OCMEDS – HIH INTEGRATION HOSPITAL SUMMARY GUIDE

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CHAPTER 1 – HIH GUIDE OVERVIEW

1.1 DOCUMENT OVERVIEW

This guide is intended to assist in selecting the appropriate options and implementing the Health Information Hub (HIH) system to connect and share data between ImageTrend EMS and hospital systems.

1.2 DATA SHARING BENEFITS

The benefits for data interoperability between Emergency Medical Services and hospital systems have started to emerge more and more in recent years. Automated data exchanges through standardized file formats have helped pave the way for these initiatives. Meaningful use, community paramedicine, and population health, are geared towards promoting interoperability to improve patient care. Being able to deliver patient information to medical personnel to the following audiences provides distinct benefits to each.

HOSPITALS

- Automate integration directly into hospital EMR and reduce scanning.
- Help identify pre-hospital patients to reduce ED re-admissions through community paramedicine initiatives.
- Decrease the time and effort required to enter data into your Patient Registry system.

EMS

- Confirm patient outcomes to close loop back to medics.
- Identify protocol enhancements to improve patient care for medical directors.
- Increased billing insurance accuracy to reduce billing delays.

1.3 BASIC HIH SYSTEM REQUIREMENTS

The system requirements for HIH integrations depend on the on the connection method and the data file standards agreed upon by each organization. ImageTrend's core HIH product consists of a master web service that send, receives, and transforms data. An additional message broker may be used for HL7 v.2 integrations. Each of these modules runs on Microsoft's server platform.

1.4 HIH Core Functions Overview

When setting up an HIH system, the client must select three major options for their implementation:

- **Connection Method** determines the technical channel that is used to transfer data between the two systems. (This is the connection method between EMS agencies and hospital EMR).
- **Data File Standard** determines the technical data sharing file format that will be used to share and consume data between the two connected systems.
- **The Data Sharing Trigger** determines the workflow that controls when the data is shared between the systems.

Chapter 2 – Patient Matching

2.1 MATCHING VIA HOSPITAL IDENTIFIERS

Most patient matching can be done by utilizing the end system's Medical Record Number and Encounter Numbers. This is accomplished by entering the data in the external identifier fields in eOutcomes.

Workflow

1. EMS picks patient up at scene and drives back to hospital.
2. EMS fills out documentation en route.
3. EMS arrives at the hospital and drops off the patient.
4. After the patient is admitted, hospital staff gives EMS the patient's MRN and Encounter "stickers."
5. These sticker numbers are then added to the external identifiers portion of the run form.
   a. These can be scanned with a scanner or entered manually.
   b. The fields that must be filled out are:
      - Medical Record Number (it4303.001)
      - Encounter Number (it4303.002)
6. After EMS is finished with their documentation, it is posted to Elite Web.
7. HIH will then translate and send over the documentation to the hospital.
8. See **EMS HIH Setup Guide** for more details.

2.2 MATCHING VIA HOSPITAL DEMOGRAPHIC MATCHING

Hospital demographic matching allows the least disruption from an EMS perspective. No workflow needs to change, since the hospital would use names, addresses and other identifiers to perform a weighted average to match with existing patients.

Workflow

1. EMS picks patient up at scene and drives back to hospital.
2. EMS fills out documentation en route.
3. EMS arrives at the hospital and drops off the patient.
4. After EMS is finished with their documentation, it is posted to Elite Web.
5. HIH will then translate and send over the documentation to the hospital.

2.3 MATCHING VIA ELITE REPEAT PATIENT

The Elite Repeat Patient option allows minimal disruption from an EMS perspective. This uses the internal patient identifier of the Elite repeat patient workflow. This uses ePatient.01 as the unique identifier.

Workflow

1. EMS picks patient up at scene
2. EMS performs repeat patient lookup and finds previous patient information
3. EMS fills out documentation enroute
4. EMS arrives at the hospital and drops off the patient
5. After EMS is completed with their documentation, it is posted to Elite Web
6. HIH will then translate and send over the documentation to the hospital

Chapter 3 – Message Lifecycle

3.1 HL7 v2 Message

Definition: This is the simplest form of sending a message. It only requires sending the needed message into the destination system and no other messages need to be sent.

Facts

1. This method is often the fastest implementation for getting data from the ImageTrend system to the hospital.

3.2 HL7 v2 Provide and Register

Definition: To be able to provide HL7 v2 provide and register, HIH can send multiple messages for a single incident. This would allow the endpoint hospital to receive an admit (ADT A01) message to register the patient. Then an encapsulated PDF (MDM T02) would be sent completing the message transmission cycle.

If the receiving system can accept multiple messages, the MDM message can be sent multiple times on every update.

Facts

- This allows a hospital system to receive an Admit and the needed information via a secondary message.

Recommendations

- This usually requires the use of an ADT message followed by an MDM or ORU messages.
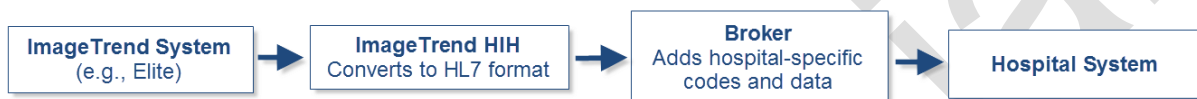
Chapter 4 – Connection Options

4.1 TCP/IP SOCKET MLLP METHOD

Elite Export

Definition: This method includes a custom-designed broker web service that adds the hospital-specific codes to the HL7 file, can calculate and add additional data such as the patient encounter number or a medical record number, and sends the data to the hospital's system.

| ImageTrend System (e.g., Elite) | → | ImageTrend HIH Converts to HL7 format | → | Broker Adds hospital-specific codes and data | → | Hospital System |

Facts

- This method generally requires a VPN server connection since the broker needs to be inside the hospital network.
- The broker is a custom-designed web service or that will update the data being sent to match the codes used by the hospital and to attach additional details if needed (such as medical record number).
- This option allows you to attach an encounter number to each record as the broker can calculate the number of times this patient has visited the hospital.
- This option is generally used with the Automated Export data sharing trigger.

How It Works

1. Data is exported from the ImageTrend system into the ImageTrend HIH web service based on the data sharing trigger for this system.
2. The HIH web service converts the exported data to HL7 format and exports it to the broker, which is inside the hospital's network.
3. The Broker web service updates the file based on the mappings set up during implementation to add hospital-specific codes and calculates encounter number if set up to do so.
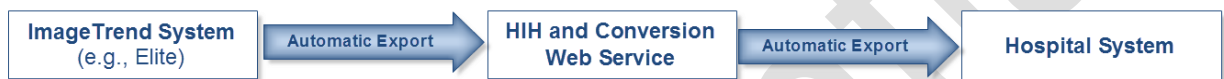4. The Broker web service sends the data to the hospital system.

Message Options

1. EMS to Hospital / HIE
   a. HL7 ADT A04 2.6
   b. HL7 ADT A01 2.6
   c. HL7 ADT A01 2.6 - with patient consent segment
   d. HL7 MDM T02 2.6 - with embedded PDF
   e. HL7 MDM T02 2.6 - with ePCR summary
   f. HL7 ORU R01 2.6 - with embedded PDF
2. Hospital / HIE to EMS
   a. HL7 ADT A03 2.6
   b. HLT ADT A06 2.6
   c. HL7 ADT A08 2.6

Chapter 5 – Data Sharing Trigger Options

5.1 ELITE PUSH METHOD

Definition: This method will automatically push data from the ImageTrend system to the HIH system based on export criteria. This is the generally accepted way of moving data from an EMS system into a destination system.

| ImageTrend System (e.g., Elite) | → Automatic Export → | HIH and Conversion Web Service | → Automatic Export → | Hospital System |

Facts

- This method is often the fastest method for getting data from the ImageTrend system to the hospital.
- This method relies on the automated processes identifying the correct patients in both systems and linking them.

How It Works

1. Triggers can be set up to look at specific data fields in order to determine when to send data. These include, but are not limited to:
    a. Report Status Change
    b. Created or Updated Date/Time
    c. Validation Score
    d. Completed Fields (hospital MRN or visit #)

2. The default setup includes:
    a. Patient First Name is not blank
    b. Patient Last Name is not blank
    c. Date of Birth is not blank
    d. Gender is not blank
    e. Destination Name matches the hospital network
    f. Agency Name matches the EMS agency
    g. Unit Notified Dispatch Date is greater than the go live date

5.2 HOSPITAL PUSH METHOD

Definition: This method sends patient records that meet specific criteria from the hospital system to an ImageTrend system. This is the generally accepted way of moving outcome data from a hospital system into an Elite system.
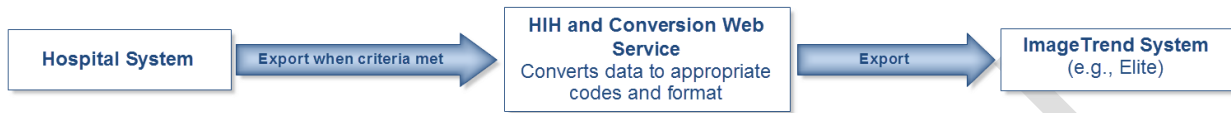
Facts

- This method allows hospitals to send specific details to ImageTrend systems.
- This allows sending outcomes data points back to EMS agencies using Elite.
- This method requires selecting criteria to determine when records will be automatically exported from the hospital to the ImageTrend system.

Updating Logic

The required fields for a patient outcome update are:

- MRN
- Encounter Number
- Sending Facility

Based on the sending facility entry, HIH will update outcomes by matching the MRN and encounter number with the appropriate ambulance service. The fields will update the originating EMS record using a merge action. Each logical grouping of data updates independently. For example if insurance information already exists but diagnosis data does not, the insurance information will not duplicate, but the diagnosis data would appear.

Merging of fields works as described below:

- **Text:** If data previously existed in the incoming fields, then the fields will be filled out with the new information. This will **overwrite the previous fields** with the COLD feed data.
- **Memo:** New data will be appended to the existing memo fields.
- **Grid:** If a data section is entered and the data is different than any previously entered data section, then a new grid record will be appended to the incident record.

Chapter 6 – Message Types

6.1.1 HL7 2.x OUTGOING MESSAGE PROCESSING SUMMARY

Connection Options

1. TCP/IP Socket MLLP Method

Message Types

1. ADT A01(Admit)
2. ADT A04 (Register)
3. MDM T02 (Medical Document Management)
   a. PDF
      i. This is the same PDF that is generated by default for an incident.
   b. Summary
4. ORU R01 (Result Message)
   a. PDF
      i. This is the same PDF that is generated by default for an incident.

6.2.1 HL7 2.x INCOMING MESSAGE PROCESSING SUMMARY

Connection Options

1. TCP/IP Socket MLLP Method

Message Types

1. ADT A03 (Discharge)
2. ADT A06 (Change An Outpatient To An Inpatient)
3. ADT A08 (Update Patient Information)