# RENAL HEALTHCARE | HIE
## FOR EQRS

Renal Healthcare Association Health Information Exchange

Electronic Health Record Vendor

Certification Process for EQRS Data Submissions

MANAGED BY

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# 1   Overview

The Centers for Medicare and Medicaid Services (CMS), in cooperation with the Renal Healthcare Association (formerly National Renal Administrator's Association) Health Information Exchange (HIE) support submission of EQRS data via an electronic data submission process.

To ensure conformance with EQRS quality data report and submission specifications, the Renal Healthcare HIE and CMS facilitate a series of certification tests for electronic health record (EHR) vendors to validate readiness for data submissions through the Renal Healthcare HIE to EQRS.  All participants (Renal Healthcare HIE, technology partners, EHR vendors and dialysis organizations) are under contract with the Renal Healthcare Association before engaging in certification and onboarding processes.

## 1.1   Purpose

The purpose of this document is to provide information to EHR vendors pursuing certification for electronic submission of EQRS data through the Renal Healthcare HIE.  This document:

- Introduces EHR vendors to the various organizations involved in the Renal Healthcare HIE and EQRS data submission and certification efforts.
- Orients the EHR vendor to the flow of quality report and administrative data through the Renal Healthcare HIE to EQRS, and provides information for handling of Deferred Responses and data error messages.
- Describes the certification process including:
  - Getting started with EQRS data file development
  - Connectivity to the Renal Healthcare HIE
  - EQRS data testing
  - Certification approval process
- Summarizes process steps for onboarding certified EHR vendors' customers contracted with the Renal Healthcare HIE to electronically submit data to EQRS.

## 1.2   Intended audience

This document is intended for:

- EHR vendors interested in becoming certified to produce data files and support electronic data submission of the EQRS quality data and administrative reports.

## 2   Introduction to the Renal Healthcare HIE and EQRS

The organizations listed below work together to sponsor, provide operational support and establish the policies for the Renal Healthcare HIE and EQRS.

### 2.1   Renal Healthcare Association

The Renal Healthcare Association is the sponsor organization offering HIE services to dialysis organizations for EQRS data submission to CMS.  Renal Healthcare Association administrative staff is responsible for reviewing submitted contracts from dialysis organizations interested in using the HIE services, validating information provided by the organization, and facilitating the Renal Healthcare HIE contract approval and denial process. Designated staff at the Renal Healthcare Association is responsible for answering contracting questions and managing special contract term requests submitted by organizations during the contracting process. The Renal Healthcare Association is also responsible for data and business logic discussions with CMS related to the EQRS dataset.

#### 2.1.1   HT Consulting

Howard Thomas, President of HT Consulting, is the contracted Program Director for the Renal Healthcare HIE program representing the Renal Healthcare Association and its contractor activities.

### 2.2   OneHealthPort HIE

The Renal Healthcare HIE is managed and operated by the OneHealthPort HIE.  The OneHealthPort HIE provides support for the contracting and facility registration applications that automate the workflows for dialysis organization onboarding. The OneHealthPort HIE manages the certification testing for EHR vendors, as well as the connectivity set-up, testing, and go-live for facilities submitting data thru the Renal Healthcare HIE.  OneHealthPort also hosts and manages the customer support request web form for the Renal Healthcare HIE.

#### 2.2.1   Axway Managed Services and Technology

OneHealthPort HIE has licensed Axway products and contracts with Axway for hosting and managed services for the technology not directly hosted and managed by OneHealthPort. OneHealthPort HIE staff triages and escalates issues to Axway Managed Services to assist in problem resolution related to the HUB operations.

### 2.3   Centers for Medicaid and Medicare Services (CMS)

CMS is the owner and responsible for the policies that govern the EQRS data repository, Kidney Data Dictionary and data schema, and the servers and services at CMS that support data submission via

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batch, HIE connection or web application.  CMS employs a number of subcontractors who manage various aspects of these services.

# 3    Renal Healthcare HIE and EQRS Data Submission

In preparation for the Renal Healthcare HIE Certification process, it's important for vendors to understand the EQRS data submission process. Data processing begins with the submission of patient demographic, clinical record or administrative data through a series of secure connections starting with the Renal Healthcare HIE Activator (a software gateway application that manages the secure electronic transmission of the EQRS data) through the Renal Healthcare HIE infrastructure to the ultimate destination at CMS – the EQRS data repository.  The sections below provide an overview of the data flow, data submission messages, Deferred Responses and data error code handling.

## 3.1   EQRS Data Submission Flow

An overview of the data flow of the patient demographic and clinical records is presented below. Administrative data submitted through the Renal Healthcare HIE to the EQRS data repository follow the same processing flow.

**Clinical and Patient Demographic Record Flow**
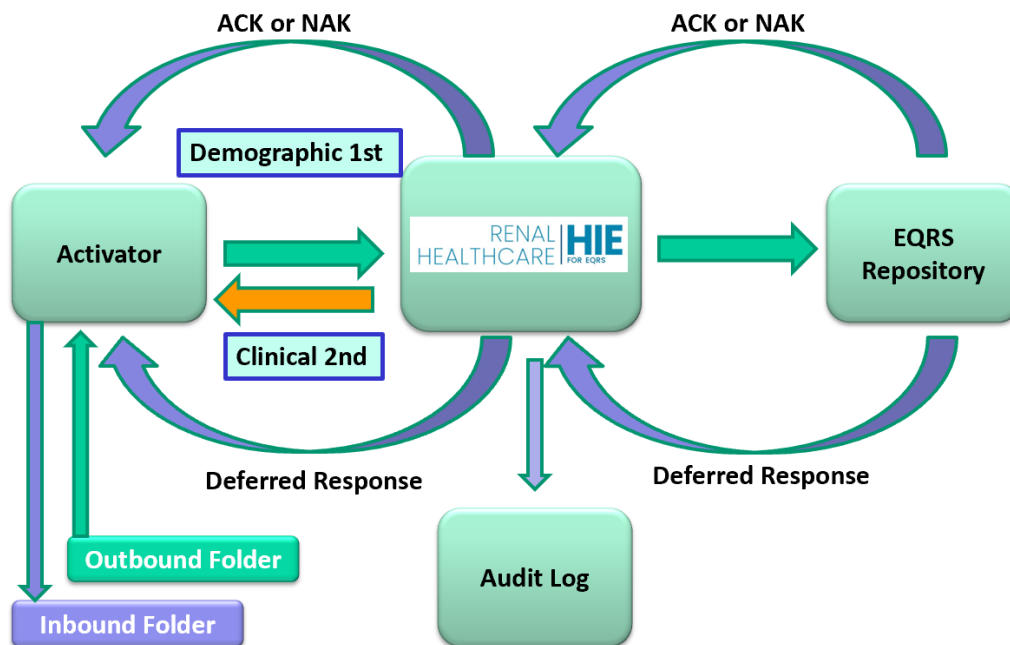
1. EQRS data files are loaded in the Activator Outbound folder that encrypts and sends the files (messages) to the Renal Healthcare HIE Hub.
    a. Patient demographic files must be successfully sent to the EQRS repository first to confirm the patient exists in the repository.
    b. Once patient demographic files are successfully submitted then the clinical data records can be submitted.
    c. Form 2728 and 2746 are also submitted following successful submission of a patient demographic file.
2. The Renal Healthcare HIE Hub stores a copy of the received message's **meta data** in the audit log. The Audit log is stored on the Renal Healthcare HIE Hub. The demographic, clinical and administrative messages are encrypted during transport and are not accessible to HIE staff.  Message handling is done programmatically by the Hub systems.
3. The Renal Healthcare HIE HUB performs the following processes for each message:
    a. Programmatically decrypts the message from the facility or vendor.
    b. Tests the message formatting against the current EQRS data map and creates a **ResMPE** (message processing error) if there are formatting errors.
    c. Packages the properly formatted message before sending to CMS and the EQRS repository.
    d. Encrypts the message with the CMS required certificates.
4. The CMS Hub sends a synchronous **ACK** (acknowledgement) message to the Renal Healthcare HIE Hub indicating the file was successfully received and was properly secured.  The CMS Hub sends a **NAK** (negative acknowledgement) if the message security does not meet requirements or if the CMS system is down.
5. The Renal Healthcare HIE Hub forwards the **ACK** or **NAK** message (for each submitted file) to the Activator from which the file was originally sent and places it in the secure mailbox for the specific Activator.  The Activator is set up to "poll" the secure mailbox for messages at certain time intervals or when manually requested by the manager of the Activator.  Messages are pulled from the secure mailbox to the Inbound folder in the Activator.
6. When the data files are processed by CMS systems, the EQRS Repository then sends a **Deferred Response** (DefRes) message to the Renal Healthcare HIE Hub.
7. The Renal Healthcare HIE Hub forwards the **Deferred Response** (DefRes) message to the secure mailbox for access by the Activator from which the file was originally sent.  The Activator pulls the Deferred Response from the secure mailbox and places it in the Inbound folder.

## 3.2   Data Submission Messages

As depicted in the data flow diagram above, the Renal Healthcare HIE Hub provides data submission messages that submitters can review in the Message Tracker feature of the Activator.  Examples of messages as they are displayed in the Activator Message Tracker and explanations of the messages are described below.

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**Examples of Successful Messages Displayed in the Activator Message Tracker**

| Document type | Origination | From | To | Status | Original filename |
|---|---|---|---|---|---|
| Receipt | Apr 17, 2012 01:42:28 PM PDT | Satellite Health | OHP | Delivered | |
| Receipt | Apr 17, 2012 01:42:28 PM PDT | Satellite Health | OHP | Delivered | |
| | Apr 17, 2012 01:42:28 PM PDT | OHP | Satellite Health | Delivered | ACK_nraa90004@_SHC_Clinical_HD_MER_13_20120300_20120416.xml |
| | Apr 17, 2012 01:42:28 PM PDT | OHP | Satellite Health | Delivered | DefResS_nraa90004@SHC_Clinical_HD_MER_13_20120300_20120416.xml |
| Receipt | Apr 17, 2012 01:41:39 PM PDT | OHP | Satellite Health | Delivered | |
| | Apr 17, 2012 01:41:37 PM PDT | Satellite Health | OHP | Delivered | SHC_Clinical_HD_MER_13_20120300_20120416.xml |

*ACK*

*Successful Deferred Response*

*Message Delivery Receipt*

**Successful Message Descriptions**

**ACK -** Message accepted by CMS gateway (synchronous response).

**Message Delivery Receipts -** Sent (Activator to the Renal Healthcare HIE Hub) or received (the Renal Healthcare HIE Hub to Activator) for each step in the message flow and are displayed as "Receipt" in the "Document type" column of the Activator Message Tracker screen. Note: Receipts will not display in Message Tracker if the message receipt feature is turned off on the Activator.

**Deferred Response -** Provides information regarding the outcome of the data processing of the file by the EQRS repository. The Deferred Responses are identified by prefixes that indicate the processing outcome. For example, a *DefResS* prefix in the file name of a Deferred Response indicates that the message was *successfully* processed by EQRS.

**Examples of Failed Messages Displayed in the Activator Message Tracker**

| Document type | Origination | From | To | Status | Original filename |
|---|---|---|---|---|---|
| Receipt | Apr 23, 2012 03:43:26 PM MST | codling_act7 | OHP | Delivered | |
| | Apr 23, 2012 03:43:26 PM MST | OHP | codling_act7 | Delivered | ResMPE_Demographic_Structureerror.xml |
| Receipt | Apr 23, 2012 03:43:06 PM MST | OHP | codling_act7 | Delivered | |
| | Apr 23, 2012 03:43:05 PM MST | codling_act7 | OHP | Delivered | Demographic_Structureerror.xml |
| Receipt | Apr 23, 2012 03:40:09 PM MST | OHP | codling_act7 | Delivered | |
| | Apr 23, 2012 03:40:05 PM MST | codling_act7 | OHP | Negative response | SAT_CROWNWeb_Demographic_v4_120711.xml |

*Negative response*        *ResMPE*

**Failed Message Descriptions**

**ResMPE –** Indicates a file format mapping failure at the Renal Healthcare HIE Hub. This file has a significant structural format issue that must be corrected and resubmitted.

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**Negative response -** A negative response (NAK) in the status column indicates that the file was not accepted by the CMS gateway for processing because of a problem with the message security, format or system availability.  Messages receiving a NAK do not receive a Deferred Response.

**Deferred Response –** If the message receives an ACK from the CMS gateway, the file can still fail the EQRS data validation process for a number of reasons. Deferred Responses will be sent for each of the files with one of the below prefixes appended to the original file name and will include appropriate error codes (and error descriptions) contained within the Deferred Response message.  Examples of the Deferred Response prefixes for files containing *errors* follow:

**DefResE** = Error
**DefResF** = Failure
**DefResW** = Warning
**DefResU** = Unknown

## 3.3  Deferred Responses

The final messages received for data submissions are Deferred Responses.  Deferred Responses are produced by the EQRS repository and let the data submitter know whether the data submitted was successfully processed or if there were errors discovered during data processing.

As described in Section 3.2 Data Submission Messages, Deferred Responses will be sent for each of the files that received an ACK from the EQRS repository with one of the below prefixes attached to the original file name.  The Deferred Response includes appropriate error codes (and error descriptions) contained within the Deferred Response message.  Deferred Response file name prefixes and descriptions are listed below:

- **DefResS (Success) -** Indicates a successfully submitted and validated record. Data from this file was recorded to the EQRS repository.
- **DefResW (Warning) -** Indicates record content needs additional clarification to be accepted by EQRS. The message needs additional review to determine whether:
  - o Message is a severity level *"Error"* indicating information needs to be corrected in the record that was originally submitted and then resubmitted to EQRS, or
  - o Message is a *"Warning"* where corrections *are not required*, the information in the submitted file was recorded to the EQRS database and the record *does not* have to be resubmitted to EQRS.
- **DefResF (Failure) -** Indicates a data error that results from an interruption in EQRS system processing.  The data file will need to be resubmitted.
- **DefResE (Error) -** Indicates a file format mapping failure at EQRS. This file has a significant structural format issue that must be corrected and resubmitted. The Deferred Response provides detailed information about where the formatting error exists.

- **DefResU (Unknown) -** Indicates the file failed processing due to an unspecified interruption. The data file will need to be resubmitted.

## 3.4 Data Error Codes

Data error codes (and error descriptions) are contained within the Deferred Response message for every patient demographic, clinical and administrative record received and processed by the CMS/EQRS repository. Data error codes are generated when data content submitted in the patient demographic, clinical or administrative record do not meet the requirements of the repository's business rules or system processing logic.

A full listing and description of the EQRS data error codes may be accessed on the Renal Healthcare HIE Vendor website. The list is organized by patient demographic, clinical, Form 2728 and Form 2746 data error code types.

The sample Deferred Response message below displays the presentation of the data error code and the accompanying error message in an actual Deferred Response message received in the Activator Inbound folder. Many Renal Healthcare HIE Certified EHR vendor software applications programmatically retrieve this information from the Deferred Response message and present it in an error report for data submitters' use in correcting errors.

### Deferred Response Data Error Code Example



**Data Error Code and Message in the Body of the Deferred Response**

## 3.5   Data Error Handling

The CMS/EQRS repository will not accept patient demographic, clinical or administrative data records that contain errors.  Errors reported in the Deferred Responses must be reviewed and the source of the error corrected.  Once the error is corrected, then the record may be resubmitted to the CMS/EQRS repository for reprocessing.  The following information provides suggestions for triaging and handling data errors, as well as descriptions of resources, tools and processes for obtaining support.

### 3.5.1   Data Error Triage

Data error triage helps organize and assess errors to best leverage support tools and resources. The suggestions below can be used for triaging Deferred Response error messages.

1. Review the data error code message/s sent in the Deferred Response from EQRS.  The Deferred Response contains the error code and specifically indicates the problem/s with the data file.
2. Examine the original file data fields (where the errors were indicated by EQRS) closely to determine whether there is information:
   a. Missing
   b. Incorrect for that data field. For example, there are words entered in the field such as "pending" or "stand-by" written in by facility staff where only a HICNUM should be entered.
   c. Improperly formatted for a data field.  For example, a lab value is not entered in the proper format for that data field.
3. For "Near Match" errors (this is an error message from EQRS indicating that the system can't match the information provided for the patient in the demographic file against the patient data that already exists in the EQRS system), do the following:
   a. Examine all the data fields in the original demographic data file to check that information is entered properly for that field, i.e. the SSN is entered in the proper format.  If it's not, make the correction to the data then resubmit the data file.  If the information is entered correctly and the file continues to fail submit a Renal Healthcare HIE Support Request.
   b. A Tier Two Support Agent from the CMS Quality Support Help Desk (see Support Matrix below) will work directly with the data submitter to identify the patient in EQRS and investigate why the patient demographic file submission is failing.
4. Follow the same investigation processes for all other data error messages that have a severity level of *error* in the Deferred Response, make appropriate corrections to the data in the EHR system, generate a new file and resubmit to EQRS.
5. Data files need to be corrected and resubmitted to EQRS until the data is successfully processed. Note: The repository will overwrite any previous data submitted for a patient during the clinical reporting period *with the latest corrected data submitted for that patient.*

### 3.5.2    Support Matrix

The Renal Healthcare HIE hosts a website with data error handling guides and a web form for submitting the Renal Healthcare HIE support form. The web form will facilitate (by issue type) the routing of a support form to Renal Healthcare Association Administration, the CMS Quality Support Help Desk, or Renal Healthcare HIE OperationssSupport based on the categories outlined in the Support Matrix shown below.

| Problem or Question | Customer Support | | |
|---|---|---|---|
| | Renal Healthcare Association Administration<br>hiesupport@renalexchange.com | CMS Quality Support Help Desk (EQRS)<br>**Phone:**<br>(866) 288-8912<br><br>**E-mail:**<br>cmsqualitysupport@servicenowservices.com | Renal Healthcare HIE Operations (OneHealthPort)<br><br>Renal Healthcare HIE Support Request |
| **Business and Account Setup Issues** | | | |
| **Renal Healthcare HIE Contract** | ✔ | | |
| **Renal Healthcare HIE Contract – Special Terms** | ✔ | | |
| **EQRS Accounts –** *Information, account set-up, and support* | | ✔ | |
| **Renal Healthcare HIE User Account setup –** *Password and account issues* | | | ✔ |
| **Facility Registration –** *Questions regarding registration of contracted facilities to submit data through the Renal Healthcare HIE* | | | ✔ |
| **Non-Certified EHR Vendors –** *Questions regarding EHR vendors not certified by the* | ✔ | | |

| | | | |
|---|---|---|---|
| *Renal Healthcare HIE supporting contracted dialysis organizations* | | | |

## HIE Technical Connectivity

| | | | |
|---|---|---|---|
| **Renal Healthcare HIE Activator and EQRS Data Submission Technical Set-up** *– Request for assistance from the Renal Healthcare HIE technical support team* | | | ✔ |
| **ACKS/NAKS –** *Assistance with troubleshooting receipt of ACKS or NAKS from the CMS gateway* | | | ✔ |
| **Deferred Response Message Receipt** *– Assistance with troubleshooting receipt of Deferred Responses from the EQRS system* | | | ✔ |
| **System not responding –** *Data submission or ping to Renal Healthcare HIE Hub* | | | ✔ |

## EQRS Data Submissions

| | | | |
|---|---|---|---|
| **Data Error Codes** *– Assistance with interpretation of error codes (and description of errors) received in the Deferred Response messages from the EQRS system* | | ✔ | |

### 3.5.3    Support Request Web Form

The Renal Healthcare HIE hosted support request web form gathers user information, the issue category and the issue description. Based on the category, the support request information is emailed to the appropriate support entity (described in the Support Matrix) to assist the requester.  If the requester selects "other" it will be reviewed and routed to the appropriate support entity by the Renal Healthcare HIE Operations Support staff.

The support request web form can also be used by Renal Healthcare Association Administration, CMS Quality Support Agents, CMS/EQRS teams and Certified Renal Healthcare HIE EHR Vendors to transfer or create tickets with the Renal Healthcare HIE Operations Support team.

The Renal Healthcare HIE support request web form can be accessed using the link below:

http://www.formstack.com/forms/?1228399-P1hy2crrdK

# 4   EHR Vendor Certification Process

The Renal Healthcare HIE and CMS facilitate a series of certification tests for electronic health record (EHR) vendors to validate readiness for data submissions through the Renal Healthcare HIE to EQRS.  The Renal Healthcare HIE welcomes EHR vendor technical teams that will implement connectivity with the HIE and test sample messages against a standard validation process before sending the messages to the CMS EQRS test environment for certification. Outlined below are the steps involved with the certification process.

1. EQRS data file build-out
2. Establishing connectivity to the Renal Healthcare HIE
3. Certification testing
4. Certification approval

## 4.1   EQRS Data File Build-Out

The first step in the Renal Healthcare HIE Vendor Certification process begins with the build-out of the EQRS data files. All past and current schema releases for the EQRS data set are posted in zip files on the Renal Healthcare HIE website as well as other informational source documents such as the Kidney Data Dictionary and sample files. EQRS data files are limited to a 10K size to allow for application of a SOAP/SAML wrapper at the Renal Healthcare HIE Hub engine and keep within the EQRS data file processing limit of 35K. Vendors are encouraged to build-out the data files using an incremental approach, and in the following order, to best understand the construct and logic of this data set:

1. Patient demographic file

2. Basic clinical file - incorporating the required segments of the EQRS schema

3. Clinical files by collection type – Hemodialysis, vascular access and peritoneal

Creating clinical files by collection type is important for Renal Healthcare HIE data submissions because of the one clinical record per patient data submission requirement. For example, if a patient had two or more collection types during the month there would have to be two or more individual clinical files (one containing each collection type) submitted for the patient.

The collection types are noted in the EQRS Schema and are derived by matching the <u>clinical period</u> to a patient treatment record and then using the treatment record's <u>dialysis</u> type as follows:

- capd = continuous ambulatory peritoneal dialysis  (PD)
- ccpd = continuous cycling peritoneal dialysis (PD)
- other = peritoneal (PD)
- hemodialysis = hemodialysis (HD)

### 4.1.1    Concatenated Convention for EQRS Data Fields

In addition to the requirements set forth in the EQRS schema, Renal Healthcare HIE EHR vendors are also required to incorporate a special concatenated convention for several data fields that resolves a known data logic constraint in EQRS. Below is the background explanation and instructions for use of a concatenated data convention as a work around for the constraint.

#### *4.1.1.1    Background*

In September of 2012, EQRS observed the occurrence of what was thought to be mismatched Deferred Responses or Deferred Responses sent back for different patient data submissions. Upon investigation it was discovered that the EQRS system was using two fields in the EQRS data files (*orgAffiliation* and *OrgPatientID*) to determine "patient uniqueness" and the problem was inadvertently created by the way the system logic could not account for multiple submitters assigned under the same identifier in the *orgAffiliation* field for Renal Healthcare HIE data submitters.

When EQRS processes the submitted files the system looks at the *orgAffiliation* and the *OrgPatientID* fields to determine a "unique patient". Because the Renal Healthcare HIE has different vendors, facilities, and organizations submitting data using the CMS assigned *orgAffiliation* identifier 125, the *OrgPatientID* **could end up not being unique** in all cases because two different facilities could have the same *OrgPatientID*.  When this occurs, the result is overwriting of entire patient information in the EQRS database.

### 4.1.1.2 Problem Solution

The Renal Healthcare HIE and the EQRS teams came up with a solution **to concatenate the Renal Healthcare HIE Facility Identifier to the value assigned from the EMR for the OrgPatientId field in the EQRS data files**. Programming use of this concatenated convention for the data in this field creates "uniqueness" for the patient demographic and clinical files and thus prevents the data overwriting problem.

**Problem Solution:** In the OrgPatientID field of the xml files use the concatenated convention "orgFacilityCode-orgPatientID". The orgFacilityCode field of the EQRS data files is to be populated with the submitting facility's Renal Healthcare HIE Facility ID, e.g. nraa10003009. The field may contain alpha, numeric and special characters. The only restriction to this concatenated data is that the OrgPatientID field of the schema is limited to 30 characters.

**Sample:** orgFacilityCode = nraa10003009 and *Old* orgPatientID = 12345678. Using the concatenated convention the *New* orgPatientID would look like the following:

<div align="center">

**nraa10003009-12345678**

</div>

**Note:** Use the full Renal Healthcare HIE Facility ID (including the nraa). Use of the hyphen is optional between the two identifiers.

There are two other fields in the EQRS data files that also require use of a concatenated convention to create the "uniqueness" required by the EQRS data repository. The fields are the **admitDischargeUniqueID** and the **modalityID**.

If the EMR system does not currently incorporate a method to track and identify each admitDischarge or Modality for a patient, a suggested method to do this and reduce the risk for the patient data overwriting issue is to incorporate a sequential number or letter to the end of the convention such as "n" or "-n".

Below are the fields in the EQRS files where the concatenated convention is to be implemented:

| |
|---|
| **orgPatientID** in the patient demographic xml (crown-patient.xsd) |
| **orgPatientID** in the clinical xml (crown-clinical.xsd) |
| **admitDischargeUniqueID** in the Admit Discharge section of the patient demographic xml (crown-patient.xsd) |
| **modalityID** in the Modality (treatment record) section of the patient demographic xml (crown-patient.xsd) |

## 4.2   Establishing Connectivity to the Renal Healthcare HIE

The second step in the process for vendor certification is to establish connectivity to the Renal Healthcare HIE. The Renal Healthcare HIE supports a connectivity approach that uses a secure communication channel and data encryption to deliver messages to the HIE where messages are then routed to CMS for processing in the EQRS data repository.

The Renal Healthcare HIE Connectivity Implementation Guide is provided to vendors and contracted Renal Healthcare HIE customers for their reference in planning for and setting up connectivity.

## 4.3   Renal Healthcare HIE Certification Testing

The third step in the Renal Healthcare HIE Vendor Certification process involves testing the EQRS data files.  The purpose of this testing is to ensure vendors demonstrate the ability to conform to file format requirements for the patient (demographic), clinical and administrative files designed for collecting and reporting data to the EQRS repository.

Testing is done in three phases, the first phase for data format conformance, the second phase for data content and business rule (logic) application and the final or third phase to demonstrate full end-to-end submission of data to the EQRS production environment.

The certification testing process can take anywhere from two to six months depending on resource availability of the vendor, Renal Healthcare HIE technical staff and availability of the EQRS test environment. Vendors who have completed the EQRS data file build out and are ready to begin testing can submit a Renal Healthcare HIE support request to notify the Renal Healthcare HIE they are ready to begin testing.

### 4.3.1   Phase 1 – Data Format Conformance Testing

The Renal Healthcare HIE for EQRS data file format conformance testing consists of preparing the data files for extraction from the electronic medical record (EMR) system and submitting test files for comparison against the specification standards set forth in the current EQRS schema.  The steps below describe the process for this phase of the certification testing.

**Step 1:** The Renal Healthcare HIE will send designated individuals from the testing organization an email with a link to set up a secure mail account for use in sending the test files to the Renal Healthcare HIE technical consultants.

**Step 2:** The testing organization will prepare sample data files for submission via the secure mail system to the designated contact at the Renal Healthcare HIE. Individual files must be prepared for each demographic file sent for file format conformance analysis as well as a clinical file for each clinical modality type. **Reminder! Sample data files must contain anonymous patient information. Files _should not_ include personal health information (PHI).**

**Step 3:** The testing organization will use a three or four letter acronym (typically an acronym that is used for their business) for use in naming sample files for submission. The acronym should be used in the Renal Healthcare HIE EQRS sample file naming convention that follows:

ABC_EQRS_Clinical_v1_mmddyr
ABC _EQRS_Demographic_v1_ mmddyr

The areas highlighted in yellow are those areas of the naming convention that change with each testing organization (the acronym, example = ABC) and iteration of the test file/s submitted (the version of the test file numbered sequentially and the date of that file submission).
The test file process follows:

**Phase 1- File Format Conformance Testing Process:**
- Testing organizations are asked to start conformance testing by submitting several sample _demographic_ files that have all the file segments fully built out to the Renal Healthcare HIE technical team (through the secure mail system).
- Testing results will be sent to the organization for analysis and use in making corrections to the data files.
- Any errors identified in the demographic files should be fixed then another iteration of sample files should be submitted for testing.
- When testing is successfully completed for the demographic files then the testing organization will be instructed to submit _sample_ clinical files for testing.
- The organization will use the same process for testing clinical and administrative (i.e. Form 2728) file formatting conformance as was used for the demographic file testing.
- Once the organization successfully tests the demographic, clinical and administrative files for formatting conformance then the organization will be promoted to Phase 2 testing.

Note: The Phase 1 testing process can take up to two to three weeks.

### 4.3.2   Phase 2 – Data Logic and Business Rule Application Testing

The EQRS data logic and business rule application conformance testing is performed by the testing organization using the EQRS training (test environment). The EQRS training environment

is only available for testing at times designated by CMS. Therefore, the Renal Healthcare HIE will coordinate this testing with CMS and the testing organization to ensure the EQRS environment is ready and the organization has the test information needed for use in the data files.

Testing patient demographic, clinical and administrative test files in the EQRS training environment provides the testing organization an opportunity to process test files and receive actual Deferred Responses containing messages that will assist the organization in correcting logic and business rules application in the programming of their EQRS data files. The preparation processes and recommended approach to the Phase 2 testing is outlined below.

### Patient (Demographic), Clinical and Administrative File EQRS Identifiers

To prepare for the Phase 2 testing, the testing organization must update several fields in the patient (demographic), clinical and administrative files.  Specifically, there are several unique identifiers in the file sets that need to be added to your message formatting so the files can be successfully submitted to EQRS.  To help you understand the identifiers, below is an explanation of the identifiers and how they are used in the submission process.

**Organization Affiliation ID:**  This number is assigned by CMS to the submitting entity, in this case, the Renal Healthcare HIE.  It will always be the same as the testing organization's customer submits data via the Renal Healthcare HIE.  That number is 125 for the Renal Healthcare HIE.  This field is in the SOAP/SAML wrapper that the Renal Healthcare HIE adds to the EQRS messages at the Hub engine.  The Kidney Data Dictionary (KDD) reference is:

> *Crown-demographic.xsd   Demographic   orgAffiliation   OrganizationAffiliation RQMT_1135  Use "125"*

> *Crown-demographic.xsd   Demographic   orgAffiliation   OrganizationAffiliation RQMT_1135  Use "125"*

> *Crown-clinical   Clinical   orgAffiliation   OrganizationAffiliation   RQMT_1135   Use "125"*

The Org_Affiliation_ID will be 125 in both test and production systems for all Renal Healthcare HIE data submissions.

**Organization Facility Code:**  This number is assigned by the Renal Healthcare HIE to each submitting entity (facility or vendor depending on who actually will do the data submission) in order to identify uniquely for CMS, each entity that can submit documents via the Renal Healthcare HIE to EQRS.  This field needs to be added to both the patient (demographic), clinical and administrative files in the following field.  This is an alphanumeric field not to exceed 30 characters.

The KDD reference is:

*crown-clinical.xsd PatientClinical orgFacilityCode xsd:string Organizational Facility Code RQMT_14*

The organization facility code along with other EQRS identifiers for submitting facilities is reported by the Renal Healthcare HIE to CMS each week to populate the facility files in the EQRS system. The information is reported to the EQRS system to verify the facility is approved to submit data. The Renal Healthcare HIE hosts a web application on the Renal Healthcare HIE website for organizations to enter new facilities and update data for existing facilities.

**Phase 2- Data Content and Business Rule Application Testing Process:**

- The CMS and the Renal Healthcare HIE technical teams will provide the ***testing* facility, patient and provider information and identifiers to the organization for use in preparing the sample data files for the Phase 2 testing.**
- Testing organizations start data content and business rule testing by submitting several sample ***demographic*** files that contain properly formatted data content and application of business rules to the EQRS training environment using their Activator.
- Deferred Responses for the files submitted will be sent back to the Activator. The testing organization can analyze the messages in the Deferred Responses to determine what errors occurred and make the appropriate corrections.
- Any errors found in the demographic files should be fixed then another iteration of sample files should be submitted to the EQRS training environment.
- When the testing organization receives successful Deferred Responses for the demographic test files submitted, they can then proceed with testing their clinical files.
- When starting the process to test the sample clinical files, ***a demographic file should be submitted first, followed by the clinical file.*** The reason for this is that the EQRS system must first successfully receive a demographic file first to confirm the patient in the database and then after the patient demographic file is successfully submitted the clinical files may be submitted. (See description of EQRS data submission flow in Section 3.1.)
- The first clinical file modality type that should be submitted for testing is a fully built out hemodialysis (HD) file.
- When this clinical file modality type is successfully processed, then testing organizations are encouraged to proceed with submission of the other clinical file modality types (with the accompanying demographic files) – peritoneal dialysis (PD) and vascular access (VA) clinical files. ***Tip:*** See the Renal Healthcare HIE website for the link to samples of clinical files built out by these various collection types for reference during the clinical file development and testing processes.

- Once the organization successfully tests both the demographic and clinical files for data content and business rule conformance then the organization can proceed with testing any administrative data files they choose to build out.
- When all data file types have been successfully tested and the testing results reviewed and approved by the Renal Healthcare HIE Project Director, the organization will be promoted to Phase 3 - End to End Certification testing.

Note: The Phase 2 testing process can take from two to eight weeks or longer depending on the availability of the EQRS training environment.

### 4.3.3   Phase 3 – End-to-End Certification Testing

When the testing organization successfully completes the EQRS data file format conformance, and data logic and business rule testing (Phase 1 and Phase 2 testing) they are then promoted to the third phase of testing – end-to-end certification testing.

Phase 3 certification testing involves a full end-to-end test of the data submission capability between the organization and the EQRS production environment. This testing confirms that:

- The Renal Healthcare HIE can successfully receive and prepare data from testing organization customer facilities to then send to the EQRS data repository.
- The testing organization Facility identifiers have been registered with CMS by the Renal Healthcare HIE so the new submitter will be recognized by CMS.
- At CMS the message will be properly identified at the gateway and the server will respond immediately (synchronous response) with an ACK or NAK for each message received from the Renal Healthcare HIE.
- The Renal Healthcare HIE will deliver the ACK or NAK to the submitting testing organization or facility to confirm document arrived at CMS.
- At CMS the message will be delivered from the connectivity gateway to the EQRS repository backend system where it will be processed and an asynchronous Deferred Message response will be created and delivered back to the Renal Healthcare HIE.
- The Renal Healthcare HIE will accept the Deferred Response message and route it back to the submitting facility or testing organization for the submitted document.
- The Production implementation of the new vendor software performs as expected after transition from the testing environment.

**Preparing for End-to-End Testing**

The final end-to-end certification testing will occur in the EQRS production environment. ***Testing organizations are required to use actual patient data and must work with a customer facility that is contracted with the Renal Healthcare HIE for access to the patient data for testing.*** If

the testing organization does not have a facility contracted with the Renal Healthcare HIE, they can request assistance from Renal Healthcare HIE staff to work with the facility to execute a Renal Healthcare HIE Participation Agreement.

Once the facility's Renal Healthcare HIE Participation Agreement is in place, the Renal Healthcare HIE technical team will coordinate the testing session with the testing organization and CMS. The testing takes approximately 30 minutes and will be hosted and facilitated via web session by the Renal Healthcare HIE technical team and observed by CMS staff. The testing organization will need to follow the processes below to prepare for the final testing.

**Phase 3- End-to-End Certification Testing Process:**

1. Prepare sample files.
    a. Sample files (demographic, clinical and administrative) need to use the numeric orgAffiliation (125) and orgFacilityCode identifiers provided by the Renal Healthcare HIE for each facility's data submitted for testing. See *Preparation of Patient (Demographic), Clinical and Administrative File EQRS Identifiers* in Section 4.3.2 above for more information about these identifiers.
    b. Organize a set of 23 demographic and accompanying clinical files that provide for a variety of modalities for use in the testing.

2. Organize for the testing process
    a. The scenarios emulated during the testing process follow:
        i. Test submitting data from an unknown facility (the facility is not on the approved list in the EQRS system and thus cannot be confirmed as an approved facility during the data file processing).  This test should create an error message and the error will be sent back with the Deferred Response from the EQRS system.  **Instructions:** Prepare one file for this test scenario and insert an orgFacilityCode that contains any random mix of alphanumeric characters not to exceed 15 characters in the test file.
        ii. Test submitting a clinical file (a clean, actual patient file, using the facility's actual Renal Healthcare HIE orgFacilityCode) *before the demographic file for that same patient is submitted* – this should initiate a Deferred Response error message for this clinical file indicating that the patient could not be identified. **Instructions:** Prepare one clinical file for this test scenario.
        iii. Test a clinical file on a patient with an incorrectly formatted SSN – this should produce a Deferred Response message for a "mapping error" indicating the file content was improperly formatted. **Instructions:** To create this error, prepare one demographic file with an SSN that has a letter, symbol or > 9 or < 9 digits in the field.

iv.   Test the remaining files (properly formatted and with correct identifiers). Prepare actual demographic, clinical and administrative (if building out administrative files such as the Form 2728 in the testing organization application) files that have variety with respect to patient type and modality, etc.).  **Instructions:** Allocate 20 file sets for this test scenario.

v.   Test data submissions, ACKs and Deferred Response messages should process as expected and similar to the processing experienced in the EQRS training environment of the Phase 2 testing.

## 4.4   Certification Approval

The final step in the Renal Healthcare HIE Vendor Certification process is certification approval.  Upon completion of the end-to-end testing, the results are provided to the Renal Healthcare HIE administrative staff and CMS for review and the final approval.  The final approval review takes typically one to two business days.

When approved, the newly certified testing organization;

- Receives certification logos and communication specifications from the Renal Healthcare Association for use in marketing and promotional materials.
- May offer the EQRS data submission capability in their EMR products to current and existing customers.
- Will participate in on-going EQRS sponsored Schema release and testing meetings as a member of the Renal Healthcare HIE community participating in electronic EQRS data submissions (EDI EQRS data submitters).

# 5   Renal Healthcare HIE Certified Vendor Roles

The Renal Healthcare HIE Certified EHR vendors play a key role in promoting and supporting electronic EQRS data submission capability to prospective and current customers. The sections below provide an overview of these roles.

## 5.1   Customer Onboarding to the Renal Healthcare HIE

Customers interested in using the electronic data submission capability in the EHR application, to reduce time spent manually submitting EQRS data and streamlining the data submission process, must execute

a Renal Healthcare HIE Participate Agreement. Certified vendors can do the following to assist customers in onboarding with the Renal Healthcare HIE:

1. **Participating in the Renal Healthcare HIE** – Vendors can direct interested customers to the Renal Healthcare HIE website for information about the Renal Healthcare HIE Participation Agreement. The website provides information and also web portal applications for automated contracting and facility registration processes.
2. **Renal Healthcare HIE Facility Identifiers** - When the customer executes a Renal Healthcare HIE Participation Agreement, Renal Healthcare HIE facility identifiers are assigned for all registered facilities. Certified vendors can assist customers in setting up these identifiers in the customer's instance of the EHR application to populate the *orgFacilityID* section of the EQRS xml files.
3. **Renal Healthcare HIE Data Submission Set-up and Training** –
   a. **Set-up:** - Certified vendors can choose to host the Activator connectivity for the EQRS data submission process via the Renal Healthcare HIE for their customers or they can require their customers manage the Activator connectivity in their organization's environment. The Renal Healthcare HIE can support either option. It is up to the vendor to work with the customer to decide on the best connectivity and data submission strategy and then engage the Renal Healthcare HIE technical team to assist with connectivity set-up accordingly.
   b. **Training –** Certified vendors are responsible for training the customer on the use of the EHR system's EQRS data submission functionality. The Renal Healthcare HIE technical team is also available (if the vendor and customer choose) to provide a high-level overview of the EQRS data submission process that complements the EHR system training offered by the vendor.

## 5.2  Certified EHR Vendor EQRS Data Submission Support

As presented in the Support Matrix in Section 3.5.2, Certified EHR vendors offer important support to their customers for the EQRS data submission process. In addition to set-up and training vendor support includes:

- Educating customers about the appropriate use of the fields in the EHR application to collect the EQRS data.
- Assisting in workflow design and analysis for data collection.
- Assessing proper presentation of the data in the EQRS format prior to submission.
- Interpretation of data error messages contained in the Deferred Responses received via the EQRS data submission process.
- Identifying solutions and making corrections to EQRS data files for resubmission.
- Educating customers for changes made to EQRS data files or EHR applications that result from EQRS Schema releases.

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## Document History

| Version | Date | Update Origin | Written by |
|---------|------|---------------|------------|
| 1.0 | 1/31/2012 | Initial draft | Kelly Llewellyn |
| 1.1 | 2/1/2012 | Process edits, approvals and promotion to production | Sue Merk |
| 1.2 | 2/1/2012 | NRAA approval of initial document | Howard Thomas |
| 2.0 | 12/17/2014 | Updated to provide new information about the certification process and the changes for Phase 2 data testing | Kelly Llewellyn |
| 3.0 | 11/9/2020 | Update for EQRS | Kelly Llewellyn |
| 4.0 | 1/17/2021 | Updated for Renal Healthcare branding | Kelly Llewellyn |

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