4. Health Center Datasets and Business Processes

4.1. Health Center Export Stored Procedures and Datasets

The following stored procedures are called by the regional repository import stored procedures and return the result sets defined below.

4.1.1. SP_ExportPatient

Exports the person table by returning the result set below to the caller.

4.1.1.1. SP_ExportPatient Parameters

The following parameters are passed to this stored procedure.

Parameter	Data Type	Required	Description
@ModifyTimestampBegin	datetime	No	Compared to the modify_timestamp field
@ModifyTimestampEnd	datetime	No	Compared to the modify_timestamp field

4.1.1.2. SP_ExportPatient Result Set

The following result set is returned to caller.

Field	Data Type	Key	Description
practice_name	varchar(40)		Represents the practice name defined in the health plan's claims system.
policy_nbr	varchar(25)	PK	Represents the insurance number of the patient.
birth_date	varchar(8) YYYYMMDD		Represents the patient's birth date in **YYYYMMDD** format.
sex	char(1)		Represents the sex of the patient. Contains either an 'F' or an 'M'.
race	varchar(100)		Represents the health plan's specific ethnicity values.

4.1.2. SP_ExportProvider

Exports the provider table by returning the result set below to the caller.

4.1.2.1. SP_ExportProvider Parameters

The following parameters are passed to this stored procedure.

Parameter	Data Type	Required	Description
@ModifyTimestampBegin	datetime	No	Compared to the modify_timestamp field
@ModifyTimestampEnd	datetime	No	Compared to the modify_timestamp field

4.1.2.2. SP_ExportProvider Result Set

The following result set is returned to caller.

Field	Data Type	Key	Description
practice_name	varchar(40)		Represents the health center name of the claim. This is the PCP of the claim. In AlohaCare's claim table, this is the pcpindicator field, which is translated, by AlohaCare, into the following standardized values: "KPHC" – Kalihi-Palama Health Center "WHC" – Waimanalo Health Center "WCCHC" – Waianae Coast Comprehensive Health Center
provider_id	uniqueidentifier	PK	Represents a unique identifier that is generated by calling newid() during the import process and is exported to the regional repository.
last_name	varchar(25)		Represents the last name of the provider. In AlohaCare's case, this is extracted from the svcprovname field

			in their claim table.
first_name	varchar(25)		Represents the first name of the provider.
			In AlohaCare's case, this is extracted from the svcprovname field in their claim table.
npi	varchar(10)		Represents the NPI of the provider.
			This may be NULL if no NPI exists for the provider.
			In AlohaCare's case, this is the svcprovNPI field in their claim table.

4.1.3. SP_ExportEncounters

4.1.3.1. SP_ExportEncounters Parameters

The following parameters are passed to this stored procedure.

Parameter	Data Type	Required	Description
@ReportPeriodBegin	datetime	Yes	The first date of the reporting period
			Compared to the enc_timestamp field
@ReportPeriodEnd	datetime	No	The last date of the reporting period
			Compared to the enc_timestamp field
@ModifyTimestampBegin	datetime	No	Compared to the modify_timestamp field
@ModifyTimestampEnd	datetime	No	Compared to the modify_timestamp field

4.1.3.2. SP_ExportEncounters Result Set

The following result set is returned to caller.

Field	Data Type	Key	Description
practice_name	varchar(60)		Represents the health center name of the claim.
			This is the PCP of the claim. In AlohaCare's claim table, this is the pcpindicator field, which is translated, by AlohaCare, into the following standardized values:
			"KPHC" – Kalihi-Palama Health Center
			"WHC" – Waimanalo Health Center
			"WCCHC" – Waianae Coast Comprehensive Health Center
enc_id	uniqueidentifier	PK	Represents the ID of the encounter.
			Generated GUID
policy_nbr	varchar(25)		Represents the patient's insurance member number of the claim.
			In AlohaCare's database, this is the mbrquestid field.
provider_id	uniqueidentifier	FK	Represents the servicing provider of the claim.
			A GUID should be generated to represent the provider in the PIC database.
			In AlohaCare's case, this is the svcprovid.
location_id	uniqueidentifier	FK	
enc_timestamp	datetime		Encounter date
er_hospitalization	bit		
orig_create_timestamp	datetime		
orig_modify_timestamp	datetime		

4.1.4. SP_ExportEncounterDiagnoses

4.1.4.1. SP_ExportEncounterDiagnoses Parameters

The following parameters are passed to this stored procedure.

Parameter	Data Type	Required	Description
@ReportPeriodBegin	datetime	Yes	The first date of the reporting period
			Compared to the enc_timestamp field

@ReportPeriodEnd	datetime	No	The last date of the reporting period Compared to the enc_timestamp field
@ModifyTimestampBegin	datetime	No	Compared to the modify_timestamp field
@ModifyTimestampEnd	datetime	No	Compared to the modify_timestamp field

4.1.4.2. SP_ExportEncounterDiagnoses Result Set

The following result set is returned to caller.

Field	Data Type	Key	Description
practice_name	varchar(60)		Represents the health center name of the claim. This is the PCP of the claim. In AlohaCare's claim table, this is the pcpindicator field, which is translated, by AlohaCare, into the following standardized values: "KPHC" – Kalihi-Palama Health Center "WHC" – Waimanalo Health Center "WCCHC" – Waianae Coast Comprehensive Health Center
enc_id	uniqueidentifier	PK	New GUID generated at the regional repository
diagnosis_code	varchar(10)		Represents the patient's insurance member number of the claim. In AlohaCare's database, this is the mbrquestid field.
diagnosis_index	int		Optional? Yes

4.1.5. SP_ExportEncounterServices

4.1.5.1. Parameters

The following parameters are passed to this stored procedure.

Parameter	Data Type	Required	Description
@ReportPeriodBegin	datetime	Yes	The first date of the reporting period Compared to the enc_timestamp field
@ReportPeriodEnd	datetime	No	The last date of the reporting period Compared to the enc_timestamp field
@ModifyTimestampBegin	datetime	No	Compared to the modify_timestamp field
@ModifyTimestampEnd	datetime	No	Compared to the modify_timestamp field

4.1.5.2. SP_ExportEncounterServices Result Set

The following result set is returned to caller.

Field	Data Type	Key	Description
practice_name	varchar(60)		Represents the health center name of the claim. This is the PCP of the claim. In AlohaCare's claim table, this is the pcpindicator field, which is translated, by AlohaCare, into the following standardized values: "KPHC" – Kalihi-Palama Health Center "WHC" – Waimanalo Health Center "WCCHC" – Waianae Coast Comprehensive Health Center
enc_id	uniqueidentifier	PK	New GUID generated at the regional repository
person_id	uniqueidentifier		New GUID generated at the regional repository
service_code	varchar(10)		Maps to PICAlohaCare.claimdetail.servcode
place_of_service	varchar(2)		Maps to PICAlohaCare.claimdetail.location
service_from_date	datetime		Maps to PICAlohaCare.claimdetail.dosfrom
service_to_date	datetime		Maps to PICAlohaCare.claimdetail.dosto

4.1.1. SP_ExportThirdNextAvailable

Populates the ThirdNextAvailable table by importing by calling the SP_ExportThirdNextAvailable sprocs from regional repositories, as well as ICHS.

4.1.1.1. SP_ ExportThirdNextAvailable Parameters

Parameter	Data Type	Required	Description
@ReportPeriodBegin	datetime	Yes	The first date of the reporting period Compared to the date field
@ReportPeriodEnd	datetime	No	The last date of the reporting period Compared to the date field
@ModifyTimestampBegin	datetime	No	Compared to the modify_timestamp field
@ModifyTimestampEnd	datetime	No	Compared to the modify_timestamp field

4.1.1.2. SP_ ExportThirdNextAvailable Result Set

The following result set is returned to caller. All fields are required unless otherwise noted.

Field	Data Type	Key	Description
source_site	varchar(100)		See source_site in Standard Fields section
practice_name	varchar(100)		See practice_name in Standard Fields section
provider_id	uniqueidentifier	FK	See provider_id in Standard Fields section
date	varchar(8) YYYYMMDD		The date the third next available is calculated from
[3na]	int		The number of days from **date** of a third next available slot
create_timestamp	datetime		See create_timestamp in Standard Fields section
modify_timestamp	datetime		See modify_timstamp in Standard Fields section

4.1.2. SP_ExportMaternalCare

SP_ExportMaternalCare returns a patient based result set of maternal care data.

4.1.2.1. SP_ExportMaternalCare Parameters

The following parameters are passed to this stored procedure.

Parameter	Data Type	Required	Description
@ReportPeriodBegin	datetime	Yes	The first date of the reporting period Compared to the date field
@ReportPeriodEnd	datetime	No	The last date of the reporting period Compared to the date field
@ModifyTimestampBegin	datetime	No	Compared to the modify_timestamp field
@ModifyTimestampEnd	datetime	No	Compared to the modify_timestamp field

4.1.2.2. SP_ExportMaternalCare Result Set

The following result set is returned to caller. All fields are required unless otherwise noted.

To determine early notification of pregnancy, the following logic will be performed at the central repository site: Calculate the difference between edc (Estimated Date of Confinement) and initial_prenatal_visit and if the difference > 6 months, early notification was given.

Field	Data Type	Key	Description
practice_name	varchar(100)		Represents the health center name.

			"KPHC" – Kalihi-Palama Health Center
			"WHC" – Waimanalo Health Center
			"WCCHC" – Waianae Coast Comprehensive Health Center
policy_nbr	varchar(25)		Represents the patient's insurance member number of the claim.
provider_id (OPTIONAL)	uniqueidentifier	FK	Represents the provider of the slot. For valid values, each provider_id value must exist in the exported providers (see SP_ExportProvider above). A unique identifier from an existing system (such as NG EMR) or a generated GUID.
edc	varchar(8) YYYYMMDD		Expected delivery date
initial_prenatal_visit	varchar(8) YYYYMMDD		Initial prenatal visit
trimester_entry (OPTIONAL)	int		Trimester (1 to 3) at entry If available, used primarily to validate the early notification calculation
gestational_age_entry (OPTIONAL)	int		Gestational age at entry

4.2. Health Center Export Cycle

It is expected that incremental data will be available every week. It is understood however that due to various systems and resource limitations, a weekly refresh of data may not be practicle, and a lower frequency of refresh may need to be implemented.

6. Interface Protocol

As agreed to by the PIC technical staff, SQL will be used as the interface language. Data will be returned in the form of SQL record sets and data requests will be accomplished by calling export stored procedures at the source server through predefined Linked Servers.

PIC Health Center Specs (From Functional Specifications 1 4).doc

7. Transmission and Connection Protocol

RPC/DTC (remote procedure call / distributed transaction coordinator) will be used to execute procedure calls on remote systems to pull data from one site to another. Furthermore, Linked Servers will be defined that point to the remote servers. Predefined SQL login will be established between each site and a password specific to each SQL server to SQL server will be used.

Standard TCP/IP will be used as the underlying transmission protocol through encrypted VPN tunnels over the Internet.

8. VPN Protocol

VPN tunnels will be established between each site to encrypt not only any transmission of PHI, but also to protect the transmission of authentication information, such as SQL logins for SQL to SQL communication as well as user logins for remote administration and report website access.

AES (Advanced Encryption Standard) or 3DES (Triple Data Encryption Standard) will configured to provide encryption using pre-shared keys for authentication. The use of certificates for authentication will also be explored.

9. Bandwidth Requirements

To determine minimum requirements, first we consider the requirements for RPC/DTC, which is 64Kbps. This is the absolute minimum at all sites.

To determine the recommended requirements, we look at the **_maximum_** data to be transmitted by calculating bps rates for each dataset based on the following assumptions:

1. 340 bytes is the maximum dataset size
2. 15 datasets will be transmitted (12 measures + patient, provider, and location tables)
3. The Washington regional aggregation site (PTSO) will host 6 health centers and will include CHPW patients. Using CY2006 figures, the total CHPW patients for the 6 health centers was 27,060. We double the amount for CHPW patients and add a small fudge factor of 10% to get 59,532 or 60,000 maximum patients.
4. The Hawaii regional aggregation site will host 3 health centers and AlohaCare patients. Again, using CY2006 figures, the total AlohaCare patients seen by the 3 health centers was 10,975. Doubling that and adding 10% comes out to 21,951 or 22,000 maximum patients.
5. For Hawaii, each member site is different, however, for simplicity, we will use 10,975 or 11,000 AlohaCare patients as the maximum patients for each Hawaii member site.
6. Each dataset transmission at a site will contain the number of records equal to the maximum patients for each site.

The calculation for each site as follows:

1. Washington regional aggregation site up speed requirements:
   - 60,000 max patients X 340 bytes/record = 20400000 bytes/dataset
   - 20400000 bytes/dataset = 19921.875KB/dataset = 159375Kbits/dataset
   - 159375Kbits/dataset / 64Kbps = 2490.234375 seconds/dataset = **41.50 minutes/dataset @ 64Kbps**
   - 41.50 minutes/dataset * 15 datasets = 622.5 minutes/dataset = **10.375 hours/export cycle @64Kbps**
   - 159375Kbits/dataset / 128Kbps = **20.75 minutes/dataset @ 128Kbps**
   - 20.75 minutes/dataset * 15 datasets = 311.25 minutes/dataset = **5.19 hours/export cycle @128Kbps**
   - 159375Kbits/dataset / 384Kbps = 415.0390625 seconds/dataset = **6.92 minutes/dataset @384Kbps**
   - 6.92 minutes/dataset * 15 datasets = 103.8 minutes/dataset = **1.73 hours/export cycle @384Kbps**
   - **Recommended up speed requirement = 384Kbps**

2. Hawaii regional aggregation site up speed requirements:
   - 60,000 Washington (WA) regional max patients / 22,000 Hawaii max patients = 2.73
   - @64Kbps:
     - 41.50 WA minutes/dataset (@64Kbps) / 2.73 = **15.21 minutes/dataset**
     - **3.80 hours/export cycle**
   - @128Kbps:
     - 20.75 WA minutes/dataset (@128Kbps) / 2.73 = **7.60 minutes/dataset**
     - **1.90 hours/export cycle**
   - @384Kbps:

- o 6.92 WA minutes/dataset (@384Kbps) / 2.73 = **2.53 minutes/dataset**
- o **37.95 minutes/export cycle**
- • **Recommended up speed requirements = 384Kbps**

3. Hawaii member site up speed requirements:
   - • 60,000 Washington (WA) regional max patients / 11,000 Hawaii max patients = 5.45
   - • @64Kbps:
     - o 41.50 WA minutes/dataset (@64Kbps) / 5.45 = **7.61 minutes/dataset**
     - o **1.90 hours/export cycle**
   - • @128Kbps:
     - o 20.75 WA minutes/dataset (@128Kbps) / 5.45 = **3.81 minutes/dataset**
     - o **57 minutes/export cycle**
   - • @384Kbps:
     - o 6.92 WA minutes/dataset (@384Kbps) / 5.45 = **1.27 minutes/dataset**
     - o **19 minutes/export cycle**
   - • **Recommended up speed requirements = 128Kbps**

10. Import Process

10.1.   Schedule

The import cycle will be executed automatically via scheduled jobs on a weekly basis. The specific schedule will be determined at the site level:

- Central repository: Saturday night/Sunday morning to avoid any interference with report generation
- Regional aggregation site: Staggered schedule on Thursday and/or Friday
- Member site (health center, health plan): Monday through Wednesday, before the regional aggregation site import cycle

10.2.   Process

Each scheduled job at each site will execute a main (or primary) SQL import procedure (SP_ImportData). For central and regional sites, the import source site will be passed to the main import procedure to determine which LinkedServer to import from.

The main SQL import procedure (SP_ImportData) will execute SQL import procedures for each dataset, which will in turn call SQL export procedures at the import source site through a corresponding LinkedServer to pull data from the source.

An incremental import approach using date and time will be used to import only the updated records from the source sites. This lessens the amount of data transferred over the Internet.

The main SQL import procedure (SP_ImportData) will use the ImportStatus table to record the beginning and ending date/time for each import job. Ending date/time values will be passed to the SQL import procedures for each dataset, which in turn will be passed to corresponding SQL export procedures at the import source site to determine which records to export by comparing the ending date/time to the modify_timestamp for each dataset.

11. Database Access

11.1.   Limited Access at the Regional Aggregation Site

To limit PHI exposure at the regional aggregation site – currently, the only PHI data stored at the regional aggregation site is patient insurance # - SQL views will be created for each health center along with corresponding logons to ensure that data specific to a health center is available to only members of that health center.

There will be **NO** possibility of PHI exposure at the central report repository, since only de-identified patient data will be stored there.