, and the measure ratio.
- Required parameters used to filter output include: Date range or reporting year.
- Optional parameters used to filter output include: Measure(s), region, health center, health plan, provider, patient (using de-identified identifiers), and patient demographics such as gender, age, and ethnicity.
- Report Uses
 - Allows staff to troubleshoot data integrity issues by examining the patients that were included in or excluded from the numerator, and by comparing the results to the detailed list at the originating health center or health plan site

- Can be used for quality assessment and further analysis of the patients included in each measure

1.2.4. Patient list

- Detailed report of patients, displayed in a tabular format where each line item represents a patient. The report footer will include a count of records.
- Required parameters used to filter output include: Date range or reporting year.
- Optional parameters used to filter output include: Region, health center, health plan, provider, patient (using de-identified identifiers), and patient demographics such as gender, age, and ethnicity.
- Report Uses
 - Allows staff to troubleshoot data integrity issues by comparing to patient list at the originating health center or health plan site

1.2.5. Encounter list

- Detailed report of encounters, displayed in a tabular format where each line item represents an encounter. The report footer will include a count of records.
- Required parameters used to filter output include: Date range or reporting year.
- Optional parameters used to filter output include: Region, health center, health plan, provider, patient, patient demographics, ICD9 codes, and CPT codes.
- Report Uses
 - Allows staff to troubleshoot data integrity issues by comparing to patient list at the originating health center or health plan site
 - Can be used for quality assessment of diagnosis and procedures

1.2.6. OLAP reports

- Various OLAP reports may be generated for statistical analysis.
- Dimensional parameters include: Reporting months or years, measures, regions, health centers, health plans, providers, patients (using de-identified identifiers), and patient demographics such as gender, age, and ethnicity.
- Report Uses
 - Used for statistical analysis and quality improvement assessment

1.3. Report Development

The ability to develop reports will be limited to selected PIC network staff or contractors hired for the purpose of developing reports.

2. Business Processes

Clinical data from the network members will be aggregated across three sites and at two different levels. The first level of aggregation is at the regional level – Washington regional aggregation site and Hawaii regional aggregation site. The second level of aggregation is at the central data repository, where data is aggregated from the regional aggregation sites, Washington and Hawaii.

2.1. Processes at the Health Center and Health Plan Sites

Datasets will be generated at the health center and health plan site in preparation of transfer to the appropriate regional aggregation site.

The regional aggregation sites reconcile patients between health centers and health plans. To accomplish this, PHI data, including patient name, date of birth, and SSN, will need to be transmitted from the health center and health plan to their respective regional aggregation site. As explained in 6.1 below, the protection of PHI will involve securing the data transfer communication, securing the health center and health plan sites, as well as securing the regional aggregation sites.

Alternatively, a one-way hash of PHI data (patient name, date of birth, and SSN) may be employed to generate an identifier that uniquely identifies the patient. If such a mechanism is used, *no* PHI data needs to be sent to the regional aggregation site.

2.1.1. PIC Dataset Generation

The PIC dataset will consist of patient data (master patient index, PHI) as well as encounter data required to report measures as defined in our grant narrative.

The following data elements will be prepared for transmission to the regional aggregation site from the health centers and health plans:

1. Master patient index – The patient medical record number (MRN) will be de-identified at the health plan and health center before transmission. The new de-identified MRN will not identify the patient back to the system unless a key is used to reverse the encryption. A different key will be used at each health plan and health center and be known only to their respective administrators.

A health center/plan identifier will be sent along with the de-identified MRN to uniquely identify a patient in the aggregated database.

If a one-way hash of PHI data is employed, the hash may be used instead of the de-identified MRN. A pre-shared key may be necessary to generate the hash. Such a key should be secured and only accessible to the administrators of the health centers and health plans.

2. PHI data – Patient name, date of birth, and SSN will need to be transmitted to match patient data from health centers with patient data coming from health plans. We will look at the possibility of sending SSNs only in the case of duplicate patient names and birthdates.

If a one-way hash of PHI data is used, no PHI data needs to be prepared for transmission.

3. Encounter identifier – Encounter identifiers will be de-identified at the health plan and health center before transmission.

4. Encounter data – Encounters that meet the requirements for the measures for reporting will be transmitted from the health centers and health plans to their respective regional aggregate site. The specific data elements for each encounter will include the date of service, diagnosis and procedural codes, as well any specific information required by the measures, which will be defined in the functional specifications.

2.1.2. Data Transfer

The PIC dataset generated at the health center or health plan will be transferred to the respective regional aggregation site automatically, once a day.

For sites that are geographically separated from the regional aggregation site, transfer will occur through a VPN tunnel over the Internet as outlined in 6.1.1 below.

In the case of PTSO (Washington regional aggregation site), where the Washington PIC network health centers and the regional aggregation site will be hosted on the same private data center network, the transfer of data will simply be an interface from one database server to another database server. The data will not be transmitted over the Internet and will not require encryption.

Every transmission of data will be logged to a table or file (data transfer logs) at the health center and health plan sites as well as their respective regional data aggregation sites for later auditing (see 7 below). At a minimum, this will include the de-identified MRN, the de-identified encounter identifiers, and the date and time of each transmission.

A checksum or other means of summarizing transmitted data will be used to ensure the integrity of the data transfer from the regional aggregation sites to the central data repository.

2.2. Processes at the Regional Aggregation Site

The purpose of the regional aggregation site is to aggregate patient and encounter data between the health centers and the health plans for each region and to transfer a subset of the aggregated data to the central data repository.

To reconcile patients between health centers and health plans, PHI data, including patient name, date of birth, and SSN, will need to be transmitted from the health center and health plan to their respective regional aggregation site. The protection of PHI will involve securing the data transfer communication, securing the health center and health plan sites, as well as securing the regional aggregation sites.

Alternatively, a one-way hash of PHI data (patient name, date of birth, and SSN) may be employed at the health center and health plan site to generate an identifier that uniquely identifies the patient.

2.2.1. PIC Dataset Generation

The PIC dataset to be transmitted from the regional aggregation sites to the central data repository will consist of patient data (master patient index) as well as encounter data required to report measures as defined in our grant narrative:

1. Master patient index – The already de-identified patient MRN (de-identified at the health center and health plan level) will be transmitted to the central data repository.

A health center/plan identifier, already stored at the regional aggregation sites, will also be sent along with the de-identified MRN to uniquely identify a patient in the central data repository.

If a one-way hash of PHI data was generated the source site, the hash may be used instead of the de-identified MRN.

2. Encounter identifier – Encounter identifiers already de-identified at the health plan and health center level and stored at the regional aggregation sites will be transmitted to the central data repository.
3. Encounter data – Encounter data stored at the regional aggregation site will be transmitted to the central data repository.

2.2.2. Data Transfer

The generated PIC dataset will be transferred to the central data repository, once a day. Although no PHI data is planned at this time to be transmitted between the regional aggregation sites and the central data repository, a VPN tunnel will be used to secure all communication over the Internet between the sites to protect any inadvertent transmission of sensitive material.

Every transmission of data will be logged to a table or file (data transfer logs) at the health center and health plan sites as well as their respective regional data aggregation sites for later auditing (see 7 below). At a minimum, this will include the de-identified MRN, the de-identified encounter identifiers, and the date and time of each transmission.

A checksum or other means of summarizing transmitted data will be used to ensure the integrity of the data transfer from the regional aggregation sites to the central data repository.

2.3. Processes at the Central Data Repository

The purpose of the central data repository is to aggregate a subset of data from the regional aggregation sites and to provide a platform for reporting. At this time, *no* PHI data is planned to be transmitted between the regional aggregation sites and the central data repository.

2.3.1. Data Transfer

PIC dataset generated at the regional aggregation sites will be transfer to the central data repository once a day. Although no PHI data is planned at this time to be transmitted

between the regional aggregation sites and the central data repository, a VPN tunnel will be used to secure all communication over the Internet between the sites to protect any inadvertent transmission of sensitive material.

Every transmission of data will be logged to a table or file (data transfer logs) at the health center and health plan sites as well as their respective regional data aggregation sites for later auditing (see 7 below). At a minimum, this will include the de-identified MRN, the de-identified encounter identifiers, and the date and time of each transmission.

A checksum or other means of summarizing transmitted data will be used to ensure the integrity of the data transfer from the regional aggregation sites to the central data repository.

2.3.2. Report Generation

Reports will be accessed by all PIC network members from a web interface and will be generated by users on-demand or scheduled for automatic generation. Where possible, reports that take too long to generate (over 2 minutes) will be considered for scheduled, automatic generation. Automatically generated reports will also be available over the web as well. Users will be allowed to subscribe to reports to be notified via email when a report has been generated. Both Business Objects and Microsoft's SQL Server Reporting Service provide this feature.

3. Administration

Administrative tasks include server administration, database administration, scheduling reports, and authorizing access to other users.

Access to database administration will be limited to selected PIC network staff that has experience and training in database administration, or DBAs. Access to server administration will also be limited to selected PIC network staff that has experience with the operating system.

The ability to schedule reports and authorizing access to others within the reporting software will be limited to selected PIC network members, who will be trained in administering the software.

4. Usability

Report generation taking longer than 2 minutes will be considered for scheduled and automatic generation. Exceptions include reports that are difficult to generate on a scheduled basis and reports that are infrequently used.

The reporting web interface must be easy to use for generating reports by the end user and must be capable of accommodating all reports defined in 1.2 above.

5. Performance

Dataset generation (performed at the health center, health plan, and regional aggregation sites), site-to-site data transfer, and scheduled report generation must be fast enough to accommodate reports containing data no less than a month old. Ideally, reports should contain data no less than a day old.

Exceptions to this requirement include possible initial data load and the re-generation of datasets in the event of data corruption or data loss.

6. Security

6.1. Data Transfer Security

6.1.1. VPN Tunnels

Where there is a geographically separation between sites that transfer data, VPN tunnels will be used to secure site-to-site transfers.

Grant funds will be used to purchase equipment, such as Cisco ASA 5510 firewalls, to enforce the standardization of IPSEC VPN communications over the Internet.

The implementation of VPN tunnels may require establishing VPN pre-shared keys and passwords between the health centers, health plans, and regional aggregation sites. Such keys/passwords will be shared only by the network or systems administrative staff, necessary to implement the VPN tunnel from each health center and health plan to their respective regional aggregate site.

Since the use of VPN tunnels opens the door to network access at the health center and health plan sites, the VPN tunnels will limit access to only those systems participating in the grant project. Furthermore, grant funds have been identified and made available for the purchase of separate servers by health centers and health plans for the purposes of the grant project.

6.1.2. SQL Data Transfer

In addition to HL7 and XML, SQL may be used to transfer data. If SQL is used, a special logon may be necessary to establish the connection between database servers at each site. This logon will be given read-only access at the source of the transfer to help protect the integrity of the data at the source.

6.2. Site Security

Security at the sites will require access controls at the physical, network, data, and report levels.

6.2.1. Health Center and Health Plan Site Security

6.2.1.1. Physical Access

The physical access of systems and servers will be limited to the individuals at the health centers and health plans that regularly maintain and manage their existing EPM/EHR systems.

6.2.1.2. Network Access

Although all health centers and health plans participating in this grant project already have firewalls in place, grant funds will be made available to allow for the upgrade to

a more advanced device, such as Cisco ASA 5510 firewall, which would provide VPN technology for securing the data transfer between sites as well as providing SSL VPN access to existing health center and health plan site administrators.

If network access is given to PIC network staff not affiliated with the health centers or health plans for the purposes of this grant project, the selected staff will be documented for later auditing.

6.2.1.3. Data Access

Access to the database at the health center and health plan sites from PIC network staff not employed or contracted by the health centers or health plans will be given read-only access to only the PIC dataset defined above. The selected PIC network staff will be documented for later auditing. Any changes to access privileges will also be documented.

6.2.2. Regional Aggregation Site Security

6.2.2.1. Physical Access

The physical access of the data regional aggregation site servers will be limited to selected PIC network technical and administrative staff. The selected staff will be documented for later auditing.

If the Hawaii regional aggregation site server will be hosted by a third party data center, the physical security will be examined to ensure that only authorized security personnel from the data center will have access to the regional aggregation site server.

In the case of PTSO (Washington regional aggregation site), physical security is already in place to protect PHI data for their existing client health centers.

6.2.2.2. Network Access

A firewall, such as the Cisco ASA 5510 device, will be purchased with grant funds to protect the central data repository site from harmful attacks over the Internet.

SSL VPN will be used to allow access into the central data repository from selected PIC network personnel for administration and maintenance of the central data repository system. The selected staff will be documented for later auditing.

6.2.2.3. Data Access

Access to the data at the regional aggregation sites will be limited to selected PIC network technical and administrative staff. The selected staff will be documented for later auditing.

6.2.3. Central Data Repository Site Security

6.2.3.1. Physical Access

The physical access of the central data repository server(s) will be limited to selected PIC network technical and administrative staff. The selected staff will be documented for later auditing.

If the central data repository site will be hosted by a third party data center, the physical security will be examined to ensure that only authorized security personnel from the data center will have access to the central data repository server(s).

6.2.3.2. Network Access

A firewall, such as the Cisco ASA 5510 device, will be purchased with grant funds to protect the central data repository site from harmful attacks over the Internet.

SSL VPN will be used to allow access into the central data repository server(s) from selected PIC network personnel for administration and maintenance of the central data repository system. The selected staff will be documented for later auditing.

6.2.3.3. Data Access

Access to the database at the central data repository will be limited to selected PIC network systems administrators. The selected staff will be documented for later auditing.

6.2.3.4. Report Access

Reports will be made available via a web interface, such as Business Objects web server application, over a SSL connection for selected PIC network staff to generate reports. The selected staff will be documented for later auditing.

7. Auditing

A report will be generated on a monthly basis to review the access to all sites. The report will summarize the number accesses to the data and reports by logons.

In addition, on a monthly basis, selected PIC network systems administrators will review the data transfer logs, the server security logs, as well as the firewall logs to identify any aberrant activities or unwarranted access attempts.

Data transfer logs will also be reviewed to identify any data integrity issues.