Basic Clinical Event Notification (CEN)
Specification

Version 1.9

Healthix

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March 31, 2015

Table of Contents

Revision History

Version	Date	Author	Comments
1.0	March 6, 2015	Nathan Hardesty-Dyck	Create initial document. Source document: NYeC Subscribe Notify Specifications (DOC-0140 V1.2)
1.1	March 30, 2015	Nathan Hardesty-Dyck	Update with interim notes
1.2	March 31, 2015	Nathan Hardesty-Dyck	Update with new SFTP location
1.3	May 19, 2015	Naitik Patel	Customize for CMC Specs only
1.4	June 18, 2015	Naitik Patel	Updated Subscription Method
1.5	August 13, 2015	Naitik Patel	Updated Subscription Method
1.6	August 27, 2015	Naitik Patel	Updated triggers
1.7	March 7, 2016	Naitik Patel	Updated triggers
1.8	April 29, 2016	Naitik Patel	Updated Direct Notification
1.9	July 6, 2016	Naitik Patel	Added Changes

1 Overview

Healthix supports a Clinical Event Notification (CEN) service that allows clinicians who are affiliated with a Healthix participant to create subscriptions to events affecting their patients, such as admissions to and discharges from any of Healthix's other acute care participants, and to receive descriptions of these events via real-time notifications.

Periodically, the CEN participant supplies Healthix with a subscription file for the patient(4th Quarter 2015) on patient demographic/clinical information(current) which will trigger the CEN notification for the patient.

The Healthix H2O CEN service will use Clinical Message Center (Current) or Direct Messaging (1st Quarter of 2016) as delivery methods to send event notification alerts depending on the choice of service participant selected during the implementation of CEN program with Healthix.

The items described in this specification are requirements that must be satisfied before the CEN service can be activated for a participant.

2 Technical Description

Healthix processes the participant's subscription file and creates subscriptions that detect patient-related events at any Healthix participant.

The whole CEN process from setting up subscription to receiving notification can be broken into three major components: Subscription, Trigger and Notification.

For the subscription file, Healthix parses the file to validate its content and configures the relationships that will determine when a notification will be sent back to the participant.

Healthix generates a notification when a patient event is detected in an incoming interface message and a subscription for this patient is found. Healthix then builds and routes the notification to the subscribing participant via the Clinical Message Center (CMC) or Direct Messaging (4th Quarter 2016).

2.1 Subscriptions

2.1.1 Subscription File
The subscription file is a comma-separated value (csv) format that contains the following information:

- List of patients
- Programs to which a patient belongs (Optional)
- List of clinicians who want to receive CENs for events pertaining to the listed patients (optional)

The subscription file must have a file name extension of `.csv` and should follow the naming convention, `<Facility>_<Date>` (e.g. `NSLIJ_013112.csv`).

The file contents must be comma-separated values, with each row containing the following values:

```
AssigningAuthority,PatientMRN,Program,ClinicianID,ClinicianFirstName,ClinicianLastName
```

Any data after the sixth parameter (`ClinicianLastName`) is ignored and removed during file processing. Do not include quotation marks around any of the parameters.

File Parameters

The following table describes each parameter of the subscription file.

Parameter	Req/Opt	Description	Data Type
AssigningAuthority (Facility Code)	Required	This identifies the facility (e.g., MSMC). The AssigningAuthority is the facility that owns the MRN. Healthix uses the facility code and MRN to identify the patient within Healthix's database. **Note**: At implementation, Healthix will provide the participant with the facility code to be used for their subscriptions. An incoming subscription file that contains assigning authority codes that have not been previously defined will be rejected by Healthix.	String
MRN	Required	This is the assigning authority's Medical Record Number (MRN) that identifies the patient for whom the subscription is created. Healthix uses the facility code and MRN to identify the patient within Healthix's database.	String
Program	Required	The AssigningAuthority name must be prepended to the Program name (e.g. `MSMC_Diabetes`). The code is a string that can include underscores but cannot include blank spaces. There is no limit to the string length. If multiple programs are included in the same subscription file, the file must be sorted by program name. For example, all subscriptions for ProgramA are listed, followed by all subscriptions for ProgramB. Unique patients may have subscriptions in one or more programs.	String
ClinicianID	Required or Optional	A unique identifier at the participant (e.g. the clinician's EMR ID) that identifies the clinician who should receive the notification message. For **Clinical Message Center (CMC)** Notification delivery implementations: • This ID is **required**, as Healthix uses this ID to identify the Healthix CMC user • The ClinicianID is the Healthix clinician number, an ID assigned when creating Healthix user accounts. During implementation, Healthix creates user accounts for clinicians receiving CMC notifications	String
ClinicianFirstName	Optional	If Healthix cannot find the ClinicianID in its registry of users or if the ClinicianID is missing, Healthix uses ClinicianFirstName and ClinicianLastName to look up the appropriate user.	String
ClinicianLastName	Optional	See **ClinicianFirstName**.	String

Note that 180 days after the date that Healthix processes this subscription file, each subscription expires. If the participant sends Healthix a new subscription file at any point, any previous subscriptions for that participant that are new subscription file are updated and not replaced as the new subscription file is processed.

Example Subscription File – CMC Delivery
The following example subscription file illustrates the use of the parameters described above for CMC delivery of notifications:

Line number	Example CMC Delivery file name: MSMC_122112.csv
1	MSMC,123456,MSMC_Diabetes,testuser1,John,Smith
2	MSMC,254367,MSMC_Diabetes,TUser01,John,Smith
3	MSMC,254367,MSMC_Diabetes,npatel,Roger,Updike
4	MSMC,254367,MSMC_Diabetes,User09,Peter,Vonce

The example assumes the following:

- John Smith, Roger Updike, and Peter Vonce are clinicians at MSMC
- `Diabetes` is the name of a program at MSMC
- `123456` and `254367` are patient MRNs at MSMC
- `testuser1,TUser01..  Clinician's User ID`

Each line of the example file creates a CEN subscription:

- Line 1 indicates that John Smith receives a notification when the patient with MRN 123456 has an event
- Lines 2, 3, and 4 indicate that John Smith, Roger Updike, and Peter Vonce receive notifications when the patient with MRN 254367
    - When multiple clinicians have a subscription with the same AssigningAuthority, PatientMRN, and Program and when an event occurs for the patient, Healthix generates a notification to each subscribing clinician

Subscription File Processing

During implementation, Healthix provides credentials to the participant to enable the participant to access the secure FTP (SFTP) site, used to submit the subscription file. Every business day, Healthix uploads any new subscription file for the participant.

Subscription file upload process:

1. Using an FTP client (e.g. WinSCP), establish a connection to the Healthix FTP site using the SFTP protocol (`sftp:\\`)
    a. The Healthix SFTP host name is `sftp.healthix.org` (Port 22)
    b. Healthix provides each participant with a SFTP account and directory during project implementation
2. When prompted, authenticate using the credentials Healthix assigns during implementation
3. Transfer the subscription file to the directory that opened upon logging into the FTP site
4. Log out of the FTP site

Subscription file processing (Healthix):
Note that processing occurs within Healthix and not all processing steps may be listed here. These steps are included for reference.

1. Healthix updates expiration date of any existing subscriptions during the processing of the new subscription file.

Healthix Clinical Event Notification Specification

2. Healthix checks each patient MRN in the subscription file against Healthix's patient master patient index (MPI). Healthix logs and reports the patients for which it was unable to determine a match within the Healthix MPI
3. Healthix verifies that the participant has valid patient consent recorded within Healthix's database. Affirmative consent is required for the creation of a CEN subscription. Healthix logs and reports all MPI-matched patients included in the subscription file and the consent status of each

Reports of the MPI matching and consent status checks are available from Healthix upon request after subscription file processing completes.

2.1.2 Persistence of Subscriptions

CEN subscriptions persist after creation according to the following rules:

- By default, all subscriptions expire 180 days after the date on which Healthix processes the subscription file or input rule based subscription.
- Each subscription file must contain the complete list of patients to which the participant wishes to subscribe
- Similarly, requesting new rule based subscription will overwrite the previous rule set to trigger CEN. The participant can subscribe to only one rule based subscription at a time.

To maintain patient subscriptions and to keep those subscriptions up-to-date, participants submit subscription files to Healthix on a regular basis. Participants must submit a new subscription file to Healthix at least every 180 days so that subscriptions remain active. Healthix processes new subscription files it receives each business day.

2.2 Trigger Events
Once the subscriptions are setup from Subscription file or Rule Based Subscription, Healthix detects several different types of clinical events, which act as a trigger to generate and send CEN to subscribed users.

Healthix listens for trigger events in from inbound HL7v2 and IHE (PIX) interfaces and cross-RHIO notifications. Following are the list of trigger events that Healthix offers in basic CEN program.

- Emergency department (ED) admission
- ED discharge
- Inpatient admission
- Inpatient discharge
- Patient incarceration; patient release
- Discharged from Skilled Nursing Facility
- Discharged from Skilled Nursing Facility
- Patient enrolled in a CEN program via rule-based subscription method

2.3 Notification Generation and Routing

Once the subscription file is processed, Healthix listens for clinical events relating to the subscribed patients. On receiving trigger event in inbound HL7v2 and IHE (PIX) interfaces and cross-RHIO notifications, Healthix sends notification in form of CMC or Direct Messaging to the clinician identified in subscription process.

1. **Message sent to CMC**
   a. Healthix sends a notification to the clinician's Healthix CMC inbox
   b. Healthix sends an email "tickler" to the email address associated with the clinician's Healthix user account. The tickler email contains a link to the Healthix CMC inbox
   c. The clinician accesses the CMC inbox directly or via the email tickler and then logs into the CMC
   d. The clinician opens the notification within the CMC inbox. The notification links directly to the patient's record within the Healthix Clinical Viewer

Note that sending notifications to the Healthix CMC requires that the user has an active Healthix user account.

2. **Direct Messaging**
   a. Healthix sends a Direct Message to one or more Direct addresses provided by the participant.