+EMS SAFR

(Search, Alert, File, Reconcile)

Technical Documentation

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Notes: (1) some of the links in the document have been disabled; (2) some XML examples require the reader to ‘enable editing’, double click the icon, then use Notepad (Windows) or any text editor to view the example.

SDHC (San Diego Health Connect) SAFR

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# Summary

Paramedics and ED staff can dramatically improve pre-hospital care coordination. The primary goal of the Search, Alert, File, and Reconcile (SAFR) grant was to improve coordination between paramedics in the field and the receiving ED. SEARCH allows paramedics to first check the HIE for patient matches. Then the paramedic has the option to query the HIE for problems, medications, allergies, and encounters and input them into their electronic patient care reporting (ePCR) application. Once a receiving hospital has been assigned, ALERT streams the paramedics narrative findings, EKGs, and vital signs to the ED's electronic medical record (EMR) where they can be viewed real-time by nurses and physicians. FILE streamlines the transition-of-care/handoff process at the ED by electronically transferring the complete National Emergency Medical Services Information System (NEMSIS) record into the hospital EMR. RECONCILE automatically sends updated patient demographics, billing information, and eOutcomes from the hospital back to the ePCR and ambulance agency. To develop and evaluate the SAFR goals, ONC provided funds to California Emergency Medical Services Authority (CAEMSA) which awarded San Diego Health Connect a contract. SDHC manages the community HIE in San Diego and Imperial Counties.

# SEARCH

## Summary

SEARCH allows the paramedic to query the HIE for all problems, medications, allergies, and encounters known to the HIE. The search is performed using an industry standard PIX/PDQ followed by an XDS.b document query and retrieve. The HIE will aggregate all participant documents and return a single structured CCDA to the ePCR.

## High Level Flow

1. The ePCR user will enter relevant patient information into the ePCR and trigger a SEARCH.
2. The ePCR will send A **Patient Discovery Request** message to SDHC.
3. SDHC uses the **Patient Discovery Request** message to query the HIE for a patient list.
4. The HIE will respond with a list of matching patients.
5. SDHC will return a **Patient Discovery Response** message.
6. The ePCR will receive the **Patient Discovery Response** message and display the potential matches on the device
7. The ePCR user will then select the patient from the returned list
8. The ePCR will send a **Document Query Request** message for the selected patient to SDHC.
9. SDHC will use the **Document Query Request** message to query the HIE for relevant clinical data.
10. SDHC will respond first with a **Document Query Response** stating that documents are available to retrieve.
11. If there were documents found in the **Document Query Response** the EMS will then send a **Document Retrieve Response** message. The **Document Retrieve Response** message will contain a Base-64 encoded CDA document. This CDA document will include the list of medications, problems, allergies and encounters (MAPE) for the selected patient.
12. The ePCR then displays the MAPE information to the user. Note: the ePCR may filter some Encounter information.

## Message Relay

* SEARCH messages are sent from to ePCR to SDHC via SOAP protocal
* SDHC and the ePCR vendor needs to exchange production certificates
* Mutual HTTPS authentication is required

## Patient Discovery

Patient Discovery is a SEARCH of the HIE’s MPI by patient demographics to determine if the patient exists in the HIE.

Patient Discovery will be handled through the standard IHE **PDQv3 - Patient Demographics Query HL7 V3** profile.

### Wiki

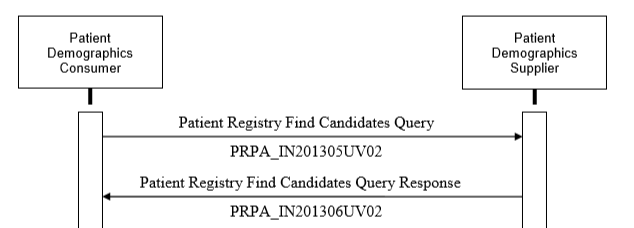
<http://wiki.ihe.net/index.php/Patient_Demographics_Query_HL7_v3>

### Technical Specification

<https://www.ihe.net/technical_frameworks/#IT>

* [Volume 2b: (ITI TF-2b)](https://www.ihe.net/WorkArea/DownloadAsset.aspx?id=1524)
* Section: Patient Demographics Query HL7 V3 [ITI-47]

### Message Flow Diagram



### Message Details

* Messages will be sent via the SOAP protocol
* All incoming requests will include a SAML payload in the message header.
  + The ePCR vendor will be the IDP for the SAML authentication
  + The SAML payload will contain meta-data that identifies the:
    - user name
    - user organization
    - user role
    - purpose for use
* The patient identifier will be returned in the **extension attribute** of the **id** **element**. This patient identifier will need to be used in further messages within the chain.

### Message Examples

#### Request



#### Response



## Document Query

Document Query is a request to receive clinical documents for a patient known to be in the HIE. The patient identifier returned in the patient discovery is required for the document query.

Document Query will be handled through the standard IHE **XDS - Cross Enterprise Document Sharing-b – Registry Stored Query** profile.

### 

### Wiki

<http://wiki.ihe.net/index.php/Cross-Enterprise_Document_Sharing>

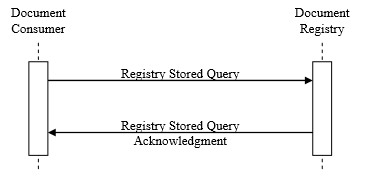
<http://wiki.ihe.net/index.php/Document_Registry>

### Technical Specification

<https://www.ihe.net/technical_frameworks/#IT>

* [Volume 2a (ITI TF-2a)](http://www.ihe.net/WorkArea/DownloadAsset.aspx?id=1525)
* Section: Registry Stored Query [ITI-18]

### Message Flow Diagram



### Message Details

* Messages will be sent via the SOAP protocol
* All incoming requests will include a SAML payload in the message header.
  + The ePCR vendor will be the IDP for the SAML authentication
  + The SAML payload will contain meta-data that identifies the:
    - user name
    - user organization
    - user role
    - purpose for use
* The AdHocQueryRequest must contain a XDSDocumentEntryPatientId slot, which includes the patient identifier which was returned in the **extension attribute** of the **id** **element**.

### Message Examples

#### Request



#### Response



## Document Retrieve

Document Retrieve is a federated SEARCH of the HIE for all documents. The documents are consumed – parsed and the consolidated - into a single CDA and returned Base64 encoded within the message response.

The unique document IDs returned in the Document Request are required for the document retrieve. The document retrieve request will automatically be triggered for all participants in the HIE which returned a document ID in the document query.

Patient Discovery will be handled through the standard IHE **XDS - Cross Enterprise Document Sharing-b – Retrieve Document Set** profile.

## 

### Wiki

<http://wiki.ihe.net/index.php/Cross-Enterprise_Document_Sharing>

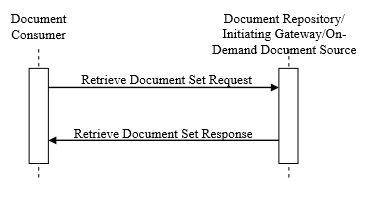
<http://wiki.ihe.net/index.php/Document_Registry>

### Technical Specification

<https://www.ihe.net/technical_frameworks/#IT>

* [Volume 2b: (ITI TF-2b)](https://www.ihe.net/WorkArea/DownloadAsset.aspx?id=1524)
* Section: Retrieve Document Set **[**ITI-43]

### Message Flow Diagram



### Message Details

* Messages will be sent via the SOAP protocol
* All incoming requests will include a SAML payload in the message header.
  + The ePCR vendor will be the IDP for the SAML authentication
  + The SAML payload will contain meta-data that identifies the:
    - user name
    - user organization
    - user role
    - purpose for use
* The CDA document returned within the Document Retrieve Response will have only the medications, problems, allergies and encounters (MAPE) data from the HIE.

### Message Examples

#### Request



#### Response



#### Response – Decoded CDA



# ALERT

## Summary

ALERT will send HL7 messages to the hospital. The HL7v2 messages will fulfill the following:

* Pre-admit of the patient into the ED system.
* Provide the paramedic narrative report, as well as a system generated narrative.
* Provide the ED system with a set of vitals which the paramedic captured while in route.
* If available, provide all EKG images to the ED system.
* Creates flagging for special scenarios such as Trauma patients.

## High Level Flow

1. The ePCR user enters the destination location (one of two UCSD locations for the purposes of this Grant)
2. The ePCR user enters relevant clinical information.
3. The ePCR sends a Nemsis3.4 Message to SDHC.
4. On the first Nemsis3.4 message received for the Patient Care Report #, SDHC will convert the Nemsis3.4 message to an ADT-A05 (Pre-Admit) HL7v2.x message. The ADT-A05 message is then sent to the destination location.
5. For all Nemsis3.4 messages received from the ePCR SDHC will:
   1. Convert relevant clinical information into an ORU-R01 (Unsolicited transmission of observation) message. The ORU-R01 message is then sent to the destination location.
   2. Parse the Nemsis document for data to include in a system generated narrative and also include the paramedic’s narrative in an MDM-T02 message.
   3. If applicable provide EKGs in individual MDM-T02 messages.
6. The ED’s EMR (Epic for the purposes of this Grant) will consume the information and display it in the EMR.

Caveats:

1. If a pre-admit has already been sent to a SAFR hospital and the location from the Nemsis message is changed. An A11 – cancellation message is sent to the initial location.
2. If the first receipt of the Nemsis message occurs after the patient has already arrived at the hospital no pre-admit or alert messages will be sent to the hospital.

## Process Flow

### High Level – Process Flow



## Message Relay

* ALERT messages will be sent to SDHC over HTTPS
  + Production ssl certificates need to be exchange
  + Mutual HTTPS authentication is required
* ALERT messages will be sent from SDHC to the corresponding ED
  + A VPN connection will need to be set up from SDHC to the participant ED
  + HL7v2 messages will be sent over MLLP to an IP/PORT range specified by the participant.
    - A second IP/PORT value can be set for the EKG messages.

## HL7 Messages

The following HL7 messages are sent to the destination ED:

1. Pre-Admit: ADT-A05
2. Vitals: ORU-R01
3. Narrative: MDM-T02
4. EKG: MDM-T02

### HL7 Segments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Segment | Pre-Admit | Vitals | Narrative | EKG |
| MSH | Y | Y | Y | Y |
| PID | Y | Y | Y | Y |
| PV1 | Y | Y | Y | Y |
| DG1 | N | Y | N | N |
| TXA | N | N | Y | Y |
| OBR | N | Y | N | N |
| OBX | N | Y | Y | Y |

#### HL7 Segment Key

For the tables in the MSH segments the following key is used to determine where the data is coming from.

* **Black Bold** – Hard coded value
* **Blue Bold** – ED specified value
* **Green Bold** – System generated value

#### MSH

All messages use the same format for the MSH Segment.

|  |  |  |
| --- | --- | --- |
| **segment** | **value** | **example** |
| 1 | **MSH** | MSH |
| 2 | **^~\&** | ^~\& |
| 3 | **Hub** | Hub |
| 4 | **Hub** | Hub |
| 5 | **Receiving Source** | EPIC |
| 6 | **Receiving Facility** | UCSD |
| 7 | **Date** | 20170101 |
| 8 |  |  |
| 9 | **ADT^A05** | ADT^A05 |
| 10 | **Control ID** | 1 |
| 11 | **P** | P |
| 12 | **2.2** | 2.2 |

#### PID

All messages use the same format for the PID Segment.

|  |  |  |
| --- | --- | --- |
| **segment** | **value** | **example** |
| 3.1 | **unique ID** | 1038545506 |
| 3.5 | **EMSHUB** | EMSHUB |
| 5.1 | **last name** | Smith |
| 5.2 | **first name** | James |
| 5.3 | **middle name** | L |
| 7 | **DOB** | 19970101 |
| 8 | **Sex** | M/F |
| 22.1 | **Race Code** | 2514005 |
| 22.2 | **Race** | Black or African American |
| 31 | **Y** | Y |

#### PV1

All messages use the same format for the PV1 Segment.

|  |  |  |
| --- | --- | --- |
| **segment** | **value** | **example** |
| 1 | **1** | **1** |
| 3 | **Location** | **ED** |
| 4 | **E** | **E** |
| 5 | **unique ID** | 1038545506 - Same as PID3.1 |

#### DG1

The DG1 segment is only available in the ORU message.

|  |  |  |
| --- | --- | --- |
| **segment** | **value** | **example** |
| 1 | **Counter** | 1 |
| 2 | **ICD10** | **ICD10** |
| 3 | **ICD-10 Code** | R41.82 |
| 4 | **Dx Description** | Primary/Secondary Symptom  Or  Primary/Secondary Impression |
| 5 | **Date** | 20170915055808 |

#### TXA

The TXA segment is used in both the Narrative and EKG messages.

|  |  |  |
| --- | --- | --- |
| **segment** | **value** | **example** |
| 1 | **Counter** | 1 |
| 2 | **Document Type** | EMS01 – Narrative  EMS02 – EKG  EMS03 – Final File |
| 3 | **ICD-10 Code** | R41.82 |
| 4 | **Activity Date** | 20170914192659 |
| 8 | **Current Date** | 20170915055808 |
| 12.3 | **File Name** |  |
| 17 | **Status** | IP – In Progress  AU - Authenticated |
| 18 | **U** | U |
| 19 | **AV** | AV |

#### OBR

The OBR segment is currently only used by the Vitals message to separate different sets of vitals.

|  |  |  |
| --- | --- | --- |
| **segment** | **value** | **example** |
| 1 | **Counter** | 1 |
| 2 | **Vitals Date** | 20170915060900 |

#### OBX

The OBX segment is used by the vitals, narrative, and EKG messages. All 3 messages use this segment differently and will be described below:

##### OBX – Vitals

|  |  |  |
| --- | --- | --- |
| **segment** | **value** | **example** |
| 1 | **Counter** | 1 |
| 3.1 | **Identifier** | \*Described below |
| 3.2 | **Text** | \*Described below |
| 5 | **Value** | 85 |
| 6 | **Units** | mm[Hg] |
| 14 | **Observation Date** | 20170915060900 |

The table below is all the identifiers for discrete vitals that are captured from the ePCR.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **OBX3.1** | **OBX3.2** | **OBX.5.1 Nemsis Field** | **OBX.6** | **Convert**  **Desc?** |
| APGAR | Apgar | eVitals.32 |  |  |
| BLOOD\_GLUCOSE\_LEVEL | Blood glucose level | eVitals.18 |  |  |
| CARBON\_DIOXIDE\_LEVEL | Carbon dioxide level | eVitals.16 | mmHg |  |
| CARDIAC\_RHYTHM | Cardiac rhythm | eVitals.03 |  | Y |
| DIASTOLIC\_BLOOD\_PRESSURE | Diastolic blood pressure | eVitals.07 | mmHg |  |
| LEVEL\_OF\_RESPONSIVENESS | Level of responsiveness | eVitals.26 |  | Y |
| METHOD\_OF\_BLOOD  \_PRESSURE\_MEASUREMENT | Method of blood pressure measurement | eVitals.08 |  | Y |
| PAIN\_SCALE | Pain scale | eVitals.27 | eVitals.28 | Y |
| PULSE\_OXIMETRY | Pulse oximetry | eVitals.12 |  |  |
| PULSE\_RATE | Pulse rate | eVitals.10 | beats/minute |  |
| PULSE\_RHYTHM | Pulse rhythm | eVitals.13 |  | Y |
| RESPIRATORY\_EFFORT | Respiratory effort | eVitals.15 |  | Y |
| RESPIRATORY\_RATE | Respiratory rate | eVitals.14 | breaths/minute |  |
| REVISED\_TRAUMA\_SCORE | Revised trauma score | eVitals.33 |  |  |
| STROKE\_SCALE | Stroke scale | eVitals.29 |  | Y |
| SYSTOLIC\_BLOOD\_PRESSURE | Systolic blood pressure | eVitals.06 | mmHg |  |
| TEMPERATURE | Temperature | eVitals.24 | centigrade |  |
| TEMPERATURE\_METHOD | Temperature method | eVitals.25 |  | Y |

Nemsis Data Dictionaries can be found at:

<https://nemsis.org/media/nemsis_v3/release-3.4.0/DataDictionary/PDFHTML/DEMEMS/index.html>

##### OBX – Narrative

|  |  |  |
| --- | --- | --- |
| **segment** | **value** | **example** |
| 1.1 | **Counter** | 1 |
| 1.2 | **TX** | TX |
| 5.2 | **Value** | 85 |

The Counter in OBX1.1 determines the type of narrative.

* 1 is the ePCR Narrative & OBX#2-#16 are the secondary narratives.
* 2 : CC
* 3 : HPI
* 4 : Alert
* 5 : Assessment
* 6 : Procedure - Arrest
* 7 : Procedure - Exam
* 8 : Procedure - Injury
* 9 : Procedure - Airway
* 10 : Procedure - Medications
* 11 : Procedure - Generic
* 12 : Demographics History
* 13 : Demographics Practitioner
* 14 : Demographics Patient
* 15 : Demographics Times
* 16 : Demographics Payment

##### OBX – EKG

|  |  |  |
| --- | --- | --- |
| **segment** | **value** | **example** |
| 1 | **Counter** | 1 |
| 2 | **ED** | ED |
| 5.2 | **MIME type** | Image |
| 5.3 | **MIME subtype** | png |
| 5.4 | **BASE64** | BASE64 |
| 5.5 | **BASE64 encoded file** |  |

### Example Messages

#### Pre-Admit

MSH|^~\&|Hub|Hub|EPIC|UCSD|20170915063313||ADT^A05|1406405|P|2.2|||||

PID|||1103571506^^^^EMSHUB||testLnm^testFnm^||19570904|M||||||||||||||^U|||||||||Y

PV1|1||ED|E||||||||||||||||||||||||||||||||||||||||||||||1103571506

#### Vitals

MSH|^~\&|Hub|Hub|EPIC|UCSD|20170915064802||ORU^R01|1406600|P|2.2|||||

PID|||1103571506^^^^EMSHUB||testLnm^testFnm^||19570904|M||||||||||||||2514011^White|||||||||Y

PV1|1||ED|E||||||||||||||||||||||||||||||||||||||||||||||1103571506

DG1|1|ICD10|R41.82|Primary Symptom|20170915055808

DG1|2|ICD10|R41.82|Provider's Primary Impression|20170915055808

OBR|1||||||20170915060900|||||||||||||||||||||||||||||||||||||||||||

OBX|1||SYSTOLIC\_BLOOD\_PRESSURE^Systolic blood pressure||86|mm[Hg]||||||||20170915060900

OBX|2||DIASTOLIC\_BLOOD\_PRESSURE^Diastolic blood pressure||54|mm[Hg]||||||||20170915060900

OBX|3||PULSE\_RATE^Pulse rate||80|beats/minute||||||||20170915060900

OBX|4||PULSE\_OXIMETRY^Pulse oximetry||72|||||||||20170915060900

OBX|5||RESPIRATORY\_RATE^Pulse rhythm||6|breaths/minute||||||||20170915060900

OBX|6||CARBON\_DIOXIDE\_LEVEL^Carbon dioxide level||55|mm[Hg]||||||||20170915060900

OBX|7||UNIT^Unit Number||M1|||||||||20170915060900

OBR|2||||||20170915062200|||||||||||||||||||||||||||||||||||||||||||

OBX|1||CARDIAC\_RHYTHM^Cardiac rhythm||Sinus Rhythm|||||||||20170915062200

OBX|2||SYSTOLIC\_BLOOD\_PRESSURE^Systolic blood pressure||127|mm[Hg]||||||||20170915062200

OBX|3||DIASTOLIC\_BLOOD\_PRESSURE^Diastolic blood pressure||87|mm[Hg]||||||||20170915062200

OBX|4||PULSE\_RATE^Pulse rate||97|beats/minute||||||||20170915062200

OBX|5||RESPIRATORY\_RATE^Pulse rhythm||15|breaths/minute||||||||20170915062200

OBX|6||RESPIRATORY\_EFFORT^Respiratory effort||Normal|||||||||20170915062200

OBX|7||CARBON\_DIOXIDE\_LEVEL^Carbon dioxide level||32|mm[Hg]||||||||20170915062200

OBX|8||BLOOD\_GLUCOSE\_LEVEL^Blood glucose level||116|||||||||20170915062200

OBX|9||UNIT^Unit Number||M1|||||||||20170915062200

OBR|3||||||20170915064000|||||||||||||||||||||||||||||||||||||||||||

OBX|1||CARDIAC\_RHYTHM^Cardiac rhythm||Sinus Rhythm|||||||||20170915064000

OBX|2||PULSE\_RATE^Pulse rate||96|beats/minute||||||||20170915064000

OBX|3||RESPIRATORY\_RATE^Pulse rhythm||19|breaths/minute||||||||20170915064000

OBX|4||CARBON\_DIOXIDE\_LEVEL^Carbon dioxide level||32|mm[Hg]||||||||20170915064000

OBX|5||UNIT^Unit Number||M1|||||||||20170915064000

#### Narrative

MSH|^~\&|Hub|Hub|EPIC|UCSD|20170915064802||MDM^T02|1406600|P|2.2|||||

PID|||1103571506^^^^EMSHUB||testLnm^testFnm^||19570904|M||||||||||||||2514011^White|||||||||Y

PV1|1|||E||||||||||||||||||||||||||||||||||||||||||||||1103571506

TXA|1|EMS01||20170915055808||||20170915064802||||^^1103571506|||||IP|U|AV

OBX|1^TX||||Pt Age: 60 Years; Gender: Male;~Primary Impression: Altered Neuro-Medical ;~Crew: First Responder Medic; Date/Time: 09/15/2017 06:11; Prior Care: Yes; Medication Given: Narcan (Naloxone Hydrochloride); Role/Type of Person Administering Medication: EMT-Paramedic; ~Crew: CrewPerson One; Date/Time: 09/15/2017 06:10; Prior Care: Yes; Medication Given: Oxygen; Dosage: 15; Units: Liters (l); Role/Type of Person Administering Medication: EMT-Paramedic;|

OBX|2^TX||||~CC:~Date/Time of Symptom Onset: 2017-09-15T00:00:00-07:00|

OBX|3^TX||||~HPI:~Primary Symptom: Altered mental status, unspecified~Provider's Primary Impression: Altered mental status, unspecified~Initial Patient Acuity: Lower Acuity (Green)|

OBX|4^TX||||~Alert:~Patient Care Report Number: 1103571~Incident Number: FS17132804~EMS Vehicle (Unit) Number: 0001~EMS Unit Call Sign: M1~Level of Care of This Unit: ALS-Paramedic~Incident Street Address: 123 Fake St~Incident City: 1661377~Incident ZIP Code: 92113|

OBX|5^TX||||~Assessment:|

OBX|6^TX||||~Procedure - Arrest:~Cardiac Arrest: No|

OBX|7^TX||||~Procedure - Exam:|

OBX|8^TX||||~Procedure - Injury:|

OBX|9^TX||||~Procedure - Airway:|

OBX|10^TX||||~Procedure - Medications:~Date/Time Medication Administered: 2017-09-15T06:10:00-07:00~Medication Administered Prior to this Unit's EMS Care: Yes~Medication Given: 7806~Medication Dosage: 15~Medication Dosage Units: Liters (l)~Date/Time Medication Administered: 2017-09-15T06:11:00-07:00~Medication Administered Prior to this Unit's EMS Care: Yes~Medication Given: 7242|

OBX|11^TX||||~Procedure - Generic:~Date/Time Procedure Performed: 2017-09-15T06:09:00-07:00~Procedure Performed Prior to this Unit's EMS Care: Yes~Procedure: 425543005|

OBX|12^TX||||~Demographics History:|

OBX|13^TX||||~Demographics Practitioner:|

OBX|14^TX||||~Demographics Patient:~Last Name: testLnm~First Name: testFnm~Patient's Home Address: Homeless~Patient's Home County: 06073~Gender: Male~Race: White~Age: 60~Age Units: Years|

OBX|15^TX||||~Demographics Times:~Unit Notified by Dispatch Date/Time: 2017-09-15T05:58:08-07:00~Unit En Route Date/Time: 2017-09-15T05:59:27-07:00~Unit Arrived on Scene Date/Time: 2017-09-15T06:05:56-07:00~Arrived at Patient Date/Time: 2017-09-15T06:08:00-07:00~Unit Left Scene Date/Time: 2017-09-15T06:29:02-07:00~Patient Arrived at Destination Date/Time: 2017-09-15T06:44:59-07:00|

OBX|16^TX||||~Demographics Payment:|

#### EKG

MSH|^~\&|Hub|Hub|EPIC|UCSD|20170915064802||MDM^T02|1406600|P|2.2|||||

PID|||1103571506^^^^EMSHUB||testLnm^testFnm^||19570904|M||||||||||||||2514011^White|||||||||Y

PV1|1|||E||||||||||||||||||||||||||||||||||||||||||||||1103571506

TXA|1|EMS02||20170914185803||||20170914192659||||^^1103442506\_eDevice\_20170914190800.png|||||AU|U|AV

OBX|1|ED|||^image^png^BASE64^**BASE64EncodedFile**|

# FILE

## Summary

FILE will provide the ED with a full report from the ePCR which is directly put into the ED document repository and automatically tied to the patient record.

## High Level Flow

1. The ePCR will send the Final File PDF encoded in a JSON message to SDHC when the patient care report is closed.
2. SDHC will interpret the JSON message and produce an MDM-T02 HL7v2 message to send to the destination hospital.

## Message Relay

* FILE JSON messages will be sent to SDHC over HTTPS
  + Production ssl certificates need to be exchange
  + Mutual HTTPS authentication is required
* FILE hl7ve MDM-T02 messages will be sent from SDHC to the corresponding ED
  + A VPN connection will need to be set up from SDHC to the participant ED
  + HL7v2 messages will be sent over MLLP to an IP/PORT range specified by the participant.

A second IP/PORT value can be set for the EKG messages.

## JSON Message

The JSON message from the ePCR to SDHC is a simple message that contains the following fields:

|  |  |  |
| --- | --- | --- |
| Field name | Data type | Example |
| patientCareReportNumber | String | 1103571a |
| incidentNumber | String | FS0123456789 |
| report | BASE64 Encoded String | JVBERi0xLjM... |
| agencyId | String | 506 |

## HL7 Message

The Final File message is the same as the EKG Alert message. the only differences are in the following user defined fields:

1. TXA2 = EMS03
2. OBX5.1 = <filename>
3. OBX5.2 = application
4. OBX5.3 = pdf

### Example Messages

#### JSON -> SDHC

{

"patientCareReportNumber" : "1103571",

"incidentNumber" : "FS0123456789",

"report" : "JVBERi0xLjM...",

"agencyId" : "506"

}

#### HL7 -> ED

MSH|^~\&|Hub|Hub|EPIC|UCSD|20170915071959||MDM^T02|7457|P|2.2|||||

PID|||1103571506^^^^EMSHUB||testLnm^testFnm||||||||||||||||||||||||||Y

PV1|1|||E||||||||||||||||||||||||||||||||||||||||||||||1103571506

TXA|1|EMS03||20170915071959||||20170915071959||||^^1103571506\_20170915071959\_final\_file.pdf|||||AU|U|AV

OBX|1|ED|||1103571506\_20170915071959\_final\_file.pdf^application^pdf^BASE64^ **BASE64EncodedFile**|

# RECONCILE

## Summary

RECONCILE will return important data such as chief complaint, billing information, etc.. from the hospital discharge back to the agency.

## High Level Flow

1. SDHC will use the existing feeds from the destination hospital to the HIE
2. SDHC will look for A03 (discharge) or A06(transfer from outpatient to inpatient) messages that have a PV1-50 value that matches the PID-3 sent in the Alert A05.
3. SDHC will convert the HL7 data to a consolidated Nemsis document

## Message Relay

* RECONCILE hL7v2 messages will already be sent from the ED to SDHC. If not:
  + A VPN connection will need to be set up from the participant ED to SDHC.
  + HL7v2 messages will be sent over MLLP to an IP/PORT range specified by SDHC.
* RECONCILE Nemsis messages will be sent to the ePCR vendor over HTTPS
  + Production ssl certificates need to be exchange
  + Mutual HTTPS authentication is required

### Example Messages:

#### HL7 -> SDHC

MSH|^~\&|EPICADT|UCSD|EPIC|EPIC|20170918151425|PJW2|ADT^A06|000000|P|2.5

PID|0001||0001112200^^^UCSD^UCSD||testLnm^testFnm^||19570904|F|||123 Fake St^APT 2^SAN DIEGO^CA^92115^US^^^SAN DIEGO|||||||99110357150699|240-54-0520

PD1|||UC SAN DIEGO MEDICAL CENTER - HILLCREST^^700|||||||||N

NK1|1|BRITTINGHAM^LEA|FRIEND|^^^^^US|(951)288-1844^^7^^^951^2881844||Emergency Contact 1

PV1|1|I|HC EMERGENCY DEPT^04^04A^UCHC|Emergency||HC EMERGENCY DEPT^04^04A^UCHC|91181^^^|||||||1|||||99110357150699|||||||||||||||||||||||||20170918105300||||||1103571506

DG1|1|I10|J44.1^Chronic obstructive pulmonary disease with (acute) exacerbation (CMS-HCC)^I10|Chronic obstructive pulmonary disease with (acute) exacerbation (CMS-HCC)

IN1|1|10550006|1099|MOLINA

IN2||000-54-0110|||Payor Plan||||||||||||||||||||||||||||||||||||||||||||||||||||||||123456|||||||||HOPE ADULT DAY \T\ HEALTHCARE

#### Nemsis -> ePCR Vendor

<EMSDataSet>

<Header>

<PatientCareReport>

<eRecord>

<eRecord.01 >1104789</eRecord.01>

<eRecord.SoftwareApplicationGroup >

<eRecord.02>SDHC</eRecord.02>

<eRecord.03>SAFR</eRecord.03>

<eRecord.04>1</eRecord.04>

</eRecord.SoftwareApplicationGroup>

</eRecord>

<ePatient>

<ePatient.PatientNameGroup>

<ePatient.02 >testLnm</ePatient.02>

<ePatient.03 >testFnm</ePatient.03>

</ePatient.PatientNameGroup>

<ePatient.05 >123 Fake St</ePatient.05>

<ePatient.07 NV="7701003" xsi:nil="true" />

<ePatient.08 >CA</ePatient.08>

<ePatient.09 >92115</ePatient.09>

<ePatient.12 >000540110</ePatient.12>

<ePatient.13 >9906001</ePatient.13>

<ePatient.14 NV="7701003" xsi:nil="true" />

<ePatient.AgeGroup >

<ePatient.15>59</ePatient.15>

<ePatient.16>2516009</ePatient.16>

</ePatient.AgeGroup>

<ePatient.17 >1957-09-04</ePatient.17>

</ePatient>

<ePayment>

<ePayment.01 NV="7701003" xsi:nil="true" />

<ePayment.InsuranceGroup >

<ePayment.10>MOLINA</ePayment.10>

<ePayment.18>123456</ePayment.18>

</ePayment.InsuranceGroup>

<ePayment.50 NV="7701003" xsi:nil="true" />

</ePayment>

<eOutcome>

<eOutcome.ExternalDataGroup >

<eOutcome.03>4303017</eOutcome.03>

<eOutcome.04>99110357150699</eOutcome.04>

</eOutcome.ExternalDataGroup>

<eOutcome.11 >2017-09-18T10:53:00-0700</eOutcome.11>

<eOutcome.13 >J44.1</eOutcome.13>

</eOutcome>

</PatientCareReport>

</Header>

</EMSDataSet>