Text Integration Utilities (TIU)
Generic HL7 Interface
Handbook

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Department of Veterans Affairs
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Computerized Patient Record System Product Line

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Event	Date	Pages	Tech Writer, Project Manager
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Table of Contents

Table of Contents

Tables, Illustrations, and Figures

Introduction

Purpose of the HL7 Generic Interface

The purpose of the project is to create a generic Health Level Seven (HL7) interface to Text Integration Utilities (TIU) that will support the upload of a wide-range of textual documents from Commercial-Off-the-Shelf (COTS) applications in use now and in the future at Veteran Administration (VA) Medical Centers. This project was created in response to multiple TIU interface requests, most notably from the Resident Assessment Instrument/Minimum Data Set (RAI/MDS) application by AccuMed Software. Other projects interested in the interface are the Remote Order Entry System (ROES) software used by the Denver Distribution Center (DDC), the Precision Data Solutions Transcription Service software, and the VA Home Telehealth software.

The project creates a single COTS/application interface specification to allow textual documents to be uploaded and displayed in CPRS. This allows clinicians to view information from the COTS package without leaving the patient's electronic medical record.

Scope of the Manual

This handbook is meant to contain all information needed to set up and operate the HL7 Generic Interface.

Audience

This is an interim manual for use during testing of the HL7 Generic Interface. Anyone needing information with respect to this software should be able to find it in this handbook.

Availability

The current copy of this document is available on the VA intranet at: http://vista.med.va.gov/tiu/ select Patches & Enhancements then User Docs next to Patch #200.

Anyone with comments or corrections on the handbook may contact the technical writer directly at charles.arceneaux@med.va.gov or 801-588-5029.

Messaging Workbench (MWB)

MWB is a tool that facilitates the creation of HL7 2.4 message profile definitions. MWB supports exporting of the message metadata into HL7v2 Message Conformance Profile format.

Getting Started – Configuring the Interface

The MWB is a tool for analysts and developers that facilitates the construction, documentation and reporting of message specifications as well as HL7 Conformance profiles. It follows the standards set by the HL7 version 2.4 Conformance Special Interest Group (SIG) and produces profiles that are interoperable with other HL7 compliant messaging tools. In addition to its profile documentation function, this tool includes other features to assist messaging developers, such as reverse engineering, message instance analysis and message instance validation.

The MWB is the first freeware tool available for creating message profiles. The MWB developer works for VHA and is an active member of the HL7 Conformance Special Interest Group (SIG) and the tool has evolved with input from this SIG. The MWB tool is used extensively within VHA for developing and documenting HL7 messages.

MWB HL7 message profiles for TIU HL7 are available to any vendor who wishes to download and use the MWB tool. A Word document generated by the tool is also available to provide the workbench information in a readable/printable format.

The MWB software can be downloaded from the VHA Intranet: http://vista.med.va.gov/messaging/ then select VistA HL7 Website, then follow the link to HL7 Messaging Workbench.

The MWB software can also be downloaded from the HL7 website www.hl7.org. From the home page heading “Committees”, select
Special Interest Groups (SIG)
Conformance
Documents and Presentations

There is a good tutorial on HL7 on the VistA HL7 webpage. To access it go to the VistA HL7 website at: http://vista.med.va.gov/messaging. Then follow the links to HL7 Documents and Presentations. From this page scroll down until you fine Archived Documents and Presentations then select HL7 1.6 Tutorial.ppt.

Overview

The Generic HL7 enhances the TIU application to allow textual documents created by non-Veteran Health Information System and Technology Architecture (VistA) applications to be uploaded and displayed in the Computerized Patient Record System (CPRS). This will meet the identified need to provide document integration between COTS and other non-VistA applications in use at medical centers and CPRS/TIU. The end result will create an improved electronic medical record by bringing into CPRS additional documentation in support of patient care and treatment.

The interface will replace the copy and pasting. It will save clinicians time by alleviating the necessity to log onto a COTS server to retrieve patient information. It will save time for clerical staff who manually will add documents into TIU.

The COTS package will connect to the VA computer system and will send an HL7 message to the VistA Interface Engine (VIE). VIE will send the message to the Generic HL7 application. The Generic HL7 application will store the message in TIU.

Getting Started – Configuring the Interface

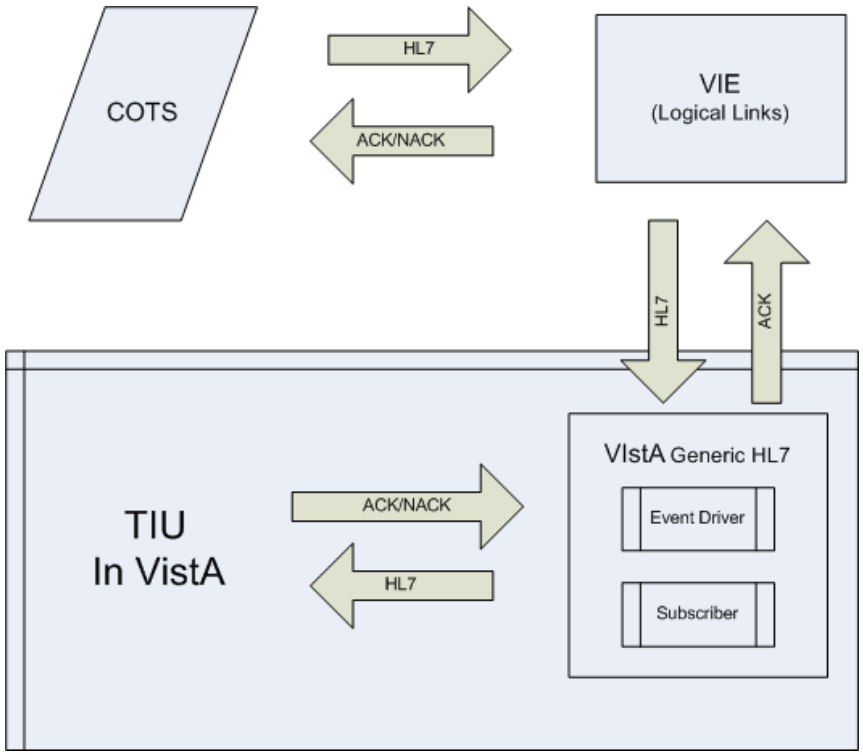
Introduction

The Text Integration Utilities (TIU) Generic HL7 Interface must be configured before HL7 messages may be received and processed to create or update TIU documents. Each step detailed below will provide an explanation regarding the configuration as it relates both to TIU and VistA HL7 messaging for this interface. For further information regarding VistA HL7 messaging, please refer to the HL7 documentation found at the VistA Documentation Library (http://www.va.gov/vdl/) under "Infrastructure: HL7" and http://www.hl7.org.

For this guide, the TIU Generic HL7 Interface (TIUHL7) consists of the following components:

- Logical Link(s)
- Receiving Application
- Event Driver
- Subscriber
- Sending Application

Generic HL7 Components and Data Flow



Physical Link

The physical link between an external contractor and any VHA entity would be satisfied with a client VPN account. Reference this document:

https://vaww.admin.vpn.va.gov/one-va-vpn/home/ConnectionOptions.ppt

Outlines what justifies the different kinds of connections.

The following are general guidelines with respect to information needed to obtain an account:

The Contracting Officer Technical Representative (COTR) for the contract should contact the local ISO. The ISO needs to know:

- The name of the contractor
- The IP address(es) they need to access
- Last 4 of their SSN
- Email address
- Phone Number
- Company Name
- Address

At a minimum, the contractor must have a Background Investigation (BI) on file or in process. This requirement is usually stipulated in the contract and the COTR should be able to provide information on that as well.

The ISO will direct the contractor to on-line VA security awareness training and privacy training. This training is required prior to a VPN account being provided.

The ISO will request a VA windows account from their local IRM for the contractor (used by the VPN for authentication)

The contractor must sign a VA Rules of Behavior and any other documentation required at the local level.

The ISO will provide the contractor with their VA Windows account and VPN media.

The HL7 Logical Link File #870

Logical links describe the complete network path to a given system. The first LOGICAL LINK to configure (*not* included in the TIU*1*200 distribution) will be the link over which all incoming HL7 messages will be received. Your site should already have a link ready for this use:

- The TCP/I Port for the link should be set to **5000**.
- The LLP type for the links should be set to **TCP**.
- The device Type for the links should be set to **Multi Listener**.
- The Autostart for the link should be set to **Enabled**.

Please contact your IRM staff or site manager to find the name of the link to use.

The next link to configure is the link to the sender's system. TIU will use this link for the transmission of APPLICATION ACKNOWLEDGMENTS. You will need to know the IP Address and Port # of the sender's system.

From the HL7 Main Menu Option, select the Interface Developer Options menu.

To set up or edit link definitions, use the "Link Edit" option, on the Interface Developer Options menu:

```
Select Interface Developer Options Option: Link Edit

Select HL LOGICAL LINK NODE:   TIUHL7 EX

                           HL7 LOGICAL LINK
------------------------------------------------------------------------
          NODE: TIUHL7 EX

   INSTITUTION:

        DOMAIN:

     AUTOSTART: Enabled

    QUEUE SIZE: 10

      LLP TYPE: TCP
------------------------------------------------------------------------
```

If your site is using a VistA Interface Engine (VIE), this link should only need to be configured once. Once setup, it may be used by multiple subscribing protocols. If your site is not using a VIE, a descriptive name is helpful in troubleshooting link problems and errors. Rename the link if desired.

Example Link Name: *TIUHL7 VIE*

Enter your site information in the Institution and Domain fields; this information is optional and may be left blank.

Tab down to the LLP Type field and press <Enter> or <Return>. The option then presents a form to edit the fields specific to the LLP Type of the selected Link:

```
                        TCP LOWER LEVEL PARAMETERS
                        TIUHL7 EX

  TCP/IP SERVICE TYPE: Client (Sender)
       TCP/IP ADDRESS: 192.168.1.1
          TCP/IP PORT: 5000


   ACK TIMEOUT:                       RE-TRANSMISION ATTEMPTS:
  READ TIMEOUT:                     EXCEED RE-TRANSMIT ACTION:
    BLOCK SIZE:                                     SAY HELO:

STARTUP NODE:                                     PERSISTENT: No
   RETENTION:                                UNI-DIRECTIONAL WAIT:
```

TCP/IP Service Type must be set as “Client (Sender)”. Enter the sending application’s IP Address and Port # to be used. Save the changes and return to the HL7 Main Menu Option.

From the HL7 Main Menu Option, select the Filer and Link Management Options menu.

To test the link, select “Ping (TCP Only)” and at the prompt “Select HL LOGICAL LINK NODE:” enter the name of the link entered. The message “PING Worked” should be displayed. If you do not see this message, ensure that the receiving system has been configured and setup properly.

After the PING portion, that the link must be started. Here’s the menu and option:

```
Select HL7 Main Menu Option: FILER AND Link Management Options


   SM     Systems Link Monitor
   FM     Monitor, Start, Stop Filers
   LM     TCP Link Manager Start/Stop
   SA     Stop All Messaging Background Processes
   RA     Restart/Start All Links and Filers
   DF     Default Filers Startup
   SL     Start/Stop Links
   PI     Ping (TCP Only)
   ED     Link Edit
   ER     Link Errors ...

Select Filer and Link Management Options Option: SL  Start/Stop Links

This option is used to launch the lower level protocol for the
appropriate device. Please select the node with which you want
to communicate

Select HL LOGICAL LINK NODE:
```

The HL7 Application Parameter File #771

Entries in this file are used to define the sending and receiving applications for VistA HL7. Each sending and receiving application must be defined separately.

From the HL7 Main Menu Option, select the Interface Developer Options menu. To set up or edit HL7 Applications, use the "Application Edit" option, on the Interface Developer Options menu:

```
Select Interface Developer Options Option: Application Edit

Select HL7 APPLICATION PARAMETER NAME: TIUHL7 EX RECEIVING APP

                            HL7 APPLICATION EDIT
------------------------------------------------------------------------------

               NAME: TIUHL7 EX RECEI               ACTIVE/INACTIVE: INACTIVE

      FACILITY NAME: <required>                       COUNTRY CODE: US

HL7 FIELD SEPARATOR: ^                    HL7 ENCODING CHARACTERS: ~|\&

         MAIL GROUP:

------------------------------------------------------------------------------
```

Rename the example application TIUHL7. This application will always be the receiving application for the TIU Generic HL7 Interface.

Change the status to ACTIVE.

The Facility Name must be entered for routing information used by the VistA Interface Engine (VIE). This field is optional if your site is not routing messages through a local VIE.

The HL7 Field Separator and HL7 Encoding Characters do not need to be changed. Please see the HL7 Site Manager & Developer Manual for more information.

Example Facility Name: 666~TESTLAB.FO-SLC.MED.VA.GOV~DNS

Repeat this step for the Sending Application; rename the TIUHL7 EX SENDING APP to the agreed upon name of the vendor server/application to receive messages from.

Example Sending Application: *HTAPPL*

This name was used for the Sending Application from the Home TeleHealth project.

The Protocol File #101

Entries in this file are used to define each transaction/message type. The two entries in this file included in the TIU*1.0*200 distribution to be edited are the Event and Subscriber protocols.

From the HL7 Main Menu Option, select the Interface Developer Options menu. To set up or edit HL7 Protocols, use the "Protocol Edit" option, on the Interface Developer Options menu:

```
Select Interface Developer Options Option: Protocol Edit

Select PROTOCOL NAME: TIUHL7 EXAMPLE MDM SUB

                        HL7 INTERFACE SETUP                          PAGE 1 OF 2
------------------------------------------------------------------------------

            NAME: TIUHL7 EXAMPLE MDM SUB

DESCRIPTION (wp):  (empty)

ENTRY ACTION:

 EXIT ACTION:

        TYPE: subscriber
------------------------------------------------------------------------------
```

The following naming convention is suggested for protocols for the TIUHL7 Interface:

```
      <RECEIVING APP> <SENDING APP> <MESSAGE TYPE> <PROTOCOL TYPE>
      Examples:    TIUHL7 HTAPPL MDM SUBSCRIBER
                   TIUHL7 HTAPPL MDM EVENT
```

Example Protocol Name for Subscribers: *TIUHL7 HTAPPL MDM SUB*

This name was used for the subscribing protocol for messages from the Home TeleHealth project.

Tab down to the Type field and press <Enter> or <Return>. The option then presents a form to edit the fields specific to the Type of the selected protocol:

```
                              HL7 SUBSCRIBER                          PAGE 2 OF 2
                            TIUHL7 EXAMPLE MDM SUB
--------------------------------------------------------------------------------

      RECEIVING APPLICATION: TIUHL7 EX RECEI

      RESPONSE MESSAGE TYPE: ACK                          EVENT TYPE: T02

 SENDING FACILITY REQUIRED?: YES          RECEIVING FACILITY REQUIRED?: YES

         SECURITY REQUIRED?: NO

               LOGICAL LINK: TIUHL7 EX

 PROCESSING RTN: D PROCMSG^TIUHL7P1

  ROUTING LOGIC:
--------------------------------------------------------------------------------
```

Enter TIUHL7 as the RECEIVING APPLICATION.

If your site is not using a VIE to route HL7 messages, the Sending and Receiving Facilities Required fields may be set to NO.

Replace the LOGICAL LINK and enter the name of the *outgoing* logical link created earlier to send Application Acknowledgments to the sending application.

Save the changes and begin editing the TIUHL7 EXAMPLE MDM EVENT as follows:

```
Select PROTOCOL NAME:   TIUHL7 EXAMPLE MDM EVENT

                        HL7 INTERFACE SETUP                       PAGE 1 OF 2
--------------------------------------------------------------------------------

            NAME: TIUHL7 EXAMPLE MDM EVENT

DESCRIPTION (wp):  (empty)

ENTRY ACTION:

 EXIT ACTION:

        TYPE: event driver
--------------------------------------------------------------------------------
```

The following naming convention is suggested for protocols for the TIUHL7 Interface:

TIUHL7 <sending app> MDM <type>

Example Protocol Name for Subscribers: *TIUHL7 HTAPPL MDM EVENT*

This name was used for the event protocol for messages from the Home TeleHealth project.

Tab down to the Type field and press <Enter> or <Return>. The option then presents a form to edit the fields specific to the Type of the selected protocol:

```
                          HL7 EVENT DRIVER                          PAGE 2 OF 2
                        TIUHL7 EXAMPLE MDM EVENT
--------------------------------------------------------------------------------
      SENDING APPLICATION: TIUHL7 EX SENDI
 TRANSACTION MESSAGE TYPE: MDM                       EVENT TYPE: T02
        MESSAGE STRUCTURE:
            PROCESSING ID:                        VERSION ID: 2.4
          ACCEPT ACK CODE: AL               APPLICATION ACK TYPE: NE

 RESPONSE PROCESSING RTN:
                          SUBSCRIBERS
  TIUHL7 EXAMPLE MDM SUB
--------------------------------------------------------------------------------
```

Edit the Sending Application and enter the name of the Sending Application created earlier.

The SUBSCRIBERS should reflect the new name created earlier for the subscribing protocol.

Vendor Setup

Vendors have two responsibilities:

1. Produce HL7 messages that are compatible with the Generic HL7 interface as described in this Handbook.
2. Establish a viable LAN connection to the customer sites within the Veterans Health Administration through the VistA Interface Engine (VIE).

Vendors should work closely with IRM staff at the customer sites.

Some of the elements that are part of establishing a LAN connection are:

3. You need the port number of the local site VIE for receiving messages.
4. You need the VIE ACK port number at the vendor site.
5. You need the site e-mail address for VIE errors.
6. You need to be familiar with the National Configuration Site Manual available online at: http://vista.med.va.gov/messaging/vie/vie_projectdocs.asp

VistA Interface Engine

The VistA Interface Engine (VIE) communication components work concurrently to model, automate, track, and optimize communication processes within and between data systems, providing a high emphasis on security and reliability. The product also enables real-time, multi-directional communication among VistA applications, the Health Data Repository, Commercial-Off-The-Shelf (COTS) products, and other systems. In other words, VIE provides an integrated environment for managing the flow of critical information throughout the VHA's corporate business systems, as well as through external vendors and computer systems.

Information on setup and operation of the VIE component is located on VIE's web page at: http://vista.med.va.gov/messaging/vie

Essentials

It is a requirement that you use VIE with the Generic HL7 Interface.

The following steps are important for the proper functioning of VIE with the Generic HL7 Interface:

1. Configure the vendor application with the local site VIE port address (this is usually 8090).
2. Identify a local site email address to receive VIE error messages. You will need to request that the VIE Team configure this email address in the local Interface Engine (IE).
3. Provide information to the VIE Team to update the VIE National Configuration matrix.
4. Sending application name
5. Receiving application name
6. IP & Port where application acknowledgments are to be sent.

Much of the information you need is in the *Interface Control Document.* Access this document by:

1. Go to the VIE web page at: http://vista.med.va.gov/messaging/vie
2. On the side bar, select VIE Project Documents.
3. Click on Interface Control Document (ICD) Template.
4. The *Interface Control Document* must be filled out and supplied to the VIE Team.

Database Repository

The existing VistA database will be used to store TIU Documents File #8925.

System Features

Creating a progress note from an HL7 message

No TIU document and/or PCE visit file entry will be created until generic HL7 verifies all required fields. The progress note will be created only if all the following conditions are met and verified.

HL7 Fields

The fields needed to support the Generic HL7 Interface are given in terms of the edits performed on each field. Some fields are only conditionally required. You should read each edit carefully to fully understand what is required of each field.

Note: If a piece of data is listed as required, document processing will not occur if that piece of data is missing from the HL7 message. This will not be annotated for each validation section unless otherwise noted.

If an error message is returned, it will contain a clear text reminder explaining the error. This can be viewed using the TIUHL7 Message Manager [TIUHL7 MSG MGR] which is exported in the TIU Maintenance Menu.

The following is an example of using the HL7 message Manager to check an error message:

```
   1      TIU Parameters Menu ...
   2      Document Definitions (Manager) ...
   3      User Class Management ...
   4      TIU Template Mgmt Functions ...
   5      TIU Alert Tools
   6      Active Title Cleanup Report
   7      TIUHL7 Message Manager

 Select TIU Maintenance Menu Option: 7  TIUHL7 Message Manager

Searching for messages.....

                                              Refresh Message List
```

```
TIUHL7 Message Manager          Aug 04, 2006@15:47:19          Page:    1 of    1
                              TIUHL7 Received Messages

                                                  Receiving     Sending        Message
    Message ID       Date/Time Processed          Application   Application    Status
1   99953044         Jul 31, 2006@11:24:53 TIUHL7        HTAPPL         Rejected
2   99953046         Jul 31, 2006@11:27:14 TIUHL7        HTAPPL         Rejected
3   99953048         Jul 31, 2006@11:28:44 TIUHL7        HTAPPL         Accepted
4   200T40029200608  Aug 02, 2006@11:35:11 TIUHL7        HTAPPL         Accepted
5   200T40003200608  Aug 02, 2006@14:28:14 TIUHL7        HTAPPL         Accepted
6   99953050         Aug 02, 2006@15:45:41 TIUHL7        HTAPPL         Accepted

          Enter ?? for more actions

     View Message                                Delete Message(s)
                                                 Refresh Message List
Select Action:  Quit// 2
```

Note Error message.

```
 TIUHL7 Message Viewer          Aug 04, 2006@15:47:22          Page:    1 of    1
MSA^AR^99953046^TIUHL7^HTAPPL
ERR^PV1^44^^0000.00~Could not find a visit for Jul 31, 2006@16:21.

MSH^~|\&^HTAPPL^00T5~VAWW.VITERION.CC.MED.VA.GOV~DNS^TIUHL7^689~ANONYMOUS.MED.V
A.GOV~DNS^20060731092708-0700^^MDM~T02~MDM_T02^99953046^T^2.4^^^AL^AL^USA
EVN^T02
PID^^^~~~USVHA~NI|~~~USSSA~SS|290~~~USVHA~PI||^^TIUPATIENT~FIVE
PV1^^^GI WALK-IN^^^^^^^^^^^NEW^^^^^^^^^^^^^^^^^^^^^^^^^^20040626011903
TXA^^^TEXT^200607311621^^^^^33271~TIUPROVIDER~THREE~~~~~USVHA^~^^~USVHA^^^^PROGRE
SS NOTE^^^^^^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
OBX^1^TX^SUBJECT~This is the subject ^^NEW TEST TODAY   NEW Location  NEW TEST n
ew REF date for GI WALK-IN   .

          Enter ?? for more actions

     Delete Message                              Reprocess Message

Select Item(s): Quit//
```

The messages displayed by the Message Manager are from the XTEMP Global, which is set to delete messages after seven (7) days. In other words, VistA discards HL7 messages that are more than seven (7) days old.

Appendix B: Testing

Unique Patient Identifier (one required)

Locate the patient information in the HL7 message. Details of the patient information, such as the Social Security Number (SSN), or Integration Control Number (ICN), or Data File Number (DFN), will be found in the Patient Identification (PID) segment of the HL7 message. The unique patient information is required to enter any information into a patient's Electronic Health Record.

This is a repeating field containing the Integration Control Number (ICN), Data File Number (DFN), or Social Security Number (SSN) along with the appropriate ASSIGNING AUTHORITY (USVHA or USSSA) and IDENTIFIER TYPE CODE (NI,PI,SS).

Table 1: Patient Identifier

HL7 Segment	Identifier	Position	Assigning Authority	Identifier type code
PID	National ICN	3.5	USVHA	NI
PID	SSN	3.5	USSSA	SS
PID	VistA id (DFN)	3.5	USVHA	PI
PID	Patient Identifier List	3.1	ICN	Use with patient name to identify unique patient in Patient File #2
PID	Patient Identifier List	3.1	SSN	Use with patient name to identify unique patient in Patient File #2
PID	Patient Identifier List	3.1	DFN (IEN) for Patient File #2	Use with patient name to identify unique patient in Patient File #2 Pointer to Patient File #2 will be stored in TIU Document File #8925, field .02 PATIENT

TIUHL7 Validation:

The PATIENT IDENTIFIERS are used to perform a patient lookup in the VistA database. If only one numeric identifier is sent, the name comparison will occur between the LAST NAME and FIRST INITIAL.

If two or more numeric identifiers are sent, the name comparison will occur between the LAST NAME only. The name from the lookup is compared with the patient name from the HL7 message. Any discrepancy between the lookup name and the HL7 message name will stop document processing.

If multiple PATIENT IDENTIFIERS are sent, each patient lookup value of the DFN is compared against the other PATIENT IDENTIFIER lookup values of the DFN. Any discrepancy will stop document processing.

If multiple patients are returned using the DFN, ICN, or SSN, Date of Birth, the patient's last and first name with the full Social Security Number will be required to select a unique patient.

Table 2: Patient Identifier (continued)

HL7 Segment	HL7 Field	Position	Content	Use/Comment
PID	Patient Name – Family Name	5.1.1	Last name	Use with patient SSN, ICN, or DFN to identify unique patient in Patient File #2
PID	Patient Name – Given Name	5.2	First name	Use with patient SSN, ICN, or DFN to identify unique patient in Patient File #2
PID	Patient Name – Second And Further Given Name	5.3	Middle name	Use with patient SSN, ICN, or DFN to identify unique patient in Patient File #2

Name fields from HL7 message are text fields and should be checked for escape sequences. COTS packages should replace all special characters used by HL7 with the appropriate escape sequences in text fields. See Table 11, Information about Delimiters And Escape Sequences.

TIU may need to format name fields from the HL7 message into the VistA name format. TIU may need to combine the first letter of the last name with the last four characters of the SSN for a patient search. If the search returns multiple patients, full name and SSN should be compared to locate the unique patient. If a unique patient is located, HL7 message processing continues.

If no unique patient matches the information in the PID segment of the message, an application acknowledgement HL7 error message will be returned to the COTS package stating that the patient could not be located. No TIU document will be created. HL7 message processing will stop.

Patient Visit (optional)

Locate the patient visit in the HL7 message, if the patient Visit IEN is in the HL7 message, use it to locate the patient visit in VistA. If there is no IEN in the HL7 message, use the admission date and time in the message to locate the visit. If no patient visit is located, check the Document.

Appendix B: Testing

Availability Status field in the HL7 record to see if the document should be created. If it indicates that a TIU note should be created when an exact visit cannot be found. A patient historical visit will be created from the date and time in the message. HL7 message processing will continue.

If there is an error and a new visit cannot be created, an HL7 application acknowledgement error message returns to the COTS package, stating the visit could not be created. No TIU document will be created. HL7 message processing will stop.

If the document availability status field indicates that a TIU note should not be created when an exact visit cannot be located, an HL7 application acknowledgment error returns to the COTS package stating that an exact patient visit could not be located and no note is created, as indicated by the COTS package. HL7 message processing will stop.

Table 3: Patient Visit

HL7 Segment	HL7 Field	Position	Content	Use/Comment
PV1	Visit Number	19.1	IEN for Visit File #9000010	If the COTS package has the visit IEN, it can be entered into this field to facilitate location of the appropriate visit. Pointer to Visit File #9000010 will be stored in TIU Document File #8925, field .03 VISIT
PV1	Admit Date/Time	44.1	Date of the admission or outpatient visit	Used to locate unique visit in Visit File #9000010 Or used to create unique visit in Visit File #900010 May be stored in TIU DOUCMENT File #8925, field .07 EPISODE BEGIN DATE/TIME
TXA	Document Availability Status	19		TIU will use this field to determine if the document should be stored if the visit cannot be found. AV - keep document If visit cannot be located, a new visit will be created as a historical visit using today's date (NOW). The document will be attached to this new visit. CA or blank - delete document If visit cannot be located, delete the document and pass back the appropriate error

HL7 Segment	HL7 Field	Position	Content	Use/Comment
				message.

Unique Document Note Title (required)

Locate the Unique Document Name, the title of the note, in the HL7 message. The TIU Note Title Name must match the exact name in the message. If there is no Note Title, return an HL7 application acknowledgement error message stating that the note title does not match an existing TIU note title. No TIU documents will be created. HL7 message processing will stop.

If a Note Title is found, HL7 message processing continues.

If the note title is under the Consults document class, but the HL7 message does not contain a Consult number, return an HL7 application acknowledgement error message stating that the consult number is missing. No TIU document will be created. HL7 message processing will stop.

If the note title is under the Surgical Reports document class, but the HL7 message does not contain a Surgery case number, the program attempts to access the case number by doing a lookup with the Admission Date/Time from the HL7 message. If it cannot find a Surgery case number, it will return an HL7 application acknowledgement error message stating that the surgery case number is missing. No TIU document will be created. HL7 message processing will stop.

If the note title is under the Discharge Summary document class, but the HL7 message does not contain a Admit Date/Time, return an HL7 application acknowledgement error message stating that the discharge date is missing. No TIU document will be created. HL7 message processing will stop.

Table 4: Document Table

HL7 Segment	HL7 Field	Position	Content	Use/Comment
TX**A**	Unique Document File Name	16	TIU document title	This field contains a unique document title which must exist in the TIU Document Definition File #8925.1 at the receiving location.

Appendix B: Testing

This patch is a required patch for the Home Telehealth/Vista Integration program. The titles listed below are the agreed upon titles by the Office of Care Coordination for the Home Telehealth program.

☞ **Note:** In order for the Home Telehealth interface to work, the titles must be an EXACT match.

Installing these titles during the HL7 patch installation is optional. If they were installed, any titles that already exist in 8925.1 as an EXACT match will simply be ignored and no changes will be made for that entry; only titles that do not yet exist will be added to 8925.1. Therefore it is highly suggested that you review the list of titles and the document class that will be added to File 8925.1 with this patch prior to installation.

The Home Telehealth titles are:

```
File # 8925.1

TIU DOCUMENT DEFINITION
-------------------------
Consult Titles:
 CARE COORDINATION HOME TELEHEALTH SCREENING CONSULT

Document Class (Progress Notes):
 CARE COORDINATION HOME TELEHEALTH NOTES

Progress Note Titles (CARE COORDINATION/HOME TELEHEALTH NOTES):
 CARE COORDINATION HOME TELEHEALTH DISCHARGE NOTE
 CARE COORDINATION HOME TELEHEALTH EDUCATION NOTE
 CARE COORDINATION HOME TELEHEALTH EVALUATION NOTE
 CARE COORDINATION HOME TELEHEALTH EVALUATION TREATMENT PLAN
 CARE COORDINATION HOME TELEHEALTH SUBSEQUENT EVAL NOTE
 CARE COORDINATION HOME TELEHEALTH SUMMARY OF EPISODE NOTE
 CARE COORDINATION HOME TELEHEALTH TELEPHONE ENCOUNTER NOTE
 CARE COORDINATION HOME TELEHEALTH VIDEO VISIT NOTE
```

Text (required)

Verify that the HL7 message contains document text. The text of the document is located in the OBX section of the HL7 message. If there is no text in the HL7 message, an application acknowledgement error message will be returned to the COTS package stating that there is no document text. No TIU document will be created. HL7 message processing will stop.

If there is text in the HL7 message, processing will continue.

There are several types of documents that can be uploaded in the HL7 message. Different types of documents have different types of required field:

Surgical Operative report documents require the unique Surgery Case Number. If no Case Number is provided and there is only one surgery case for the day, the document text will be added to an existing TIU Surgical Operative Report stub note for the surgery date if a note does not already exist with text. If a Surgery case number is provided with a date, the document will be created. If there is no Surgery Case Number and there is no date provided for the surgery, an error message will be returned to the COTS package. The surgery case number is located in the Unique Document Number element TXA 12 section of the HL7 message segment.

Discharge Summary documents require a particular admission date in order for a document to be created. If there is no match on the admission date, an application error message will be returned to the COTS package. This discharge date is located in the PV1 44 section of the HL7 message segment.

Consults require the unique ID number of the Consult. If the unique ID number is present, processing continues. If the unique ID number is blank or the ID provided cannot be found, no consult document is created and an application error message is returned. This document type is located in the TXA 12 section of the message segment.

Appendix B: Testing

Table 5: Text

HL7 Segment	HL7 Field	Position	Content	Use/Comment
OBX	Observation Value (repeatable element, one for every line in the report)	5	Document text	Text of TIU document. Only one OBX segment will be included in the message. This text will be stored in TIU Document File #8925, field 2 REPORT TEXT The Observation Value element is repeatable and is used to transmit document text. Each Observation Value should contain a single line of the text document. Leading spaces should be included. Trailing spaces should be removed. The sending package will substitute the appropriate escape sequences for every field separator and encoding character in this and any other text field in the message. The receiving package will change every escape sequence back to the appropriate special character.

Document Author (required)

Verify the author of the document located in the TXA section of the HL7 message. Locate Author information in the New Person File #200 using the Name and SSN located in the HL7 message. Current TIU rules will apply to the Author. Signed by author will use Current APIs.

The NAME is required and if missing will stop document processing. The ID NUMBER is optional but recommended. If the ID NUMBER is not included, an exact match lookup will be performed using the name from the HL7 message. If this lookup fails, document processing will stop.

If the ID NUMBER is included, it will be used to perform the lookup and retrieve the author/dictator name. If a name is found, it is validated against the name from the HL7 message. If this comparison fails, document processing will stop.

The document Originator is the author or dictator and is the expected signer. This project expects the expected signer or expected cosigner will be the only signers.

Table 6: Document Author Table

HL7 Segment	HL7 Field	Position	Content	Use/Comment
TXA	Originator Code/Name – ID	9.1	SSN or IEN	Use with clinician name to identify unique clinician in New Person File #200 This is the author/dictator of the document in the TIU Document File #8925, field 1202 AUTHOR/DICTATOR
TXA	Originator Code/Name – Family Name	9.2.1	Last name	Use with clinician SSN to identify unique clinician in NEW PERSON File #200 Pointer to this person will be stored in TIU Document File #8925, field 1204 EXPECTED SIGNER
TXA	Originator Code/Name – Given Name	9.3	First name	Use with clinician SSN to identify unique clinician in NEW PERSON File #200
TXA	Originator Code/Name – Second And Further Given Name	9.4	Middle name	Use with clinician SSN to identify unique clinician in New Person File #200
TXA	Assigning authority/Namespace ID	9.9	USSSA or USVHA	USSSA means 9.1 is an SSN USVHA means 9.1 is an IEN

Activity Date/Time (required)

Verify the activity date and time of the document, which is located in the TXA segment of the HL7 message. If there is no activity date and time in the HL7 message, an application acknowledgement error message will be returned to the COTS package stating that no activity date/time exists. No TIU document will be created. HL7 message processing will stop.

If the document activity date and time is not blank, HL7 processing will continue.

Table 7: Origination Date/Time

HL7 Segment	HL7 Field	Position	Content	Use/Comment
TXA	Activity Date/Time	6.1	Reference date/time Dictation date/time	Date/time the document was created (dictated, recorded) This date will be stored in TIU Document File #8925, field 1301 REFERENCE DATE and TIU Document File #8925, field 1307 DICTATION DATE (if document was dictated)

Create New TIU Document

Create a TIU document note if all the following data elements are verified:
The patient is uniquely matched in VistA
The activity date/time is not blank
The HL7 message contains text
The author is a unique match in VistA and does not require a cosigner (TIU business rules)
The document note title is located in TIU and required fields for that document type are verified (the document type is in the HL7 message):
Progress note: title exists in the TIU PROGRESS NOTES document class
Consult document: title exists in the TIU CONSULTS document class, and unique document number (consult number) must exist in VistA; document will be linked to the consult;
Discharge summary document: title exists in the TIU DISCHARGE SUMMARY document class and admit date/time must be verified; document will reference the date of admission
Surgical Operative Report: title exists in the TIU SURGICAL REPORTS document class and unique document number (surgery case number) must exist in the Surgery package - if no case number, activity date must match the date of an existing surgery case; document text will be stored in existing TIU Surgery stub note.

An application acknowledgement is returned if the note is created. If there is a problem creating the progress note an application error acknowledgement is returned that states that the note could not be created, no TIU document is created, and HL7 message processing stops.

Appendix B: Testing

Expected Cosigner (conditionally required)

If the author requires an expected cosigner and one isn't included in the HL7 message, document in not created and an error message is returned.

The NAME is required and if missing will stop document processing. The ID NUMBER is optional but recommended. If the ID NUMBER is not included, an exact match lookup will be performed using the name from the HL7 message. If this lookup fails, document processing will stop.

If the ID NUMBER is included, it will be used to perform the lookup and retrieve the expected cosigner name. If a name is found, it is validated against the name from the HL7 message. If this comparison fails, document processing will stop.

Table 8: Expected Cosigner

HL7 Segment	HL7 Field	Position	Content	Use/Comment
TXA	Assigned Document Authenticator – ID	10.1	SSN	Use with clinician name to identify unique clinician in New Person File #200 Identifies expected cosigner for unsigned documents in the TIU Document File #8925, field 1208 EXPECTED COSIGNER.
TXA	Assigned Document Authenticator – Family Name	10.2.1	Last name	Use with clinician SSN to identify unique clinician in New Person File #200 Identifies expected cosigner for unsigned documents.
TXA	Assigned Document Authenticator – Given Name	10.3	First name	Use with clinician SSN to identify unique clinician in New Person File #200 Identifies expected cosigner for unsigned documents.
TXA	Assigned Document Authenticator – Second And Further Given Name	10.4	Middle name	Use with clinician SSN to identify unique clinician in New Person File #200 Identifies expected cosigner for unsigned documents.
TXA	Identifier type code	10.13	COSIGNER	This code indicates that the person specified in this group of elements is the expected cosigner of this document

Entered By

Segment: TXA
Field: TRANSCRIPTIONIST CODE/NAME
Example: 666123456~TRANSCRIBER~ONE TIUHL7~~~~~USSSA
Required: No
TIU Field: 1302 ENTERED BY
Description: The name of the transcriptionist in HL7 format along with the appropriate ID NUMBER (SSN or IEN) and NAMESPACE ID (USSSA or USVHA).

TIUHL7 Validation:

The NAME is required and if missing will stop document processing. The ID NUMBER is optional but recommended. If the ID NUMBER is not included, an exact match lookup will be performed using the name from the HL7 message. If this lookup fails, document processing will stop.

If the ID NUMBER is included, it will be used to perform the lookup and retrieve the transcriptionist. If a name is found, it is validated against the name from the HL7 message. If this comparison fails, document processing will stop.

Visit Number

Segment: PV1
Field: VISIT NUMBER
Example: 144701
Required: No
TIU Field: .03 VISIT
Description: This is the IEN of the desired Visit from file #9000010.

TIUHL7 Validation:

The identified patient is compared with the patient indicated from the Visit # and any discrepancy will stop document processing.

If a Visit # is not sent, the EPISODE BEGIN DATE/TIME will be used as a lookup value to find a Visit #. If this lookup fails and DOCUMENT AVAILABILITY not sent as "AV", document processing will stop.

Appendix B: Testing

Hospital Location

☞ **Note:** Visits are required for all TIU documents.

Segment: PV1
Field: ASSIGNED PATIENT LOCATION
Segment: point of care
Example: EXAMPLE LOCATION
Required: Conditionally
TIU Field: Hospital Location

Description: Only the first component, point of care, is supported as the free text name of the HOSPITAL LOCATION (file # 44). Do not add any component separators.

TIUHL7 Validation:

This VISIT validation supersedes all previous versions for all the associated fields: ADMIT DATE/TIME, ACTIVITY DATE/TIME, HOSPITAL LOCATION, VISIT # & DOCUMENT AVAILABILITY.

For DISCHARGE SUMMARIES:

- must have a co-signer and TIUHL7 will also use to set ATTENDING PHYSICIAN
    - - If a VISIT # is sent: Patient in HL7 message and VISIT must match
- If a VISIT # is NOT sent:
    - ADMIT DATE/TIME is required for the admission lookup, otherwise message will be rejected.
    - Will use ADMIT DATE/TIME to find an admission. If multiple admissions for that day, HOSPITAL LOCATION will be used to find the most recent admission. If multiple matches for a given HOSPITAL LOCATION, lookup fails and message will be rejected.

For PROGRESS NOTES:

- For NEW VISIT (including new HISTORICAL):
    - VISIT # must be sent as NEW

- If DOCUMENT AVAILABILITY is AV, a new HISTORICAL visit will be created, otherwise a NEW VISIT will be created.

- HOSPITAL LOCATION is required for new, NON-HISTORICAL visits (will reject). A HISTORICAL VISIT may be set as "NO LOCATION" if one is not sent.

- The ADMIT DATE/TIME will be used as the visit date. If this date is NOT sent, it will use NOW.

- If the HOSPITAL LOCATION is a ward location, the visit type will be "I" for inpatient. If the visit is a historical visit, the type will be "E" for event. All other visits will be "A" for ambulatory.

For non-historical visits, If the HOSPITAL LOCATION cannot be determined via lookup, message will be rejected.

For EXISTING VISIT:

- VISIT # must be sent

- Patient in HL7 message and VISIT must match

To lookup EXISTING VISIT:

- VISIT # must NOT be sent or equal to null

- VISIT lookup varies based up type of DATE used for lookups.

IF an ADMISSION is to be used, the ADMIT DATE/TIME MUST be sent. Using same matching logic from above, if an ADMISSION cannot be found, message will be rejected.

IF a CLINIC APPOINTMENT is to be used, the ADMIT DATE/TIME must NOT be sent and the ACTIVITY DATE/TIME will be used to find the clinic appointment. If an APPT cannot be found, the message will be rejected UNLESS DOCUMENT AVAILABILITY is set as AV, then a new historical visit using NOW will be used.

Appendix B: Testing

Dictation Date/Time

Segment: **TXA**
Field: **TRANSCRIPTION DATE/TIME**
Example: 200602281530 (Feb 28, 2006@3:30 pm)
Required: No
TIU Field: 1307 DICTATION DATE
Description: This is the date/time in HL7 format.

TIUHL7 Validation:

This value is used for the DICTATION DATE of the TIU document.

Episode Begin Date/Time (conditionally required)

Segment:PV1
Field: ADMIT DATE/TIME
Example: 200601311200 (Jan 1, 2006@12:00 pm)
Required: Conditionally Required*
TIU Field: 07 EPISODE BEGIN DATE/TIME
Description: This is the date/time in HL7 format.

TIUHL7 Validation:

Used if a VISIT # is not included in the HL7 message to find a visit for the patient. If a visit cannot be found (none or multiple visits for the date), document processing will stop if DOCUMENT AVAILABILITY not sent as "AV".

This date is also used to find an OPERATION REPORT or PROCEDURE REPORT if the associated Surgical Case # is not included in the HL7 message.

Required for DISCHARGE SUMMARY if VISIT # not sent, otherwise optional.

Reference Date/Time

Segment: TXA
Field: ACTIVITY DATE/TIME
Example: 200603061400 (March 6, 2006@2:00 pm)
Required: Yes
TIU Field: 1301 REFERENCE DATE/TIME
Description: This is the date/time in HL7 format.

TIUHL7 Validation:

This is the date by which the document will be referenced and sorted. For Progress Notes & Discharge Summaries, this should be the date of the visit. For OPERATION REPORTS, this should be the date of the surgical case. Because this date is used in sorting, no validation is done by TIUHL7.

This date is used to determine the author's cosigner requirements.

Surgical Case # or Consult # (conditionally required)

Segment: TXA
Field: UNIQUE DOCUMENT NUMBER
Example: 2112
Required: Conditionally Required*
TIU Field: 1405 REQUESTING PACKAGE REFERENCE
Description: This is the surgical case # or consult #.

TIUHL7 Validation:

Based on the document title class, TIUHL7 will validate the value from the HL7 message as either a surgical case # or consult request #.

For both the consult and surgical case, TIUHL7 will validate the patient against the patient from the consult/surgical case. Any discrepancy will stop document processing.

Required for Consult titles; optional for SURGICAL REPORTS.

Signature Status (required)

Check the signature status of the HL7 message. The HL7 element Document Completion Status should contain LA for Legally Authenticated if the document is supposed to be signed and the signature information is included in the HL7 message. The value of PA or blank indicates that the document is not signed. Processing of the HL7 message continues.

Appendix B: Testing

Table 9: Signature Status

HL7 Segment	HL7 Field	Position	Content	Use/Comment
TXA	Document Completion Status	17	LA, PA, or NULL	Determines whether the document is signed or not. PA/Pre-Authenticated: A completion status for documents indicating that the Document is complete, but has not been signed. LA/Legally Authenticated: A completion status in which a document or entry has been signed manually or electronically in the COTS package by the individual who is legally responsible for that document or entry.

TIUHL7 follows regular TIU business rules when setting the document signature status. The document signature status is determined by parameters assigned at the title level or inherited from the parent document class or class level.

Some TIU title parameters (Require Verification & Release) are only followed if the capture method is "upload", so all TIUHL7 titles will be set to "upload" upon document creation.

TIU can apply signatures to uploaded documents if the document status is "unsigned" or "uncosigned".

TIU cannot apply signatures to uploaded documents if the document requires verification ("unverified" status) and/or release ("unreleased" status).

If the TIU HL7 message contains signature information and a document availability status is "AV" then the document will be created and TIU will attempt to electronically sign the document; if the signature fails, the document will be kept in an unsigned status. After the signature(s) have been applied, the document with either be in an "uncosigned" or "completed" status.

If the TIU HL7 message contains signature information and the document availability status is not "AV", the document will not be saved due to the failure to apply the electronic signature.

Document Completion Status

Segment: TXA
Field: DOCUMENT COMPLETION STATUS
Example: LA
Required: No
TIU Field: N/A
Description: This can be set to Legally Authenticated (LA) or blank.

TIUHL7 Validation:

During message processing, if this value is set to LA, at least one electronic signature must be applied to the document. If electronic signature fails and the availability is not set to AV, the document will be deleted.

Document Availability

Segment: TXA
Field: DOCUMENT AVAILABILITY STATUS
Example: AV
Required: No
TIU Field: N/A
Description: This can be set to either AV or blank.

TIUHL7 Validation:

During message processing, this value is used to determine the status of a TIU document.

If a visit cannot be found or the DOCUMENT COMPLETION STATUS is sent as Legally Authenticated (LA) and the signature action fails, and this status is not set to available (AV), then the document will be deleted.

Appendix B: Testing

Delimiter values

Table 11: Information about Delimiters and Escape Sequences.

Delimiter	Suggested Value	Encoding Character Position	Escape Sequence	Usage
Segment Terminator	<cr> (hex 0D)	-		Terminates a segment record. This value cannot be changed by implementers.
Field Separator	^	-	\F\	Separates two adjacent data fields within a segment. It also separates the segment ID from the first data field in each segment.
Component Separator	~	1	\S\	Separates adjacent components of data fields where allowed.
Subcomponent Separator	&	4	\T\	Separates adjacent subcomponents of data fields where allowed. If there are no subcomponents, this character may be omitted.
Repetition Separator	|	2	\R\	Separates multiple occurrences of a field where allowed.
Escape Character	\	3	\E\	Escape character for use with any field represented by an ST, TX, or FT data type, or for use with the data (fourth) component of the ED data type. If no escape characters are used in a message, this character maybe omitted. However, it must be resent if subcomponents are used in the message.

When a field of type TX, FT, or CF is being encoded, the escape character maybe used to signal certain special characteristics of portions of the text field. The escape character is whatever display ASCII character is specified in the <escape character> component of *MSH-2-encoding characters.* For purposes of this section, the character \ will be used to represent the character so designated in a message. An *escape sequence* consists of the escape character followed by an escape code ID of one character, zero (0) or more data characters, and another occurrence of the escape character.

Information about delimiters and handling of HL7 text

There maybe special character embedded in text that also have meaning within HL7. The sending system will be responsible for changing every one of these special characters into the appropriate escape sequences before they place the text into the HL7 message.

For every field parsed from the HL7 message that is a data type TX (text) or ST (simple string), call a function that will replace all escape sequences with the corresponding field separator or encoding character.

For every text field placed into an HL7 message, call a function that will replace all field separator or encoding characters with the corresponding escape sequence.

Document text in OBX segmented field 5 is delimited by Field Separator "^". The Observation Value will be repeated once for every line of the document.

For every name parsed from the HL7 message, call a function that will take the fields and format a VistA name.

For every name placed into an HL7 message, call a function that will take the VistA name and split it into HL7 format.

Vendor Guidelines

Overview

This document describes the technical details behind TIUI/HL7 functionality that will allow computer-off-the-shelf (COTS) packages to upload documents into Text Integration Utility (TIU) using Health Level Seven (HL7) messaging. Each COTS package must have authorized access to the VA VistA system located behind a VA firewall at a VA data center that runs VistA TIU software. A critical function of the Home Telehealth systems will be their ability to communicate with existing Veteran Health Administration (VHA) computer systems, including VistA.

HL7 is the VA-adopted standard for the exchange of data that supports clinical patient care, and the management and delivery of healthcare services. HL7 accomplishes data exchange by defining the protocol for exchanging clinical data between healthcare information systems. As a standard, HL7 is widely accepted and used both nationally and internationally. Any vendors that wish to upload documents in HL7 format will be required to incorporate into their systems the ability to accept and send HL7 messages.

TIU is a software package written and maintained by VHA that allows users to create many different types of clinical documents and store them in a patient's electronic record. Currently, clinical users can type document text directly into TIU. The TIU Upload utility also allows users to create documents outside of VistA and upload them into a TIU document using Kermit. The TIU Upload utility will not change and will still be available to users who need this functionality. Since the VistA systems have evolved and HL7 has become the adopted standard for transmission of health data, the VHA was in need of a new HL7 utility to upload documents into TIU.

This TIU/HL7 utility is designed to accommodate upload of *most* types of TIU documents. TIU Upload can still be used to upload text documents that cannot be handled TIU/HL7.

This document gives an overview of the functions that must be implemented using HL7 messaging. The rest of this document is divided into overview of the data flow, detailed overview of each function, and specifications and references. The section **Background of the VistA TIU Application** provides the setting for Text Integration Utilities. The **Generic HL7 Functions** section provides information about each TIU document type that is supported by this software. Section **Required Fields** and the following sections contain the specifications for the HL7 data fields and the references that form the basis of this document.

Appendix B: Testing

Table 12 contains the acronyms and abbreviations used in this document.

Table 12: Acronyms and Abbreviations

Acronym	Description
AAC	Austin Automation Center
ADT	Admission, discharge and Transfer
ACK	Acknowledgement
CIO	Chief Information Officer
CPRS	Computerized Patient Records System
DDC	Denver Distribution Center
DFN	Data File Number
ESM	Enterprise Systems Manager
Hines	Hines Data Center
HL7	Health Level 7 protocol
HT	Home Telehealth
ICN	Integration Control Number
IE	Interface Engine
IEN	Internal Entry Number
M&IS	Messaging & Interfaces Services
MPI	Master Patient Index
OCC	Office of Care Coordination
OI	Office of Information
PD	Patient Demographics
RDV	Remote Data View
ROES	Remote Order/Entry System
SSN	Social Security Number
TCP/IP	Transmission Control Protocol/Internet Protocol
URL	Universal Record Location
VA	Department of Veterans Affairs
VACO	Veterans Affairs Central Office
VAMC	Department of Veterans Affairs Medical Center
VIE	VistA Interface Engine
VISN	Veterans integrated service unit
VistA	Veterans Health Information Systems and Technology Architecture
VHA	Veterans Health Administration
WAN	Wide Area Network

Appendix B: Testing

Background of the VistA TIU Application

The VistA Test Integration Utilities (TIU) application was designed as a repository for a variety of text documents that belong in the patient record. The purpose of TIU) is to simplify the access and use of clinical documents for both clinical and administrative VAMC personnel, by standardizing the way clinical documents are managed. TIU includes a document hierarchy that is made up of Classes, Document Classes and Document titles. Titles a under a Document Class take on the characteristics of that document class and each document class has its own unique requirements

Progress Notes

VistA users create Progress Note titles in the TIU PROGRESS NOTES Class. When TIU creates a Progress Note document, TIU must associate this type of document to a visit. HL7 Progress Note messages should contain information to identify an existing visit in VistA. If visit information is missing from a Progress Note HL7 message or if TIU cannot find the visit, TIU will reject the HL7 message unless it contains information that instructs TIU to create a new patient historical visit with the activity date and time in the message.

Consult Notes

VistA users create Consult Note titles in the TIU CONSULTS Document Class. Consult notes must be linked to a Consult at the time they are created.

A VistA user creates a consult order. To resolve a consult, the VistA user selects a Consult Note title and selects an open consult from a list of patient. A signed consult note completes the consult, but a user can link any number of additional consult notes to a single consult. HL7 Consult Note messages must contain the DFN of an existing VistA Consult. If the consult information is not included in a Consult Note HL7 message, TIU will reject the HL7 message.

Surgery Reports

VistA users create Surgery Report titles in the TIU SURGICAL REPORTS Document Class. The Surgery package assigns a case number to each Surgery case. The Surgery package creates a “stub” surgery note at the time a VistA user completes a Surgery case in the Surgery package. The stub document is just a placeholder and does not contain text. Currently, the VistA user can manually enter text or TIU Upload can add the transcribed text to the stub note if it can locate the stub note using the surgery case number. HL7 Surgery Report messages should contain the surgery case number. If the surgery case number is missing, TIU will look for the Operation date in the element Activity Date/Time. If the Activity Date/Time can be located in the Surgery package and there is only one surgery for that date/time, TIU will add the text to an existing stub surgery note.

Appendix B: Testing

Discharge Summaries

VistA users create discharge summary Note titles in the TIU DISCHARGE SUMMARY Document Class. Discharge Summary notes must be linked to an admission.

TIU requires a particular admission in order to create a discharge summary document. HL7 discharge summary messages must include an admission date. If there is no match on the admission date, TIU will reject HL7 message.

Appendix B: Testing

Assumptions

1. The vendor has some relationship or contract with the VHA that gives them access to the VA WAN.
2. The vendor has some information from the VA about a site: location,
3. The vendor has some information from the VA about a patient: name, national identity (ICN), VistA identity (DFN), US identity (SSN), Date of Birth
4. The vendor has some information about the author of the note: Name, VistA identity (DFN), US identity (SSN)
5. The vendor has some information about other VA employees, like cosigner, attending physician: Name, VistA identity (DFN), US identity (SSN)
6. The vendor knows the exact document title that will be created at each site
7. The VA sites that receive the HL7 message will create not new document titles if the exact title does not already exist

Each COTS package that uses the TIUHL7 software has some patient data that the vendor and their VHA contact want to upload as document text into the VistA electronic patient record. This information could be:

- Transcription text for a report or a note
- Details of an order placed with a system outside of VistA
- Details of a completed assessment or care plan
- Incident report or periodic status

Each vendor, working with VHA staff, must answer the following questions:

- What information from the COTS package needs to uploaded into a TIU document
- What type of TIU document should be created?
  - Surgery report that will be text for an existing stub surgery note
  - Consult note that will be linked to an existing consult
  - Discharge summary that will be associated with an admission date
  - Progress note that will be associated with a visit date.
- What should be the format of the document text?
  - Simple text must be created, without formatting information
  - TIU will do no formatting, it will just store lines of text
- What type of TIU note should the HL7 message upload?
  - The HL7 message is required to contain some specific information for each TIU document type, but the HL7 message does not control the type of document that TIU will create; TIU controls the document type by following rules for the TIU document class that contains the document title
  - Progress note titles must be created in the TIU PROGRESS NOTES class
  - Discharge summary note titles must be created in the TIU discharge SUMMARY document class
  - Consult note titles must be created in the TIU CONSULTS document class
  - Surgery report titles must be created in the TIU SURGICAL REPORTS document class

  - The title must be included in the HL7 message and must be the exact spelling as the title stored in TIU at the site that receives the HL7 message
- Should the document be stored in TIU as a signed or unsigned document?
  - Signature information may be included in an HL7 message, but the COTS package should have a legal electronic signature on file before they create a signed document in TIU
  - TIU must be able to locate an electronic signature in VistA for any signer designated in the HL7 messageTIU/HL7 software will respect existing TIU business rules as it evaluates each document and determines the correct status
  - The TIU/HL7 upload process can result in TIU documents with the following status codes: UNRELEASED, UNVERIFIED, UNSIGNED, UNCOSIGNED, COMPLETED
- What VistA location should receive the HL7 message?
  - The COTS package should have received information from a VistA location and should send documents to that location so they can be stored as part of the patient record

Once the vendor and the VHA staff agree on all of these points, each vendor must modify their software to create an MDM/T02 HL7 message and send it to TIU. The vendor software should contain the following functionality:

- Define a trigger, or multiple triggers, that will generate an MDM/T02 HL7 message
  - Trigger when a document has been completed – create unsigned document
  - Trigger when a document has been signed – create signed document
  - Trigger to create one HL7 message; could be used to retransmit message that failed, once the message has been corrected; could be used to upload individual documents created from information that existed prior to the installation of the TIU/HL7 software
  - Trigger to create a series of HL7 messages for completed or signed documents that have not been uploaded to VistA for a given date range; could be used to upload documents created from information that existed prior to the installation of the TIU/HL7 software
- Modify COTS software to create and send one MDM/T02 HL7 message for each document
  - Each trigger can generate one or many HL7 messages
  - Software may queue a number of individual HL7 messages to be sent at a later time when system performance should not be impacted
  - Each HL7 message should be complete and will be processed separately, as one HL7 message
  - COTS software should not create what is known as an HL7 “batch” with one header and multiple records – TIU will not be able to process the data.
  - Vendor software must be connected to the VA WAN
  - HL7 message can be sent via TCP/IP or HTTP protocol
- Modify COTS software to receive HL7 acknowledgement messages
  - Receive HL7 commit acknowledgement (ACK) message that indicates if the HL7 message was received by VIE/VistA TIU

  - Receive an application ACK message if TIU document is successfully stored
  - Receive an application ACK reject message if TIU document is not successfully stored
- Vendor should have process for resolving errors
  - Receive an email from VIE if the HL7 message could not be properly forwarded by the VIE or if there is an error – must designate an email recipient
  - Errors will need to be resolved on the vendor side; there will be no error buffer on the TIU side where errors can be resolved, as is currently available with TIU Upload.
  - Record successful transmissions in the vendor software to prevent retransmission of the same document
  - Record transmission failures in the vendor software to trigger error resolution or document retransmission (automated or manual)
  - Review the HL7 application ACK reject message to determine if the problem is data related and correct the patient data
  - Review the HL7 application ACK reject message to determine if the problem is software related and correct the software
  - Provide reports of successful uploads, failed uploads, and uploads where no ACK was received.
  - Provide for retransmission of individual messages

TIU will not create any document and/or PCE visit file entry until it has verified all required fields. TIU will only create the document once if all the necessary fields are present and pass verification.

Once the data from the HL7 message is verified, TIU creates the document and assigns a status to the document. TIU will generate signature alerts for the appropriate individuals. The COTS package will send the document text in the OBX segment of an MDM/T02 HL7 message. Chapter 9 of the HL7 2.4 standards manual defines messages to support *Medical Records/Information Management (Document Management).*

A network of Interface Engines (IE) will move all HL7 messages from the vendor software to the VistA TIU software. Each COTS package must have access to a local VA interface engine using TCP port 8090. The validation and testing document will include the IE domain name and port number that each vendor will use at the VA sites that receives the HL7 message.

Generic HL7 Functions

The Function section describes the different types of documents a COTS package can upload to the VistA patient record with an HL7 message. Vendors will send all documents using the MDM/T02 HL7 message type.

All messages require a basic set of information that identify the VistA facility, the patient, the author of the document and the document title. Sub heading 3.1 documents this basic information. Subsequent subheadings will refer back to the basics in section 3.1.

The MDM/T02 HL7 message can be sent to upload the following types of documents: progress note, consult note, discharge summary, addendum, or surgery report. Each document type is described under separate document sub headings.

☞ **Important!** Please note: The choice of document type is *not* under the control of the HL7 message. The TIU software determines document type based on the location of the document title within the TIU document hierarchy:

- A progress note title must be stored in the TIU PROGRESS NOTE Class
- A consult note title must be stored in the TIU CONSULTS Document Class
- A discharge summary title must be stored in the TIU DISCHARGE SUMMARY Document Class
- A surgery report title must be stored in the TIU SURGICAL REPORTS Class

The HL7 message has a field for Document type, but this field is not supported because it will not override TIU business rules. To give an example, a single HL7 message could create two different document types.

Intent: Create a consult note that is linked to a particular consult

The consult number is included in the HL7 message and the document title is located under the TIU CONSULTS Document Class; TIU will create a Consult Note.

Expected Result: Correct document type created.

A consult number is included in the HL7 message, but the document title is located under the TIU PROGRESS NOTES Document Class; TIU will ignore the consult number and create a Progress Note.

Unexpected Result: Incorrect document type created.

This document is not a replacement for the HL7 manuals. For more information about the MDM/T02 HL7 message, refer to Chapter 9 of the HL7 2.4 standard: *Medical*

Appendix B: Testing

Records/Information Management (Document Management). Information specific to this software HL7 requirements are documented under each document type below.

Appendix B: Testing

TIU Document: Progress Note

The vendor has patient information to upload to VistA and they and their VistA contact has decided that it should be stored as a TIU Progress Note. The vendor software formats the information into document text, builds an HL7 message that contains this text, and sends the HL7 message to VistA, where TIU stores the text in the patient record as a TIU Progress Note.

Description

The vendor creates an MDM/T02 HL7 message to upload a progress note. The message contains document text, information to identify a patient, the document author, the progress note title, and visit information if they want the progress note linked to an existing visit.

TIU will verify the content of the HL7 message and will not create the progress note until it has finished verifying all the required fields. If there are errors, TIU will send an HL7 Application Reject Acknowledgement message to the vendor software. The message will include text descriptions of all the errors found during data verification. If there are no errors, TIU will store the text in a progress note.

Responsibilities

Responsibilities are the required actions necessary for the completion of the function; the following paragraphs list the responsibilities.

Vendor Responsibilities

In support of the process of creating a progress note, vendor is responsible for:

- Establishing a relationship with one or more VHA sites so the vendor has access to the VHA WAN and an interface engine server located at a VA site
- Receiving information from the VHA site that will:
  - Uniquely identify a patient
  - Uniquely identify the VistA location that will receive and store the progress note
  - Uniquely identify the VistA user who is the author (signer) of the document.
  - Uniquely identify the progress note title at the receiving VA site into which the document text will be stored
  - Uniquely identify the VistA visit that will be linked to the progress note at the time the document is created:
    - Visit IEN
    - Admission date/time
    - Authorizing TIU to create a new visit or reject the HL7 message if an existing visit cannot be located.
- Working with their VHA contacts to determine the acceptable layout for the document text and the exact TIU progress note title.

- Creating a trigger in the vendor software that will generate an MDM/T02 HL7 message that contains text of the progress note that has been formatted from data stored in the vendor system.
- Sending the MDM/T02 HL7 message to the Interface Engine.
- Receiving HL7 commit acknowledgement message from the Interface Engine indicating that message was received.
- Checking whether the TIU document was successfully created.
  - Recording that TIU successfully created a progress note.
    - Receiving HL7 Application Accept Acknowledgement message indicating that TIU successfully created the progress note.
    - Recording successful document transmission in vendor software so there is a record that the data was successfully uploaded, if appropriate.
  - Recording that TIU rejected the HL7 message and did not create a progress note:
    - Receiving HL7 Application Reject Acknowledgement message indicating that TIU rejected the HL7 message and did not create the progress note
    - Recording that the HL7 message failed in vendor software so there is a record that the data has not been uploaded and store the error message so it can be reviewed
    - Alerting appropriate people of failed document upload.
    - Triggering another MDM/T02 message once the problems have been corrected (may require software change or update of vendor software with VistA information).
  - Recording that no HL7 Application Acknowledgement was received.
    - Recording that an application or commit acknowledgement for the HL7 message was received.
    - Determining what happened if the vendor software does not receive a commit or application acknowledgement.
    - Triggering another MDM/T02 message to be sent once the problems have been corrected (may require vendor software change or update of vendor software with VistA information).
- Providing a way to retransmit the MDM/T02 message.
  - When a message did not upload successfully.
  - When they want to upload data that existed in the vendor system prior to the availability of this TIU HL7 upload software.

Interface Engine Responsibilities

The Interface Engine is responsible for:

- Storing vendor information in a table so it will know that it should receive and accept HL7 messages from the vendor software.
- Receiving the HL7 message from the COTS software package.
- Routing the HL7 message from the vendor software to the appropriate facility via the Interface Engine.
- Routing HL7 commit and application Acknowledgement messages to the vendor server

- Sending an email to a designated address when an error occurs

VistA Responsibilities

TIU is responsible for:

- Receiving and parsing data from the HL7 message
- Locating a unique patient using identifiers SSN, ICN, DFN, name, Date of Birth
- Locating a unique patient visit using visit IEN or admission date/time; or creates a patient historical visit from the date and time in the message, if the message indicates that a TIU note should be created when an exact visit cannot be found
- Locating the document title in TIU
- Verifying that document text was included in the HL7 message
- Locating the author and cosigner using identifiers SSN, name
- Locating an existing visit in VistA that will be associated with the progress note
- Creating a new visit if instructed to do so in the HL7 message

A progress note must be associated with a visit date. If TIU cannot find a visit date that matches the HL7 message data, the HL7 message can instruct TIU to create a new visit and then create the progress note, or to reject the HL7 message and not create a progress note. TIU will take the following steps in its attempt to find a visit to associate with a progress note document. TIU will:

- Look for the visit IEN and uses it to locate an existing visit
- Look for the admission date and time and uses it to locate an existing visit or
- If neither visit IEN or admission date match a visit at the receiving site, TIU will examine the document availability status in the HL7 record
    - AV – Available indicates that the progress note should be created if an existing visit cannot be found; TIU creates a new patient historical visit from the date and time of the message, then creates the progress note
    - CA – Cancel indicates that the progress note should *not be created* if an existing visit cannot be found; TIU does not create a progress note, TIU rejects the HL7 message and returns an Application Acknowledgment reject HL7 message.

If verification proves that it has everything it needs to create a progress note, TIU will create a new progress note and link it to a visit. If verification proves that there is an error, TIU will create an Application Acknowledgement reject HL7 message with an error code and error text that explains all of the fields that failed verification and TIU will not create a progress note document.

Appendix B: Testing

If the Progress Note HL7 message contains signature data, TIU will create a signed progress note with a status of “completed”. Otherwise TIU saves the note with a status according to regular TIU business rules. If the document text was transcribed, the status could be set to “unverified”. If the status is “unsigned”, TIU will send an alert to the author (signer) to let them know there is a note to be signed. TIU will send an HL7 Application Accept Acknowledgement message to the vendor software, along with the DFN of the new progress note.

A positive acknowledgement indicates that TIU successfully created the progress note. A reject acknowledgment indicates that TIU did not create the progress note. Reject acknowledgements contain information that indicate why the HL7 message was rejected

User Responsibilities

A user is someone who has contact with the vendor, and the vendor software, and has some responsibility for the progress note document. More than one user could handle these responsibilities. A user with VistA access is responsible for:

- Ensuring that the exact document title included in the HL7 message exists in TIU and has been created in the TIU Progress Notes document class
- Verifying the progress note document if it is created with status “unverified”
- Signing the progress note document if it is created with status “unsigned”
- Cosigning the progress note document if it is created with status “uncosigned”
- Reviewing the signed document is in VistA if they were the person who signed the document in the vendor software

Appendix B: Testing

Required Fields

The MDM/T02 HL7 message for progress notes requires the following fundamental data items:

- Vendor identification
- Patient record VistA facility id
- Patient record VistA facility number
- Patient Name
- Patient identifier (at least one)
  - Patient ICN
  - Patient SSN
  - Patient Date of Birth
  - Patient record number (DFN) created by the VistA facility
- Document title from VistA facility that is from the TIU PROGRESS NOTES document class (title in HL7 message must exactly match title in TIU)
- Author (expected signer) name and ID as identified in VistA
- Document text

In addition to the fields that are required in all MDM/T02 HL7 messages, a Progress note requires visit information.

Table 13: Data Validation Rules

Data		
Home Telehealth vendor server identification	All	Placed in MSH and OBX segments to identify the vendor server and vendor server application
Patient ICN	Alert	National index for the patient (unique identity within the VA)
Patient Name	Alert	Legal name of the patient
Patient SSN	Alert	US index for the patient (unique identity within the US)
Patient's record number in sign up VistA facility (DFN)	Alert	VistA facility index for the patient (unique identity within VistA facility)
Name of document author	All	Person who will be expected to sign the TIU document in VistA
Visit IEN		VistA facility index for a patient visit (unique identity within the VistA facility)

Data Nomenclature

The VistA facility id and VistA facility number are obtained from the Institution File. Patient data comes from VistA Patient File #2. Information about the author, cosigner, attending physician comes from VistA New Person File #200.

The institution file definition and extract can be found on the section labeled *Facility address file* on the web page

http://vaww.va.gov/techsvc/projects/VICReplacement_docs.html. A recent extract from the address file can be directly retrieved from URL http://vaww.va.gov/techsvc/projects/VIC/FacilityAddresses_Vendor.txt.

Message Content

The HL7 message content is defined in the HL7 2.4 standard chapter 9 (*Medical Records/Information Management (Document Management*).

Message Format

The message type for the progress note message is MDM~T02. The Medical Document Management (MDM) Message is documented in Chapter 9 of the HL7 2.4 standard. The HL7 event code is T02, which identifies the message as carrying an "original document and content". The MDM/T02 HL7 message has six data segments that contain the following information:

- Message identification (MSH)
- Document available event (EVN)
- Patient identification (PID)
- Patient visit information (PV1)
- Document notification (TXA)
- Observation/result data (OBX)

TIU Document: Consult

The vendor has patient information to upload to VistA and they and their VistA contact has decided that it should be stored as a TIU Consult Note. The vendor software formats the information into document text, builds an HL7 message that contains this text, and sends the HL7 message to VistA, where TIU stores the text in the patient record as a TIU Consult Note.

Description

The vendor creates an MDM/T02 HL7 message to upload a consult note. The message contains document text, information to identify a patient, the document author, the consult note title, and the ID number of the consult. Consults are created as orders for some type of service. Consult notes are created under the CONSULTS document class in TIU and are linked to consults so the consult and the note text can be viewed from the Consults Tab in CPRS GUI. A signed consult note completes the consult. Multiple signed consult notes can be created and linked to a single consult.

TIU will verify the content of the HL7 message and will not create the consult note until it has finished verifying all the required fields. If there are errors, TIU will send an HL7 Application Reject Acknowledgement message to the vendor software. The message will include text descriptions of all the errors found during data verification. If there are no errors, TIU will store the text in a progress note.

Responsibilities

Responsibilities are the required actions necessary for the completion of the function; the following paragraphs list the responsibilities.

Vendor Responsibilities

In support of the process of creating a progress note, vendor is responsible for:

- Establishing a relationship with one or more VHA sites so the vendor has access to the VHA WAN and an interface engine server located at a VA site
- Receiving information from the VHA site that will
  - Uniquely identify a patient
  - Uniquely identify the VistA location that will receive and store the progress note
  - Uniquely identify the VistA user who is the author (signer) of the document.
  - Uniquely identify the progress note title at the receiving VA site into which the document text will be stored
  - Uniquely identify the VistA Consult IEN that will be linked to the consult note at the time the document is created:
- Working with their VHA contacts to determine the acceptable layout for the document text and the exact TIU consult note title.
- Creating a trigger in the vendor software that will generate an MDM/T02 HL7 message that contains text of the consult note that has been formatted from data stored in the vendor system
- Sending the MDM/T02 HL7 message to the Interface Engine
- Receiving HL7 commit acknowledgement message from the Interface Engine indicating that message was received
- Checking whether the TIU document was successfully created
  - Recording that TIU successfully created a consult note
    - Receiving HL7 Application Accept Acknowledgement message indicating that TIU successfully created the consult note
    - Recording successful document transmission in vendor software so there is a record that the data was successfully uploaded, if appropriate
  - Recording that TIU rejected the HL7 message and did not create a consult note
    - Receiving HL7 Application Reject Acknowledgement message indicating that TIU rejected the HL7 message and did not create the consult note
    - Recording that the HL7 message failed in vendor software so there is a record that the data has not been uploaded and store the error message so it can be reviewed

    - Alerting appropriate people of failed document upload
    - Triggering another MDM/T02 message once the problems have been corrected (may require software change or update of vendor software with VistA information)
- Recording that no HL7 Application Acknowledgement was received
    - Recording that an application or commit acknowledgement for the HL7 message was received
    - Determining what happened if the vendor software does not receive a commit or application acknowledgement
    - Triggering another MDM/T02 message to be sent once the problems have been corrected (may require vendor software change or update of vendor software with VistA information)
- Providing a way to retransmit the MDM/T02 message
    - When a message did not upload successfully
    - When they want to upload data that existed in the vendor system prior to the availability of this TIU HL7 upload software

Interface Engine Responsibilities

The Interface Engine is responsible for:

- Storing vendor information in a table so it will know that it should receive and accept HL7 messages from the vendor software
- Receiving the HL7 message from the COTS software package
- Routing the HL7 message from the vendor software to the appropriate facility Interface Engine via
- Routing HL7 commit and application Acknowledgement messages to the vendor server
- Sending an email to a designated address when an error occurs

VistA Responsibilities

TIU is responsible for:

- Receiving and parsing data from the HL7 message
- Locating a unique patient using identifiers SSN, ICN, DFN, name, and Date of Birth
- Locating a unique patient visit using visit IEN or admission date/time; or creates a patient historical visit from the date and time in the message, if the message indicates that a TIU note should be created when an exact visit cannot be found
- Locating the document title in TIU
- Verifying that document text was included in the HL7 message
- Locating the author and cosigner using identifiers SSN, name
- Locating an existing consult in VistA that will be linked to the consult note

A consult note must be linked to an existing consult. If TIU cannot find a consult that matches the HL7 message consult number, TIU will reject the HL7 message and not create a consult note.

NOTE: The HL7 message does not determine the type of TIU document. A VistA user must create the consult note title in the TIU CONSULTS document class in order for it to be a consult note. If the HL7 message contains a consult number and the document title exists in the TIU PROGRESS NOTES document class instead of the TIU CONSULTS document class, TIU will create a progress note instead of a consult note and the document will not be linked to a consult.

If verification proves that it has everything it needs to create a progress note, TIU will create a new consult note and link it to a visit. If verification proves that there is an error, TIU will create an Application Acknowledgement reject HL7 message with an error code and error text that explains all of the fields that failed verification and TIU will not create a consult note document.

If the consult note HL7 message contains signature data, TIU will create a signed consult note with a status of "completed." Otherwise, TIU saves the note with a status according to regular TIU business rules. If the document text was transcribed, the status could be set to "unverified." If the status is "unsigned," TIU will send an alert to the author (signer) to let them know there is a note to be signed. TIU will send an HL7 Application Accept Acknowledgement message to the vendor software, along with the DFN of the new consult note.

A positive acknowledgement indicates that TIU successfully created the consult note. A reject acknowledgment indicates that TIU did not create the consult note. Reject acknowledgements contain information that indicate why the HL7 message was rejected

User Responsibilities

A user is someone who has contact with the vendor, and the vendor software, and has some responsibility for the progress note document. More than one user could handle these responsibilities. A user with VistA access is responsible for:

- Ensuring that the exact document title included in the HL7 message exists in TIU and has been created in the TIU Consults document class
- Verifying the consult note document if it is created with status "unverified"
- Signing the consult note document if it is created with status "unsigned"
- Cosigning the consult note document if it is created with status "uncosigned"
- Reviewing the signed document is in VistA if they were the person who signed the document in the vendor software

Appendix B: Testing

Required Fields

The MDM/T02 HL7 message for consult notes requires the following fundamental data items:

- Vendor identification
- Patient record VistA facility id
- Patient record VistA facility number
- Patient Name
- Patient identifier (at least one)
    - Patient ICN
    - Patient SSN
    - Patient record number (DFN) created by the VistA facility
    - Patient Date of Birth
- Document title from VistA facility that is from the TIU CONSULTS document class (title in HL7 message must exactly match title in TIU)
- Author (expected signer) name and ID as identified in VistA
- Document text

In addition to the fields that are required in all MDM/T02 HL7 messages, a Progress note requires visit information.

-

Table 14: Data Validation Rules

Home Telehealth vendor server identification	All	Placed in MSH and OBX segments to identify the vendor server and vendor server application
Patient ICN	Alert	National index for the patient (unique identity within the VA)
Patient Name	Alert	Legal name of the patient
Patient SSN	Alert	US index for the patient (unique identity within the US)
Patient Date of Birth		
Patient's record number in sign up VistA facility (DFN)	Alert	VistA facility index for the patient (unique identity within VistA facility)
Name of document author	All	Person who will be expected to sign the TIU document in VistA
Consult IEN		VistA facility index for a consult (unique identity within the VistA facility)

Data Nomenclature

The VistA facility id and VistA facility number are obtained from the Institution File. Patient data comes from VistA Patient File #2. Information about the author, cosigner, attending physician comes from VistA New Person File #200.

The institution file definition and extract can be found on the section labeled *Facility address file* on the web page http://vaww.va.gov/techsvc/projects/VICReplacement_docs.html. A recent extract from the address file can be directly retrieved from URL http://vaww.va.gov/techsvc/projects/VIC/FacilityAddresses_Vendor.txt.

Appendix B: Testing

Message Content

The HL7 message content is defined in the HL7 2.4 standard chapter 9 (*Medical Records/Information Management (Document Management*).

Message Format

The message type for the progress note message is MDM~T02. The Medical Document Management (MDM) Message is documented in Chapter 9 of the HL7 2.4 standard. The HL7 event code is T02, which identifies the message as carrying an "original document and content". The MDM/T02 HL7 message has six data segments that contain the following information:

- Message identification (MSH)
- Document available event (EVN)
- Patient identification (PID)
- Patient visit information (PV1)
- Document notification (TXA)
- Observation/result data (OBX)

Example

```
MSH^~|\&^Home Telehealth 2004^<facility number>~XYZ Corp
server.MED.VA.gov~DNS ^VistA^<VA facility dns>^^20040621104503-0500^^MDM~T02^50016
7399^T^2.4^^^AL^AL^US
PID^^^1234567890V23456~~~USVHA&&0363~NI|123456789~~~USSSA~SS~VA FACILITY NAME&500&
L|1234567890V23456~~~USVHA&&0363~NI~VA FACILITY NAME&500&L^^Patient~Veterans~Admin
istration~~~~L
PV1^^^^^123456789~~~USVHA~~VA facility&facility number&L~~^^^^^^^^^^^^^^^^^^^^^^^^
^^^^^^^^^^^^^^20041101062220000-0400^20041128062220000-0400^^^^^^^^
TXA^^CN^TEXT^^32885~Doctor~Fine~~~~~~USVHA~L~~~NI~facility&facility number&L^20041
1280622200000-0400^20041128062220000-0400^^^32885~Doctor~Fine~~~~~~USVHA~L~~~NI~f
acility&facility number&L^^^123456789~~~USVHA~~VA facility&facility number&L~~^^^C
are Coordination/Home Telehealth Summary of Episode^PA^U^AV^A
OBX^1^TX^^^Patient, Veterans Aloysius has been supported by the Home Telehealth Pr
ogram.|The following information was submitted by the veteran through their Home T
elehealth system.|- 28 sessions with the Congestive Heart Failure DIALOG | -28 ses
sions with the Chronic Pain DIALOG|
- 28 BLOOD GLUCOSE observations | - 28 BLOOD PRESSURE observations |- 28 PAIN obse
rvations | - 28 PULSE observations | - 28 PULSE OXIMETRY observations | -
 28 TEMPERATURE observations | - 28 WEIGHT observations
```

Figure 11: 28-Day Consult Note Data

```
MSH^~|\&^Home Telehealth 2004^<facility number>~XYZ Corp
server.MED.VA.gov~DNS ^VistA^<VistA Facility dns>^^20040621104503-0500^^ORU~R01^50
0167499^T^2.4^^^AL^AL^US
PID^^^1234567890V23456~~~USVHA&&0363~NI|123456789~~~USSSA~SS~VA FACILITY NAME&500&
L|1234567890V23456~~~USVHA&&0363~NI~VA FACILITY NAME&500&L^^Patient~Veterans~Admin
istration~~~~L
```

```
PV1^^^^^123456789~~~USVHA~~VA facility&facility number&L~~^^^^^^^^^^^^^^^^^^^^^^^^
^^^^^^^^^^^^^^^20041214062220000-0400^20041214062220000-0400^^^^^^^^
TXA^^PR^AP^200412141154-0500^32885~Doctor~Fine~~~~~~USVHA~L~~~NI~facility&facility
 number&L^20041214062220000-0400^20041214062220000-0400^^^32885~Doctor~Fine~~~~~
~USVHA~L~~~NI~facility&facility number&L^^^123456789~~~USVHA~~VA facility&facility
 number&L~~^^^Care Coordination/Home Telehealth Summary of Episode^PA^U^AV^A
OBX^^ST^2~Pulse~99VA120.51^^50^beats/min^^^^^F^^^^^^Device Entered^XYZ Corp~123B~1
.2
```

Figure 12: "Out-of-bounds" Progress Note Data (Pulse)

Acknowledge Message Content

The message content is given in the *VA Home Telehealth HL-7 Message formats* document. The VistA system generates an acknowledgment message when it has processed the progress note message.

Message Format

The acknowledge function uses the General Acknowledgment (ACK) Message as documented in chapter 2 of the HL7 standard. The Home Telehealth Vendor Server will mandate an acceptance of the progress note itself (an application acknowledgement).

Example

The following three examples are of a message acceptance, a request acceptance (application acknowledge) and a request refusal (application negative acknowledgement). The example is from the *Home Telehealth Profile*. The fields of interest are in *italics*, bold and red.

```
MSH^~|\&^VistA^<VistA Facility dns>^Home Telehealth 2004^<facility number>~XYZ Cor
p server.MED.VA.gov~DNS ^20040621104503-0500^^ACK^600167123^T^2.4^^^ER^ER^USA
MSA^CA^500167399^^^^
```

Figure 13: Progress Note Message Acceptance (Message Acknowledge)

```
MSH^~|\&^VistA^<VistA Facility dns>^Home Telehealth 2004^<facility number>~XYZ Cor
p server.MED.VA.gov~DNS ^20040621104503-0500^^ACK^600167123^T^2.4^^^ER^ER^USA
MSA^AA^500167399^^^^
```

Figure 14: Progress Note Acceptance (Application Acknowledge)

```
MSH^~|\&^VistA^<VistA Facility dns>^Home Telehealth 2004^<facility number>~XYZ Cor
p server.MED.VA.gov~DNS ^20040621104503-0500^^ACK^600167123^T^2.4^^^ER^ER^USA
MSA^AR^500167399^^^^100~Missing ICN~HL70357
ERR^PID^3^0^100~Missing ICN~HL70357
```

Figure 15: Progress Note Refusal (Application Acknowledge)

Appendix B: Testing

TIU Document: Discharge Summary

The vendor has patient information to upload to VistA and they and their VistA contact have decided that it should be stored as a TIU discharge summary. The vendor software formats the information into document text, builds an HL7 message that contains this text, and sends the HL7 message to VistA, where TIU stores the text in the patient record as a TIU discharge summary.

Description

The vendor creates an MDM/T02 HL7 message to upload a discharge summary. The message contains document text, information to identify a patient, the document author, the discharge summary title, and the VistA admission date that they want associated with this discharge summary.

TIU will verify the content of the HL7 message and will not create the discharge summary until it has finished verifying all the required fields. If there are errors, TIU will send an HL7 Application Reject Acknowledgement message to the vendor software. The message will include text descriptions of all the errors found during data verification. If there are no errors, TIU will store the text in a discharge summary.

Responsibilities

Responsibilities are the required actions necessary for the completion of the function; the following paragraphs list the responsibilities.

Vendor Responsibilities

In support of the process of creating a discharge summary, vendor is responsible for:

- Establishing a relationship with one or more VHA sites so the vendor has access to the VHA WAN and an interface engine server located at a VA site
- Receiving information from the VHA site that will:
  - Uniquely identify a patient
  - Uniquely identify the VistA location that will receive and store the discharge summary
  - Uniquely identify the VistA user who is the author (signer) of the document.
  - Uniquely identify the discharge summary title at the receiving VA site into which the document text will be stored
  - Uniquely identify the VistA inpatient admission date/time that will be associated with the discharge summary.
- Working with their VHA contact(s) to determine the acceptable layout for the document text and the exact TIU discharge summary title.
- Creating a trigger in the vendor software that will generate an MDM/T02 HL7 message that contains text of the discharge summary
- Sending the MDM/T02 HL7 message to the Interface Engine

- Receiving HL7 commit acknowledgement message from the Interface Engine indicating that message was received
- Checking whether the TIU document was successfully created
  - Recording that TIU successfully created a discharge summary
    - Receiving HL7 Application Accept Acknowledgement message indicating that TIU successfully created the discharge summary
    - Recording successful document transmission in vendor software so there is a record that the data was successfully uploaded, if appropriate
  - Recording that TIU rejected the HL7 message and did not create a discharge summary
    - Receiving HL7 Application Reject Acknowledgement message indicating that TIU rejected the HL7 message and did not create the discharge summary
    - Recording that the HL7 message failed in vendor software so there is a record that the data has not been uploaded and store the error message so it can be reviewed
    - Alerting appropriate people of failed document upload
    - Triggering another MDM/T02 message once the problems have been corrected (may require software change or update of vendor software with VistA information)
  - Recording that no HL7 Application Acknowledgement was received
    - Recording/acknowledging that an application or commit acknowledgement for the HL7 message was received
    - Determining what happened if the vendor software does not receive a commit or application acknowledgement
    - Triggering another MDM/T02 message to be sent once the problems have been corrected (may require vendor software change or update of vendor software with VistA information)
- Providing a way to retransmit the MDM/T02 message
  - When a message did not upload successfully
  - When they want to upload data that existed in the vendor system prior to the availability of this TIU HL7 upload software

Interface Engine Responsibilities

The Interface Engine is responsible for:

- Storing vendor information in a table so it will know that it should receive and accept HL7 messages from the vendor software
- Receiving the HL7 message from the COTS software package
- Routing the HL7 message from the vendor software to the appropriate facility Interface Engine via
- Routing HL7 commit and application Acknowledgement messages to the vendor server
- Sending an email to a designated address when an error occurs

VistA Responsibilities

Appendix B: Testing

TIU is responsible for:

- Receiving and parsing data from the HL7 message
- Locating a unique patient using identifiers SSN, ICN, DFN, name, and Date of Birth
- Locating a unique patient admission using admission date/time
- Locating the document title in TIU
- Verifying that document text was included in the HL7 message
- Locating the author and cosigner using identifiers SSN, name
- Using the admission date in the HL7 message to locate an inpatient visit in VistA that will be associated with the discharge summary.

A discharge summary must be associated with a patient admission. If TIU cannot find a visit with an admission date that matches the HL7 message data, TIU will reject the HL7 message and not create a discharge summary. TIU will find the admission date and time in the HL7 message and use it to locate an existing visit

If verification proves that it has everything it needs to create a discharge summary, TIU will create a new discharge summary and link it to an inpatient admission. If verification proves there is an error, TIU will create an Application Acknowledgement reject HL7 message with an error code and error text that explains all of the fields that failed verification and TIU will not create a discharge summary document.

If the discharge summary HL7 message contains signature data, TIU will create a signed discharge summary with a status of “completed”. Otherwise, TIU saves the note with a status according to regular TIU business rules. If the document text was transcribed, the status could be set to “unverified”. If the status is “unsigned”, TIU will send an alert to the author (signer) to let them know there is a note to be signed. TIU will send an HL7 Application Accept Acknowledgement message to the vendor software, along with the DFN of the new discharge summary.

A positive acknowledgement indicates that TIU successfully created the discharge summary. A reject acknowledgment indicates that TIU did not create the discharge summary. Reject acknowledgements contain information that indicate why the HL7 message was rejected

User Responsibilities

A user is someone who has contact with the vendor, and the vendor software, and has some responsibility for the discharge summary document. More than one user could handle these responsibilities. A user with VistA access is responsible for:

- Ensuring that the exact document title included in the HL7 message exists in TIU and has been created in the TIU discharge SUMMARY document class
- Verifying the discharge summary document if it is created with status “unverified”
- Signing the discharge summary document if it is created with status “unsigned”

- Cosigning the discharge summary document if it is created with status "uncosigned"
- Reviewing the signed document is in VistA if they were the person who signed the document in the vendor software

Required Fields

The MDM/T02 HL7 message requires the following fundamental data items:

- Vendor identification
- Patient record VistA facility id
- Patient record VistA facility number
- Patient Name
- Patient identifier (at least one)
  - Patient ICN
  - Patient SSN
  - Patient record number (DFN) created by the VistA facility
- Document title from VistA facility that is from the TIU discharge SUMMARY document class (title in HL7 message must exactly match title in TIU)
- Author (expected signer) name and ID as identified in VistA
- Document text

In addition to the fields that are required in all MDM/T02 HL7 messages, a discharge summary requires visit information.

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Table 15: Data Validation Rules

Home Telehealth vendor server identification	All	Placed in MSH and OBX segments to identify the vendor server and vendor server application
Patient ICN	Alert	National index for the patient (unique identity within the VA)
Patient Name	Alert	Legal name of the patient
Patient SSN	Alert	US index for the patient (unique identity within the US)
Patient Date of Birth		
Patient's record number in sign up VistA facility (DFN)	Alert	VistA facility index for the patient (unique identity within VistA facility)
Name of document author	All	Person who will be expected to sign the TIU document in VistA
Admission date/time		VistA date/time of an inpatient visit

Data Nomenclature

The VistA facility id and VistA facility number are obtained from the Institution File. Patient data comes from VistA Patient File #2. Information about the author, cosigner, attending physician comes from VistA New Person File #200.

The institution file definition and extract can be found on the section labeled *Facility address file* on the web page http://vaww.va.gov/techsvc/projects/VICReplacement_docs.html. A recent extract from

the address file can be directly retrieved from URL http://vaww.va.gov/techsvc/projects/VIC/FacilityAddresses_Vendor.txt.

Message Content

The HL7 message content is defined in the HL7 2.4 standard chapter 9 (*Medical Records/Information Management (Document Management*).

Message Format

The message type for the discharge summary message is MDM~T02. The Medical Document Management (MDM) Message is documented in Chapter 9 of the HL7 2.4 standard. The HL7 event code is T02, which identifies the message as carrying an "original document and content". The MDM/T02 HL7 message has six data segments that contain the following information:

- Message identification (MSH)
- Document available event (EVN)
- Patient identification (PID)
- Patient visit information (PV1)
- Document notification (TXA)
- Observation/result data (OBX)

TIU Document: Surgery Report

The vendor has patient information to upload to VistA and they and their VistA contact have decided that it should be stored as a TIU surgery operative report. The vendor software formats the information into document text, builds an HL7 message that contains this text, and sends the HL7 message to VistA, where TIU stores the text in the patient record as a TIU surgery operative report.

Description

The vendor creates an MDM/T02 HL7 message to upload a surgery operative report. The message contains document text, information to identify a patient, the document author, the surgery operative report title, and the surgery case number into which they want to store this surgery operative report.

The Surgery Operation report is different from other documents. When a user enters Patient Time Out of OR into the Surgery package, the Surgery package creates a "stub" surgery report document that is linked to the surgery case number. The document does not contain text, so the surgeon has to enter the data manually or a service will need to upload the transcribed text into this stub document. TIU will need to use the surgery case number in the HL7 message to locate the correct stub note and store the report text into this document stub.

TIU will verify the content of the HL7 message and will not add the text to a surgery operative report until it has finished verifying all the required fields. If there are errors, TIU will send an HL7 Application Reject Acknowledgement message to the vendor software. The message will include text descriptions of all the errors found during data verification. If there are no errors, TIU will store the text into the surgery operative report.

Responsibilities

Responsibilities are the required actions necessary for the completion of the function; the following paragraphs list the responsibilities.

Vendor Responsibilities

In support of the process of creating a surgery operative report, vendor is responsible for:

- Establishing a relationship with one or more VHA sites so the vendor has access to the VHA WAN and an interface engine server located at a VA site
- Receiving information from the VHA site that will
  - Uniquely identify a patient
  - Uniquely identify the VistA location that will receive and store the surgery operative report
  - Uniquely identify the VistA user who is the author (signer) of the document.
  - Uniquely identifies the surgery operative report title at the receiving VA site into which the document text will be stored
  - Uniquely identify the VistA Surgery case and the TIU stub document where the text of the surgery operative report will be stored
    - Locate TIU stub note using surgery case number from the HL7 message
    - If the surgery case number is not included, TIU will attempt to locate surgery case number using the operation date stored in activity date/time field of HL7 message. If TIU can locate one surgery for that date, it will locate and update the stub note. If TIU finds more than one surgery case, it will reject the HL7 message.
- Working with their VHA contact(s) to determine the acceptable layout for the document text and the exact surgery document title
- Creating a trigger in the vendor software that will generate an MDM/T02 HL7 message that contains text of the surgery operative report
- Sending the MDM/T02 HL7 message to the Interface Engine
- Receiving HL7 commit acknowledgement message from the Interface Engine indicating that message was received
- Checking whether the TIU document was successfully updated:
  - Recording that TIU successfully updated the surgery operative report
    - Receiving HL7 Application Accept Acknowledgement message indicating that TIU successfully added text to the surgery operative report

        - Recording successful document transmission in vendor software so there is a record that the data was successfully uploaded, if appropriate
    - Recording that TIU rejected the HL7 message and did not create a surgery operative report
        - Receiving HL7 Application Reject Acknowledgement message indicating that TIU rejected the HL7 message and did not update the surgery operative report
        - Recording that the HL7 message failed in vendor software so there is a record that the data has not been uploaded and store the error message so it can be reviewed
        - Alerting appropriate people of failed document upload
        - Triggering another MDM/T02 message once the problems have been corrected (may require software change or update of vendor software with VistA information)
    - Recording that no HL7 Application Acknowledgement was received
        - Recording that an application or commit acknowledgement for the HL7 message was received
        - Determining what happened if the vendor software does not receive a commit or application acknowledgement
        - Triggering another MDM/T02 message to be sent once the problems have been corrected (may require vendor software change or update of vendor software with VistA information)
- Providing a way to retransmit the MDM/T02 message
    - When a message did not upload successfully
    - When they want to upload data that existed in the vendor system prior to the availability of this TIU HL7 upload software

Interface Engine Responsibilities

The Interface Engine is responsible for:

- Storing vendor information in a table so it will know that it should receive and accept HL7 messages from the vendor software
- Receiving the HL7 message from the COTS software package
- Routing the HL7 message from the vendor software to the appropriate facility Interface Engine via
- Routing HL7 commit and application Acknowledgement messages to the vendor server
- Sending an email to a designated address when an error occurs

VistA Responsibilities

TIU is responsible for:

- Receiving and parsing data from the HL7 message
- Locating a unique patient using identifiers SSN, ICN, DFN, name, and Date of Birth
- Locating a unique patient admission using admission date/time

- Locating the document title in TIU
- Verifying that document text was included in the HL7 message
- Locating the author and cosigner using identifiers SSN, name
- Locating the stub surgery document in TIU VistA that will be associated with the surgery operative report.
    - Surgery case number
    - Activity date/time = Operation date

A surgery operative report must be uploaded into an existing surgery stub document in TIU. If TIU cannot find the stub TIU document that matches that case number using the HL7 message data, TIU will attempt to locate the case number using the activity date/time. If TIU still cannot locate a surgery case for that date or if there are more than surgery cases for that date, TIU will reject the HL7 message. Surgery reports cannot be created outside of the Surgery package, so TIU cannot create a new surgery operative report from text in an HL7 message.

If verification proves that it has everything it needs, TIU will add text to the stub operation report. If verification proves there is an error, TIU will create an Application Acknowledgement reject HL7 message with an error code and error text that explains all of the fields that failed verification and TIU will not create a new surgery operation report or update an existing stub document.

If the surgery operation report HL7 message contains signature data, TIU will create a signed surgery operation report with a status of “completed”. Otherwise TIU saves the note with a status according to regular TIU business rules. If the document text was transcribed, the status could be set to “unverified”. If the status is “unsigned”, TIU will send an alert to the author (signer) to let them know there is a note to be signed. TIU will send an HL7 Application Accept Acknowledgement message to the vendor software, along with the DFN of the new surgery operation report.

A positive acknowledgement indicates that TIU successfully added text to an existing stub surgery report. A reject acknowledgment indicates that TUI did not add text to an existing stub surgery report. Reject acknowledgements contain information that indicate why the HL7 message was rejected

User Responsibilities

A user is someone who has contact with the vendor, and the vendor software, and has some responsibility for the surgery operation report. More than one user could handle these responsibilities. A user with VistA access is responsible for:

- Ensuring that the exact document title included in the HL7 message exists in TIU and has been created in the TIU SURGICAL REPORTS document class
- Verifying the surgery operation report document if it is created with status “unverified”
- Signing the surgery operation report document if it is created with status “unsigned”

- Cosigning the surgery operation report document if it is created with status "uncosigned"
- Reviewing the signed document is in VistA if they were the person who signed the document in the vendor software

Required Fields

The MDM/T02 HL7 message for surgery operation reports requires the following fundamental data items:

- Vendor identification
- Patient record VistA facility id
- Patient record VistA facility number
- Patient Name
- Patient identifier (at least one)
- Patient ICN
- Patient SSN
- Patient Date of Birth
- Patient record number (DFN) created by the VistA facility
- Document title from VistA facility that is from the TIU surgery operation report document class (title in HL7 message must exactly match title in TIU)
- Author (expected signer) name and ID as identified in VistA
- Document text

In addition to the fields that are required in all MDM/T02 HL7 messages, a discharge summary requires visit information.

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Table 16: Data Validation Rules

Home Telehealth vendor server identification	All	Placed in MSH and OBX segments to identify the vendor server and vendor server application
Patient ICN	Alert	National index for the patient (unique identity within the VA)
Patient Name	Alert	Legal name of the patient
Patient SSN	Alert	US index for the patient (unique identity within the US)
Patient Date of Birth		
Patient's record number in sign up VistA facility (DFN)	Alert	VistA facility index for the patient (unique identity within VistA facility)
Name of document author	All	Person who will be expected to sign the TIU document in VistA
Admission date/time		VistA date/time of an operation visit

Data Nomenclature

The VistA facility id and VistA facility number are obtained from the Institution File. Patient data comes from VistA Patient File #2. Information about the author, cosigner, attending physician comes from VistA New Person File #200.

Appendix B: Testing

The institution file definition and extract can be found on the section labeled *Facility address file* on the web page http://vaww.va.gov/techsvc/projects/VICReplacement_docs.html. A recent extract from the address file can be directly retrieved from URL http://vaww.va.gov/techsvc/projects/VIC/FacilityAddresses_Vendor.txt.

Message Content

The HL7 message content is defined in the HL7 2.4 standard chapter 9 (*Medical Records/Information Management (Document Management*).

Message Format

The message type for the discharge summary message is MDM~T02. The Medical Document Management (MDM) Message is documented in Chapter 9 of the HL7 2.4 standard. The HL7 event code is T02, which identifies the message as carrying an "original document and content". The MDM/T02 HL7 message has six data segments that contain the following information:

Message identification (MSH)

Document available event (EVN)

Patient identification (PID)

Patient visit information (PV1)

Document notification (TXA)

Observation/result data (OBX)

References

Health Level Seven, Version 2.4 standard can be found at URL http://vista.med.va.gov/messaging/msgadmin/hl7_specifications.asp.

VHA OI Home Telehealth Web site containing this document and other information can be found at URL http://vaww.va.gov/techsvc/projects/HomeTelehealthHL7.html

HL7 Vitals Message Profile (http://vaww.va.gov/techsvc/projects/eHomeCare/HDRVitalsMessageProfile.doc) defines the HL7 messages used to transfer vitals to HDR.

VA Data Standards group posts the current standards work at URL http://vaww.infoshare.va.gov/Data_Standardization/Working%20Groups/Vitals_DAT/default.aspx.

HL7 Telehealth Message Profiles (http://vaww.va.gov/techsvc/projects/HomeTelehealthHL7.html) defines the HL7 messages used to implement the Home Telehealth patient sign up, observation, and acknowledgements.

Master Patient Index (MPI)/Patient Demographics (PD) HL7 Interface Specification (http://vista.med.va.gov/VistA_Lib/Clinical/MPI_Patient_Demographics_(MPI-PD)/MPI_PD_HL7_Interface.pdf) defines the HL7 message ate are used with MPI.

The institution master file is maintained on FORUM.

A current extract from that file can be found at URL http://vaww.va.gov/techsvc/projects/VIC/FacilityAddresses_Vendor.txt.

The File Format Specification can be found at URL http://vaww.va.gov/techsvc/projects/VIC/FacilityAddressFileFormat.doc.

A complete list of VA IT acronyms can be found at URL http://vaww1.va.gov/med/acronyms/acronym.cfm

Glossary

ACK	General Acknowledgment message. The ACK message is used to respond to a message where there has been an error that precludes application processing or where the application does not define a special message type for the response.
Acknowledgment—Application Level	The appropriate application on the receiving system receives the transaction and processes it successfully. The receiving system returns an application-dependent response to the initiator.
Acknowledgment—Accept Level	The receiving system commits the message to safe storage in a manner that releases the sending system from any obligation to resend the message. A response is returned to the initiator indicating successful receipt and secure storage of the information.
Austin Automation Center (AAC)	AAC is a corporate data center for VA. The central repository for National Patient Care Database is maintained at the AAC.
ASU	Authorization/Subscription Utility, an application that allows sites to associate users with user classes, allowing them to specify the level of authorization needed to sign or order specific document types and orderables. ASU is distributed with TIU in this version; eventually it will probably become independent, to be used by many V*IST*A packages.
Action	A functional process that a clinician or clerk uses in the TIU computer program. For example, "Edit" and "Search" are actions. Protocol is another name for Action.
Boilerplate Text	A pre-defined TIU template that can be filled in for Titles, speeding up the entry process. TIU exports several Titles with boilerplate text which can be modified to meet specific needs; sites can also create their own.
Business Rule	Part of ASU, Business Rules authorize specific users or groups of users to perform specified actions on documents

	in particular statuses (e.g, an unsigned progress note may be edited by a provider who is also the expected signer of the note).
Care Coordinators	Care Coordinators are licensed health care professionals who help veteran patients self-manage their condition and in doing so guide and support them to ensure they receive the right care, in the right place, at the right time from the right person.
Class	Part of Document Definitions, Classes group documents. For example, “Progress Notes” is a class with many kinds of progress notes under it. Classes may be subdivided into other Classes or Document Classes. Besides grouping documents, Classes also store behavior which is then inherited by lower level entries.
Clinician	A doctor or other provider in the medical center who is authorized to provide patient care.
Component	Components are “sections” or “pieces” of documents, such as Subjective, Objective, Assessment, and Plan in a SOAP Progress Note. Components may have (sub)Compon-ents as items. They may have Boilerplate Text. Components may be designated as “Shared.”
Consult	Referral of a patient by the primary care physician to another hospital service/ specialty, to obtain a medical opinion based on patient evaluation and completion of any procedures, modalities, or treatments the consulting specialist deems necessary to render a medical opinion.
COTS	Commercial Off The Shelf. Describes software or hardware products that are ready-made and available for sale to the general public. COTS include VA applications that are not part of the VistA system.
CPRS	Computerized Patient Record System. CPRS provides an integrated patient record system for clinicians, managers, quality assurance staff, and researchers. The primary goal of CPRS is to create a fast and easy-to-use product that gives physicians enough information through clinical reminders, results reporting, and expert system feedback to make better decisions regarding orders and treatment. V*IST*A software integrated with CPRS includes Pharmacy, Lab, Radiology, Allergy Tracking, Consults, Dietetics,

	Progress Notes, Problem List, Patient Administration, Vitals, PCE, TIU, ASU and Clinical Lexicon.
CWAD	Cautions, Warnings, Adverse Reactions, Directives; a type of Progress Note.
DFN	Data File Number used in VA FileMan. Sometimes referred to as the Patient's Internal Entry Number (IEN).
Discharge Summary	Discharge summaries are summaries of a patient's medical care during a single hospitalization, including the pertinent diagnostic and therapeutic tests and procedures as well as the conclusions generated by those tests. They are required for all discharges and transfers from a VA medical center, domiciliary, or nursing home care. The automated Discharge Summary module of TIU provides an efficient and immediate mechanism for clinicians to capture transcribed patient discharge summaries online, where they're available for review, signing, adding addendum, etc.
Document Class	Document Classes are categories that group documents (Titles) with similar characteristics together. For example, Nursing Progress Notes might be a Document Class, with Nursing Dialysis Progress Notes, Nursing psychology Progress Notes, etc. as Titles under it. Or maybe the Document Class would be Psychology Notes, with Psychology Nursing Notes, Psychology Social Worker Notes, Psychology Patient Education Notes, etc. under that Document Class..
Document Definition	Document Definition is a subset of TIU that provides the building blocks for TIU, by organizing the elements of documents into a hierarchy structure. This structure allows documents (Titles) to inherit characteristics (such as signature requirements and print characteristics) of the higher levels, Class and Document Class. It also allows the creation and use of boilerplate text and embedded objects.
HIMS	Hospital Information Management System, common abbreviation/synonym used at VA site facilities; also known as MIS (see below).
HIPAA	Health Insurance Portability and Accountability Act. Addresses the security and privacy of health data.

HL7	Health Level 7. An ANSI recognized information exchange protocol used in medicine, and possibly elsewhere. The protocol architecture is hierarchical, moving from high-level groupings and structures to a set of several hundred data fields. Each level of the hierarchy serves a different organizing purpose and is designed to accommodate the flexibility necessary for compatibility of specialized data sets that have facility-specific needs. See the HL7 website: **www.hl7.org**.
ICN	Integration Control Number. A unique identifier assigned to patients when they are added to the Master Patient Index. ICNs fall under two categories: national and local. The ICN follows the ASTM E1714-95 standard for a universal health identifier. ICNs link patients to their records across VA systems. The ICN is stored in a message using the HL7 CX format. The ID subfield is the ICN. The type subfield is USVHA.
ID	Coded Value data type.
IE	Interface Engine. A device or software application that connects disparate system, transforms data, converts data, routes data, ensures the delivery of data and is rules based. The IE provides a consistent HL7 compliant communication environment. That is separate from the specific and individual application needs. Within this environment messages can be routed, transformed, converted and delivery guaranteed as required by the application.
IEN	Internal Entry Number. Used by FileMan, it is a unique number assigned to each entry in an M global.
IRT	Incomplete Record Tracking, a package TIU can interface with to transmit incomplete progress notes and discharge summaries.
Interdisciplinary Note	A new feature of Text Integration Utilities (TIU) for expressing notes from different care givers as a single episode of care. They always start with a single note by the initial contact person (e.g., triage nurse, case manager, attending) and continue with separate notes created and signed by other providers, then attached to the original note.

ISO	Information Security Officer. Every medical center within the VA has one.
MIS	Common abbreviation/synonym used at VA site facilities for the Medical Information Section of Medical Administration Service. May be called HIMS (Health Information Management Section).
MIS Manager	Manager of the Medical Information Section of Medical Administration Service at the site facility who has ultimate responsibility to see that MRTs complete their duties.
MPI	Master Patient Index. Creates an index that uniquely identifies each active patient treated by the Veterans Administration and to identify the VHA facilities where a patient is receiving care. This is crucial to the sharing of patient information across sites. Master Patient Index manages the synchronization of patient file information with the Master Patient Index and with the patient's treating facilities to insure that data being shared is stored in the correct patient's record.
MRT	Medical Record Technician in the Medical Information Section of Medical Administration Service at the site facility who completes the tasks of assuring that all discharge summaries placed in a patient's medical record have been verified for accuracy and completion and that a permanent chart copy has been placed in a patient's medical record for each separate admission to the hospital.
Protocol	A set of procedures for establishing and controlling data transmission
Procedure Request	Any procedure (EKG, Stress Test, etc.) which may be ordered from another service/specialty without requiring formal consultation first.
RDV	Remote Data View. A CPRS application that allows a caregiver to view patient data that is stored at another VHA facility.
Result	A consequence of an order. Refers to evaluation or status results. In regards to Consult/Request Tracking, results refer to a TIU document or Medicine procedure result attached to the consult or procedure request.

Requestor	This is the health care provider (e. g., the physician/clinician) who requests the order to be done.
ROES	Remote Order Entry System.
Screen Context	This term refers to the particular selection of orders displayed on the screen (e. g., Medicine consults for the patient Ralph Jones).
Service	A clinical or administrative specialty (or department) within a Medical Center.
SSN	Social Security Number
Status	A result that indicates the processing state of an order; for example, a Cardiology Consult order may be “discontinued (dc)” or “completed (c)”.
Status Symbols	Codes used in order entry and Consults displays to designate the status of the order.
Telehealth	The use of electronic communications and information technology to provide and support health care when distance separates the participants. It covers health care practitioners interacting with patients and patients interacting with other patients.
Telemedicine	The provision of care by a licensed independent health care provider that directs, diagnoses, or otherwise provides clinical treatment delivered using electronic communications and information technology when distance separates the provider and the patient. .
TCP/IP	Transaction Control Protocol/Internet Protocol A set of protocols for Layers 3 (Network) and 4 (Transport) of the OSI network model. TCP/IP has been developed over a period of 30 years under the auspices of the Department of Defense. It is a de facto standard, particularly as higher-level layers over Ethernet. TCP/IP predates the OSI model; and thus, TCP/IP is not OSI-compliant.
TIU	Text Integration Utilities, a part of VistA that files clinical notes. These are most visible in CPRS on the Notes tab.
USVHA	United States Veterans Health Administration
VA	Department of Veterans Affairs

VAMC	Department of Veterans Affairs Medical Center
VIE	VistA Interface Engine. This is the formal communications gateway to VistA applications. Formerly called the Vitria Interface Engine. Communication components work concurrently to model, automate, track, and optimize communication processes within and between data systems, providing a high emphasis on security and reliability. The product will also enable real-time, multi-directional communication among VistA applications, the HDR, Commercial-Off-The-Shelf (COTS) products, and other systems.
VistA	Veteran Health Information System and Technology Architecture
VistA Web	A new web based application to view patient data at a set of VA facilities.

Appendix A: Messaging Workbench

Overview

The following is sample printout from the Messaging Work Bench (MWB). The HL7 message format is one used during the testing of Generic HL7.

MWB is a tool that facilitates the creation of HL7 2.4 message profile definitions. MWB supports exporting of the message metadata into HL7v2 Message Conformance Profile format.

The MWB is a tool for analysts and developers that facilitates the construction, documentation and reporting of message specifications as well as HL7 Conformance profiles. It follows the standards set by the HL7 version 2.4 Conformance Special Interest Group (SIG) and produces profiles that are interoperable with other HL7 compliant messaging tools. In addition to its profile documentation function, this tool includes other features to assist messaging developers, such as reverse engineering, message instance analysis and message instance validation.

The MWB is the first freeware tool available for creating message profiles. The MWB developer works for VHA and is an active member of the HL7 Conformance Special Interest Group (SIG) and the tool has evolved with input from this SIG. The MWB tool is used extensively within VHA for developing and documenting HL7 messages.

MWB HL7 message profiles for TIU HL7 are available to any vendor who wishes to download and use the MWB tool. A Word document generated by the tool is also available to provide the workbench information in a readable/printable format.

The MWB software can be downloaded from the VHA Intranet: **http://vista.med.va.gov/messaging/** then select VistA HL7 Website, then follow the link to HL7 Messaging Workbench.

The MWB software can also be downloaded from the HL7 website www.hl7.org. From the home page heading “Committees”, select
Special Interest Groups (SIG)
Conformance
Documents and Presentations

There is a good tutorial on HL7 on the VistA HL7 webpage. To access it go to the VistA HL7 website at: **http://vista.med.va.gov/messaging**. Then follow the links to HL7 Documents and Presentations. From this page scroll down until you fine Archived Documents and Presentations then select HL7 1.6 Tutorial.ppt.

HL7 Message Profile

HL7 Message Profile

Implementation Note:

This MWB profile defines the HL7 MDM T02 message COTS applications can use to upload text data into VistA Text Integration Utilities (TIU) documents. The COTS application must have access to the VA WAN and must have a relationship with a VHA site . The COTS package must also have patient specific information that the site wants uploaded into a TIU document.

The vendor should work closely with their VHA contact as they prepare their HL7 message. The COTS package will establish a trigger event that creates an unsolicited MDM/T02 message and sends it to VistA. The HL7 message will contain document text in a format approved by their VA contact, along with the exact title of a TIU document that exists at the receiving VHA site.

Important: The location of the title in the TIU hierarchy determines the document type, not the content of the HL7 message. The following TIU document types are supported:

Progress Note TIU PROGRESS NOTES document class must be associated with a visit

Consult Note TIU CONSULTS document class must be linked to an existing consult

Discharge Summary TIU DISCHARGE SUMMARY document class must be associated with an admission

Surgery Report TIU SURGICAL REPORTS document class must be an existing TIU stub note

Other TIU document classes with special processing are not supported by this software:

Not Supported: Patient Record Flags document class

Not Supported: Addendum document class

Not Supported: Clinical Procedures document class

The HL7 message will be processed if, at the receiving VistA location, TIU can: Identify a unique patient; Identify a unique person who is the author or cosigner of the document; Locate the exact document title; Locate other information required for the specific TIU document types. The HL7 message can also include specific user information to create a signed document.

If the HL7 message passes all TIU validations and TIU is able to create/update a TIU document, an Application Acknowledgement HL7 message will be returned to the COTS package.

Appendix B: Testing

Interface ID	HL7 Generic Interface with TIU - rev
Organization	HDS
HL7 Version	2.4
Spec Version	.0
Application Role	Sender
Conformance Type	Strict
Encodings	ER7
Event Description	Original document notification and content
Message Type	MDM
Event Type	T02
Order Control Code	
Message Structure	MSH,EVN,PID,PV1,TXA,{OBX}
Structure Type	MDM_T02
Accept Ack	NE
Application Ack	AL
Ack Mode	Deferred
Static Profile ID	{ConfSig(1) HDS(1) 2.4(7) static-profile(1) MDM(23) T02(226) null(0) MDM_T02(51) .0(1) Sender(1)}
Dynamic Profile ID	{ConfSig(1) HDS(1) 2.4(7) dynamic-profile(2) AccNE_AppAL(2) defer_mode_ack(1)}

Segments

Optionality Codes:

- R - required
- RE - required or empty
- C - conditional
- CE - conditional or empty
- O - optional
- NS - not supported
- U - unknown

Abbreviations:

- seq - sequence
- DT - datatype
- Len - length
- Opt - optionality
- Rep - repeatable
- Min - quantity min
- Max - quantity max
- Tbl - table

Segment: MSH

Description: Message Header
Optionality: R
Repeatable: False
Minimum: 1
Maximum: 1
Reference:

Fields

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Field Separator	1	ST	1	R	False	1	1				^	2.16.9.1
Encoding Characters	2	ST	4	R	False	1	1				~|\&	2.16.9.2

Implementation Note:
Escape sequences to use for the field separator and encoding characters if they occur in the body of any text field:
\F\ field separator ^
\S\ component separator ~
\R\ repetition separator |
\E\ escape character \
\T\ subcomponent separator &

HL7 Definition:
Component separator, Repetition separator, Escape character, Subcomponent separator

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Sending Application	3	HD	50	R	False	1	1	0361				2.16.9.3
HL7 Definition: Uniquely identifies the sending COTS application among all other applications that send HL7 messages to TIU. Entirely site-defined. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise.												
namespace ID	1	IS	20	R		1	1	0363			HTAPPL	
Implementation Note: User defined table 0363: No need to add COTS application ID to table. HL7 Definition: A character string that uniquely identifies the sending COTS application.												
universal ID	2	ST	3	NS		0	0					
universal ID type	3	ID	3	NS		0	0	0301				
Sending Facility	4	HD	110	R	False	1	1	0362				2.16.9.4
HL7 Definition: Identifies the sending application among multiple identical instances of the application running on behalf of different organizations.												
namespace ID	1	IS	10	R		1	1	0363			200T5	
Implementation Note: No need to add COTS facility ID to table. HL7 Definition: Namespace ID assigned to COTS package. Required by VIE. Alpha numeric.												
universal ID	2	ST	90	R		1	1				VAWW.VITERION.CC.MED.VA.GOV	
HL7 Definition: Universal ID that identifies sending COTS facility. Domain name is better than a hard coded IP address because it will still work if the IP address changes.												
universal ID type	3	ID	3	R		1	1	0301			DNS	
HL7 Definition: DNS = Internet dotted name.												

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Receiving Application	5	HD	50	R	False	1	1	0361				2.16.9.5
HL7 Definition: Uniquely identifies the receiving application among all other applications within the network enterprise												
namespace ID	1	IS	20	R		1	1	0363			TIUHL7	
Implementation Note: No need to add VA application ID to table. HL7 Definition: Namespace ID that identifies TIU/HL7 as the receiving application/process. TIUHL7 is recommended												
universal ID	2	ST	3	NS		0	0					
universal ID type	3	ID	3	NS		0	0	0301				
Receiving Facility	6	HD	180	R	False	1	1	0110				2.16.9.6
HL7 Definition: Identifies the receiving application among multiple identical instances of the application running on behalf of different organizations. Site defined. Facility must have TIU HL7 installed and must have the patient record to which this TIU document will be added.												
namespace ID	1	IS	10	R		1	1	0363			552	
Implementation Note: No need to add ID to table. HL7 Definition: VistA site ID.												
universal ID	2	ST	90	R		1	1				DAYTLAB.FO-BAYPINES.MED.VA.GOV	
HL7 Definition: Universal ID that identifies sending VistA facility. Domain name is better than a hard coded IP address because it will still work if the IP address changes.												
universal ID type	3	ID	3	R		1	1	0301			DNS	
HL7 Definition: DNS = Internet dotted name.												

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Date/Time Of Message	7	TS	26	R	False	1	1					2.16.9.7
HL7 Definition: Date/time that the COTS package created the message.												
Date/Time	1	NM	14	R		1	1				20050629163312	2.16.9.7
degree of precision	2	ST	1	NS		0	0					
Security	8	ST	40	NS	False	0	0					2.16.9.8
Message Type	9	CM_MSG	15	R	False	1	1	0076				2.16.9.9
HL7 Definition: Unsolicited document creation. The COTS package could have two methods for triggering this message. 1. Internal processing triggers the event 2. Event manually triggered by user; could be used to resubmit an HL7 message or to submit an HL7 message for an event that took place prior to installation of this software. Examples: document completed and locked; document signed and locked; order submitted, order updated, order completed; weekly report completed; incident report completed;												
message type	1	ID	3	R		1	1	0076			MDM	
trigger event	2	ID	3	R		1	1	0003			T02	
message structure	3	ID	3	NS		0	0	0354				
Message Control ID	10	ST	30	R	False	1	1				20050621153255 MDMT02	2.16.9.10
HL7 Definition: Contains a number or other identifier created by the COTS package to uniquely identify the message. It is echoed back to the COTS package in the Message Acknowledgement Segment (MSA)												
Processing ID	11	PT	3	R	False	1	1					2.16.9.11
Implementation Note: This field must be set to "P" for production when the software runs against production VistA. HL7 Definition: This field is used to decide whether to process the message as defined in HL7 Application. This allows different priorities to be given to different processing modes.												

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
processing ID	1	ID	3	R		1	1	0103			T	
Implementation Note: VIE requires that this field be set to "P" when HL7 message is sent to a VistA production site. They also look for "T" when running at a test site. HL7 Definition: T=Training, P=Production												
processing mode	2	ID	3	NS		0	0	0207				
Version ID	12	VID	10	R	False	1	1	0104				2.16.9.12
HL7 Definition: HL7 2.4												
version ID	1	ID	3	R		1	1	0104			2.4	
internationalization code	2	CE	0	NS		0	0					
international version ID	3	CE	0	NS		0	0					
Sequence Number	13	NM	15	NS	False	0	0					2.16.9.13
Continuation Pointer	14	ST	180	NS	False	0	0					2.16.9.14
Accept Acknowledgment Type	15	ID	2	R	False	1	1	0155			AL	2.16.9.15
HL7 Definition: Identifies the conditions under which commit acknowledgments are required to be returned in response to this message. Should be set to AL="always".												
Application Acknowledgment Type	16	ID	2	R	False	1	1	0155			AL	2.16.9.16
HL7 Definition: Identifies the conditions under which applicatoin acknowledgments are required to be returned in response to this message. Should be set to AL = "always"												
Country Code	17	ID	3	NS	False	0	0	0399				2.16.9.17
Character Set	18	ID	16	NS	False	0	0	0211				2.16.9.18

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Principal Language Of Message	19	CE	250	NS	False	0	0					2.16.9.19
Alternate Character Set Handling Scheme	20	ID	20	NS	False	0	0	0356				2.16.9.20
Conformance Statement ID	21	ID	10	NS	False	0	0	0449				2.16.9.21

Segment: EVN

Description: Event Type

Optionality: R

Repeatable: False

Minimum: 1

Maximum: 1

Reference:

Fields

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Event Type Code	1	ID	3	RE	False	0	1	0003				3.4.1.1
HL7 Definition: TIU will not use this field. This field has been retained for backward compatibility only. Use the second component (trigger event) of MSH-9 - Message Type to transmit event type code information.												
Recorded Date/Time	2	TS	26	NS	False	0	0					3.4.1.2
Date/Time Planned Event	3	TS	26	NS	False	0	0					3.4.1.3
Event Reason Code	4	IS	0	NS	False	0	0	0062				3.4.1.4
Operator ID	5	XCN	250	NS	False	0	0	0188				3.4.1.5
Event Occurred	6	TS	26	NS	False	0	0					3.4.1.6
Event Facility	7	HD	180	NS	False	0	0					3.4.1.7

Segment: PID

Description: Patient identification
Optionality: R
Repeatable: False
Minimum: 1
Maximum: 1
Reference:

Fields

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Set ID - PID	1	SI	4	NS	False	0	0					3.4.2.1
Patient ID	2	CX	20	NS	False	0	0					3.4.2.2
Patient Identifier List	3	CX	100	RE	True	0	*					3.4.2.3
Implementation Note: One identifier is the Integration Control Number (ICN). Other possible identifiers present include Vista DFN (IEN), Social Security Number (SSN). VA Claim Number and ICN Alias are not supported. HL7 Definition: ICN - Integration Control Number (ICN) will always be the first number in the list.												
ID	1	ST	25	RE		0	1				5520020866 V352123	PATIENT file #2, field MPI;1 991.01 INTEGRATION CONTROL NUMBER
Implementation Note: Cannot be a locally defined MPI number HL7 Definition: Master Patient Index INTEGRATION CONTROL (ICN) NUMBER stored in Patient file #2. COTS package should provide the ICN if they have it available.												
check digit	2	ST	0	NS		0	0					
code identifying the check digit scheme employed	3	ID	3	NS		0	0	0061				
assigning authority	4	HD	30	RE		0	1	0363				

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
namespace ID	1	IS	10	RE		0	1	0363			USVHA	
Implementation Note: User defined table 0363: Patient Identifier Table Value --- SSN USSSA ICN,DFN USVHA - add HL7 Definition: USVHA for ICN and DFN												
universal ID	2	ST	10	NS		0	0					
universal ID type (ID)	3	ID	10	NS		0	0	0301				
identifier type code	5	ID	3	RE		0	1	0203			NI	
HL7 Definition: NI = National Unique Individual Identifier for ICN												
assigning facility	6	HD	3	NS		0	0					
effective date	7	DT	3	NS		0	0					
expiration date	8	DT	3	NS		0	0					
Patient Identifier List_rep	3	CX	100	RE	False	0	1					3.4.2.3
HL7 Definition: SSN - Social Security Number. If DFN (IEN to PATIENT file) is not provided, this will be the secondary field used for TIU patient lookup.												
ID	1	ST	25	RE		0	1				666242333	PATIENT file #2 - .09 SOCIAL SECURITY NUMBER
HL7 Definition: SSN												
check digit	2	ST	0	NS		0	0					
code identifying the check digit scheme employed	3	ID	0	NS		0	0					

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
assigning authority	4	HD	10	RE		0	1					
namespace ID	1	IS	10	RE		0	1	0363			USSSA	
universal ID	2	ST	0	NS		0	0					
universal ID type (ID)	3	ID	0	NS		0	0					
identifier type code	5	ID	3	RE		0	1	0203			SS	
assigning facility	6	HD	3	NS		0	0					
effective date	7	DT	0	NS		0	0					
expiration date	8	DT	0	NS		0	0					
Patient Identifier List_rep	3	CX	100	RE	False	0	1					3.4.2.3
HL7 Definition: DFN is the Internal Entry Number (IEN) for PATIENT file #2. Pointer to PATIENT file #2 will be stored in TIU DOCUMENT file #8925, field .02 PATIENT												
ID	1	ST	25	RE		0	1				129909	PATIENT file #2, field .001 IEN
HL7 Definition: DFN - aka IEN, Internal Entry Number												
check digit	2	ST	0	NS		0	0					
code identifying the check digit scheme employed	3	ID	0	NS		0	0					
assigning authority	4	HD	10	RE		0	1					
namespace ID	1	IS	10	RE		0	1	0363			USVHA	
HL7 Definition: VHA is the authority that assigned the IEN to the patient												
universal ID	2	ST	0	NS		0	0					

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
universal ID type (ID)	3	ID	0	NS		0	0					
identifier type code	5	ID	10	RE		0	1	0203			PI	
HL7 Definition: Patient Internal Identifier - PI												
assigning facility	6	HD	3	NS		0	0					
effective date	7	DT	0	NS		0	0					
expiration date	8	DT	0	NS		0	0					
Patient Identifier List_rep	3	CX	0	NS	False	0	0					3.4.2.3
Patient Identifier List_rep	3	CX	0	NS	False	0	0					3.4.2.3
Alternate Patient ID - PID	4	CX	20	NS	False	0	0					3.4.2.4
Patient Name	5	XPN	250	R	True	1	*					PATIENT file #2, field .01 NAME
HL7 Definition: Legal [VHA Standard] (2; .01) VistA format is LASTNAME, FIRSTNAME MIDDLE; VistA software will format VistA name from HL7 name, if necessary.												
family name	1	FN	35	R		1	1					
surname	1	ST	35	R		1	1				TIUPATIENT	
own surname prefix	2	ST	3	NS		0	0					
own surname	3	ST	3	NS		0	0					
surname prefix from partner/spouse	4	ST	3	NS		0	0					
surname from partner/spouse	5	ST	3	NS		0	0					
given name	2	ST	30	R		1	1				ONE	

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
second and further given names or initials thereof	3	ST	30	RE		0	1				R	
suffix	4	ST	3	NS		0	0					
prefix	5	ST	3	NS		0	0					
degree	6	ST	3	NS		0	0	0360				
name type code	7	ID	3	NS		0	0	0200				
name representation code	8	ID	3	NS		0	0	0465				
name context	9	CE	0	NS		0	0					
name validity range	10	DR	3	NS		0	0					
name assembly order	11	ID	3	NS		0	0	0444				
Patient Name_rep	5	XPN	3	NS	False	0	0					
Patient Name_rep	5	XPN	3	NS	False	0	0					
Patient Name_rep	5	XPN	3	NS	False	0	0					
Mother's Maiden Name	6	XPN	3	NS	False	0	0					6.5.7.40
Date/Time of Birth	7	TS	26	NS	False	0	0					15.4.6.6
Administrative Sex	8	IS	1	NS	False	0	0	0001				15.4.6.5
Patient Alias	9	XPN	250	NS	False	0	0					3.4.2.9
Race	10	CE	250	NS	False	0	0	0005				15.4.6.27
Patient Address	11	XAD	250	NS	False	0	0					3.4.2.11
Phone Number - Home	12	XTN	3	NS	False	0	0					3.4.2.13
Phone Number - Business	13	XTN	3	NS	False	0	0					3.4.2.14

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Primary Language	14	CE	250	NS	False	0	0	0296				6.5.7.34
Marital Status	15	CE	3	NS	False	0	0	0002				15.4.6.17
Religion	16	CE	3	NS	False	0	0	0006				6.5.7.39
Patient Account Number	17	CX	250	NS	False	0	0					3.4.2.18
SSN Number - Patient	18	ST	16	NS	False	0	0					3.4.2.19
Driver's License Number-Patient	19	DLN	25	NS	False	0	0					3.4.2.20
Mother's Identifier	20	CX	250	NS	False	0	0					3.4.2.21
Ethnic Group	21	CE	3	NS	False	0	0	0189				15.4.6.28
Birth Place	22	ST	250	NS	False	0	0					3.4.2.23
Multiple Birth Indicator	23	ID	250	NS	False	0	0	0136				3.4.2.24
Birth Order	24	NM	2	NS	False	0	0					3.4.2.25
Citizenship	25	CE	250	NS	False	0	0	0172				6.5.7.33
Veterans Military Status	26	CE	250	NS	False	0	0	0172				3.4.2.27
Nationality	27	CE	250	NS	False	0	0	0212				6.5.7.41
Patient Death Date and Time	28	TS	3	NS	False	0	0					3.4.2.29
Patient Death Indicator	29	ID	3	NS	False	0	0	0136				3.4.2.30
Identity Unknown Indicator	30	ID	3	NS	False	0	0	0136				3.4.2.31
Identity Reliability Code	31	IS	3	NS	False	0	0	0445				3.4.2.32
Last Update Date/Time	32	TS	3	NS	False	0	0					3.4.2.33
Last Update Facility	33	HD	3	NS	False	0	0					3.4.2.34

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Species Code	34	CE	3	NS	False	0	0	0446				3.4.2.35
Breed Code	35	CE	3	NS	False	0	0	0447				3.4.2.36
Strain	36	ST	3	NS	False	0	0					3.4.2.37
Production Class Code	37	CE	3	NS	False	0	0	0429				3.4.2.38

Segment: PV1

Description: Patient visit
Optionality: R
Repeatable: False
Minimum: 1
Maximum: 1
Reference:

Fields

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Set ID - PV1	1	SI	4	NS	False	0	0					3.4.3.1
Patient Class	2	IS	1	NS	False	0	0	0004				3.4.3.2
Assigned Patient Location	3	PL	80	C	False	0	1	B	For Progress Notes: a new HISTORICAL visit will be created, otherwise a NEW VISIT will be created. - HOSPITAL LOCATION is required for new, NON-HISTORICAL vists (will reject).			6.5.1.16

Implementation Note:
For Progress Notes:
a new HISTORICAL visit will be created, otherwise a NEW VISIT will be created.
- HOSPITAL LOCATION is required for new, NON-HISTORICAL vists (will reject).

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
point of care	1	IS	30	C		0	1	0302	For Progress Notes: a new HISTORICAL visit will be created, otherwise a NEW VISIT will be created. - HOSPITAL LOCATION is required for new, NON-HISTORICAL vists (will reject).		EXAMPLE LOCATION	44; .01 NAME (0;1) [RF]
Implementation Note: Only the first component, point of care, is supported as the free text name of the HOSPTIAL LOCATION (file # 44). Do not add any component separators.												
room	2	IS	3	NS		0	0	0303				
bed	3	IS	3	NS		0	0	0304				
facility (HD)	4	HD	3	NS		0	0					
location status	5	IS	3	NS		0	0	0306				
person location type	6	IS	3	NS		0	0	0305				
building	7	IS	3	NS		0	0	0307				
floor	8	IS	3	NS		0	0	0308				
Location description	9	ST	3	NS		0	0					

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Admission Type	4	IS	2	NS	False	0	0	0007				3.4.3.4
Preadmit Number	5	CX	250	NS	False	0	0					3.4.3.5
Prior Patient Location	6	PL	3	NS	False	0	0					3.4.3.6
Attending Doctor	7	XCN	250	NS	False	0	0	0010				3.4.3.7
Referring Doctor	8	XCN	250	NS	False	0	0	0010				3.4.3.8
Consulting Doctor	9	XCN	250	NS	False	0	0	0010				3.4.3.9
Hospital Service	10	IS	10	NS	False	0	0	0069				3.4.3.10
Temporary Location	11	PL	80	NS	False	0	0					3.4.3.11
Preadmit Test Indicator	12	IS	2	NS	False	0	0	0087				3.4.3.12
Re-admission Indicator	13	IS	2	NS	False	0	0	0092				3.4.3.13
Admit Source	14	IS	6	NS	False	0	0	0023				3.4.3.14
Ambulatory Status	15	IS	2	NS	False	0	0	0009				6.5.7.32
VIP Indicator	16	IS	2	NS	False	0	0	0099				3.4.3.16
Admitting Doctor	17	XCN	250	NS	False	0	0	0010				3.4.3.17
Patient Type	18	IS	2	NS	False	0	0	0018				6.5.1.18
Visit Number	19	CX	250	RE	False	0	1					3.4.3.19

HL7 Definition:

Progress Note: Used when creating a TIU Progress Note. DFN (IEN) that identifies a unique visit in VistA VISIT file #9000010. Progress notes must be linked to a visit. If this field is populated, TIU will use it to locate the patient visit in VistA. If this field is blank or TIU cannot find a visit to match the content of this field, TIU will use PV1.44 Admit Date/Time to locate the visit.

If no patient visit is located, TIU will check TXA.19 Document Availability Status to see if the document should be created: AV=Available, i.e. create a new document using NOW for the visit date and time; CA=Cancel, i.e. reject the HL7 message and do not create the document.

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
ID	1	ST	30	RE		0	1				1900	VISIT file #9000010, field .001 IEN
HL7 Definition: Contains the DFN/IEN to VISIT file #9000010, which will be stored in TIU DOCUMENT file #8925, field .03 VISIT.												
Check digit	2	ST	0	NS		0	0					
code identifying the check digit scheme employed	3	ID	3	NS		0	0	0061				
assigning authority	4	HD	3	NS		0	0					
identifier type code (ID)	5	ID	3	NS		0	0	0203				
assigning facility	6	HD	3	NS		0	0					
effective date (DT)	7	DT	3	NS		0	0					
expiration date	8	DT	3	NS		0	0					
Financial Class	20	FC	50	NS	False	0	0	0064				3.4.3.20
Charge Price Indicator	21	IS	2	NS	False	0	0	0032				3.4.3.21
Courtesy Code	22	IS	2	NS	False	0	0	0045				3.4.3.22
Credit Rating	23	IS	2	NS	False	0	0	0046				3.4.3.23
Contract Code	24	IS	2	NS	False	0	0	0044				3.4.3.24

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Contract Effective Date	25	DT	8	NS	False	0	0					3.4.3.25
Contract Amount	26	NM	12	NS	False	0	0					3.4.3.26
Contract Period	27	NM	3	NS	False	0	0					3.4.3.27
Interest Code	28	IS	2	NS	False	0	0	0073				3.4.3.28
Transfer to Bad Debt Code	29	IS	1	NS	False	0	0	0110				3.4.3.29
Transfer to Bad Debt Date	30	DT	8	NS	False	0	0					3.4.3.30
Bad Debt Agency Code	31	IS	10	NS	False	0	0	0021				3.4.3.31
Bad Debt Transfer Amount	32	NM	12	NS	False	0	0					3.4.3.32
Bad Debt Recovery Amount	33	NM	12	NS	False	0	0					3.4.3.33
Delete Account Indicator	34	IS	1	NS	False	0	0	0111				3.4.3.34
Delete Account Date	35	DT	8	NS	False	0	0					3.4.3.35
Discharge Disposition	36	IS	3	NS	False	0	0	0112				3.4.3.36
Discharged to Location	37	CM_DLD	25	NS	False	0	0	0113				3.4.3.37
Diet Type	38	CE	250	NS	False	0	0	0114				3.4.3.38
Servicing Facility	39	IS	10	NS	False	0	0	0115				3.4.3.39
Bed Status	40	IS	1	NS	False	0	0	0116				3.4.8.2
Account Status	41	IS	2	NS	False	0	0	0117				3.4.3.41
Pending Location	42	PL	80	NS	False	0	0					3.4.3.42

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Prior Temporary Location	43	PL	80	NS	False	0	0					3.4.3.43
Admit Date/Time	44	TS	26	RE	False	0	1					3.4.3.44
HL7 Definition: Represents an inpatient admission or an outpatient visit. Discharge Summary: Required when creating a TIU Discharge Summary document; used to identify the admission associated with the discharge. Progress note: Used to find an existing visit if TIU cannot find one using PV1.19 Visit Number.												
Date/Time	1	NM	14	RE		0	1				200501200814	VISIT file #9000010, field .01 VISIT/ADMIT DATE&TIME
HL7 Definition: Admission date will be used to locate a visit if the IEN to the VISIT file is not provided. If the visit is located, the date/time will be stored in TIU DOCUMENT file #8925, field .07 EPISODE BEGIN DATE/TIME. If this field is blank, a new historical visit could be created using today's date.												
degree of precision	2	ST	0	NS		0	0					
Discharge Date/Time	45	TS	26	NS	False	0	0					3.4.3.45
Current Patient Balance	46	NM	12	NS	False	0	0					3.4.3.46
Total Charges	47	NM	12	NS	False	0	0					3.4.3.47
Total Adjustments	48	NM	12	NS	False	0	0					3.4.3.48
Total Payments	49	NM	12	NS	False	0	0					3.4.3.49
Alternate Visit ID	50	CX	250	NS	False	0	0	0203				3.4.3.50
Visit Indicator	51	IS	1	NS	False	0	0	0326				3.4.3.51
Other Healthcare Provider	52	XCN	250	NS	False	0	0	0010				3.4.3.52

Segment: TXA

Description: Transcription Document Header
Optionality: R
Repeatable: False
Minimum: 1
Maximum: 1
Reference: 9.6.1

Fields

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Set ID- TXA	1	SI	4	NS	False	0	0					9.6.1.1
Document Type	2	IS	2	NS	False	0	0	0270				9.6.1.2
Document Content Presentation	3	ID	4	R	False	1	1	0191			TEXT	9.6.1.3
Activity Date/Time	4	TS	26	R	False	1	1					9.6.1.4
HL7 Definition: Required for all documents. Will be used as the Reference date in TIU and will be the date by which the documents will be referenced and sorted. For new documents, this date will be stored in TIU DOCUMENT file #8925, field 1301 REFERENCE DATE. Discharge Summary: date of admission. (same date as PV1.44 Admit date/time) Consult Note: date of the consult or the date patient data was added to the vendor system Progress Note: date of the visit or date that will be used as Reference data when creating historical visit Surgery Report: date of the surgery. This date will be used to locate a Surgery document if the surgery case number is not in this HL7 message. If more than one surgery took place on this date, TIU will not be able to tell which case to update, so the HL7 record will be rejected and must be resubmitted with the surgery case number.												
Date/Time	1	NM	14	R		1	1				200501281130	
Implementation Note: YYYYMMDD[HHHMM[SS[.SSSS]]][+-ZZZZ]												
degree of precision	2	ST	0	NS		0	0					

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Primary Activity Provider Code/Name	5	XCN	250	NS	False	0	0					9.6.1.5
Origination Date/Time	6	TS	0	NS	False	0	0					
Transcription Date/Time	7	TS	26	RE	False	0	1					9.6.1.7
HL7 Definition: This field is required if the the document was transcribed. This field will not be stored in TIU.												
Date/Time	1	NM	26	RE		0	1				200602281530	8925; 1307 DICTATION DATE (13;7) [D]
Implementation Note: YYYYMMDD[HHHMM[SS[.SSSS]]][+-ZZZZ]												
degree of precision	2	ST	0	NS		0	0					
Edit Date/Time	8	TS	0	NS	False	0	0					9.6.1.8
Originator Code/Name	9	XCN	250	R	False	1	1					9.6.1.9
HL7 Definition: Author & expected signer. This field identifies the person who originated (i.e., dictated) the document and is expected to enter the first-line signature for the document. TIU will use this field to populate two fields in TIU DOCUMENT file #8925: field 1202 AUTHOR/DICTATOR; field 1204 EXPECTED SIGNER If the Document Completion Status is LA/Legally Authenticated, TIU will check for a date in the signer field TXA.22.15.1 Authentication Person, Time Stamp. If the date is there, TIU will use the signature block information for this person to apply an electronic signature to this note for EXPECTED SIGNER. The date of signature in VistA will be NOW.												
ID number (ST)	1	ST	30	R		1	1				33234	NEW PERSON file #200, field .001 IEN
HL7 Definition: SSN or DUZ of a person in VistA NEW PERSON file #200. Must have value in TXA 9.9.1 Originator Code/name namespace to determine which number: USVHA for DUZ; USSSA for SSN												
family name	2	FN	30	R		1	1					
HL7 Definition: Test data must conform to confidentiality rules.												

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
surname	1	ST	30	R		1	1				TIUPROVIDER	
own surname prefix	2	ST	3	NS		0	0					
own surname	3	ST	3	NS		0	0					
surname prefix from partner/spouse	4	ST	3	NS		0	0					
surname from partner/spouse	5	ST	3	NS		0	0					
given name	3	ST	30	R		1	1				ONEORIGINATOR	
second and further given names or initials thereof	4	ST	30	RE		0	1				M	
suffix (e.g., JR or III)	5	ST	3	NS		0	0					
prefix (e.g., DR)	6	ST	3	NS		0	0					
degree (e.g., MD)	7	IS	3	NS		0	0	0360				
source table	8	IS	20	NS		0	0	0297				
assigning authority	9	HD	10	R		1	1					
namespace ID	1	IS	10	R		1	1	0363			USVHA	
HL7 Definition: Required to determine value in TXA.9.1 Originator Code/Name ID number: USVHA for DUZ; USSSA for SSN												
universal ID	2	ST	3	NS		0	0					
universal ID type	3	ID	3	NS		0	0	0301				
name type code	10	ID	3	NS		0	0	0200				
identifier check digit	11	ST	3	NS		0	0					

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
code identifying the check digit scheme employed	12	ID	3	NS		0	0	0061				
identifier type code (IS)	13	IS	10	NS		0	0	0203				
assigning facility	14	HD	3	NS		0	0					
Name Representation code	15	ID	3	NS		0	0	0465				
name context	16	CE	15	NS		0	0	0448				
name validity range	17	DR	3	NS		0	0					
name assembly order	18	ID	3	NS		0	0	0444				
Assigned Document Authenticator	10	XCN	250	RE	True	0	*					9.6.1.10
HL7 Definition: Expected cosigner: Identifies expected co-signer. Will be used to look up user in NEW PERSON file #200. Pointer to the person will be store in TIU DOCUMENT file #8925, field 1208 EXPECTED COSIGNER If the Document Completion Status is LA/Legally Authenticated, TIU will check for a date in the cosigner field TXA.22(1).15.1 Authentication Person, Time Stamp_rep. If the date is there, TIU will use the signature block information for this person to apply an electronic signature to this note for EXPECTED COSIGNER. The date of signature in VistA will be NOW.												
ID number (ST)	1	ST	13	RE		0	1				666554444	
HL7 Definition: SSN or DUZ of a person in VistA NEW PERSON file #200. Must have value in TXA 10.9.1 assigning authority namespace ID to determine what this number represents: USVHA for DUZ, USSSA for SSN.												
family name	2	FN	35	RE		0	1					
surname	1	ST	30	R		1	1				TIUPROVIDER	
own surname prefix	2	ST	3	NS		0	0					
own surname	3	ST	3	NS		0	0					

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
surname prefix from partner/spouse	4	ST	3	NS		0	0					
surname from partner/spouse	5	ST	3	NS		0	0					
given name	3	ST	30	RE		0	1				ONEAUTHENTICATOR	
second and further given names or initials thereof	4	ST	30	RE		0	1				TWO	
suffix (e.g., JR or III)	5	ST	3	NS		0	0					
prefix (e.g., DR)	6	ST	3	NS		0	0					
degree (e.g., MD)	7	IS	3	NS		0	0	0360				
source table	8	IS	30	NS		0	0	0297				
assigning authority	9	HD	10	RE		0	1					
HL7 Definition: Required if this group is populated, if ID number contains data.												
namespace ID	1	IS	10	RE		0	1	0363			USSSA	
HL7 Definition: Required to determine source of number in field TXA.10.1 ID number. Should be USVHA for DUZ, or USSSA an SSN.												
universal ID	2	ST	3	NS		0	0					
universal ID type	3	ID	3	NS		0	0	0301				
name type code	10	ID	3	NS		0	0	0200				
identifier check digit	11	ST	3	NS		0	0					

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
code identifying the check digit scheme employed	12	ID	3	NS		0	0	0061				
identifier type code (IS)	13	IS	30	NS		0	0					
assigning facility	14	HD	3	NS		0	0					
Name Representation code	15	ID	3	NS		0	0	0465				
name context	16	CE	15	NS		0	0	0448				
name validity range	17	DR	6	NS		0	0					
name assembly order	18	ID	3	NS		0	0	0444				
Transcriptionist Code/Name	11	XCN	250	RE	False	0	1					9.6.1.11
Implementation Note: The name of the transcriptionist in HL7 format along with the appropriate ID NUMBER (SSN or IEN) and NAMESPACE ID (USSSA or USVHA).												
ID number (ST)	1	ST	20	RE		0	1				666123456	8925; 1302 ENTERED BY (13:2) [P200'O]
Implementation Note: Pointer to #200 NEW PERSON File												
family name	2	FN	50	RE		0	1					
surname	1	ST	30	RE		0	1				TRANSCRIBER	9.6.1.11
own surname prefix	2	ST	3	NS		0	0					
own surname	3	ST	3	NS		0	0					
surname prefix from partner/spouse	4	ST	3	NS		0	0					

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
surname from partner/spouse	5	ST	3	NS		0	0					
given name	3	ST	30	RE		0	1				ONE TIUHL7	9.6.1.11
second and further given names or initials thereof	4	ST	3	NS		0	0					
suffix (e.g., JR or III)	5	ST	3	NS		0	0					
prefix (e.g., DR)	6	ST	3	NS		0	0					
degree (e.g., MD)	7	IS	3	NS		0	0	0360				
source table	8	IS	30	RE		0	1	0297			USSSA	HL70297
assigning authority	9	HD	3	NS		0	0					
name type code	10	ID	3	NS		0	0	0200				
identifier check digit	11	ST	3	NS		0	0					
code identifying the check digit scheme employed	12	ID	3	NS		0	0	0061				
identifier type code (IS)	13	IS	3	NS		0	0					
assigning facility	14	HD	3	NS		0	0					
Name Representation code	15	ID	3	NS		0	0	0465				
name context	16	CE	3	NS		0	0	0448				
name validity range	17	DR	3	NS		0	0					
name assembly order	18	ID	3	NS		0	0	0444				

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Unique Document Number	12	EI	30	RE	False	0	1					9.6.1.12
HL7 Definition: Surgery Report: this field should contain the Surgery case number and Unique Document File Name should also contain the title of the operative report. If this field is blank, an attempt will be made to locate a surgery case with a date equal to the Activity date/time. If there is only one surgery for this date and the TIU stub note does not already contain text, TIU will store the text of this document into this surgery report. Consult Note: this field should identify the consult to which this note should be linked. This field will contain the DFN/IEN of the record in CONSULTATION file #90.21. Note: HL7 Document Type is not used in this HL7 message. TIU identifies document type by the location of the document title in the TIU document hierarchy.												
entity identifier	1	ST	20	RE		0	1				109	
HL7 Definition: SURGERY case number Consult number												
namespace ID	2	IS	10	NS		0	0	0363				
universal ID	3	ST	3	NS		0	0					
universal ID type	4	ID	3	NS		0	0	0301				
Parent Document Number	13	EI	30	NS	False	0	0					9.6.1.13
Placer Order Number	14	EI	22	NS	False	0	0					9.6.1.14
Filler Order Number	15	EI	22	NS	False	0	0					9.6.1.15
Unique Document File Name	16	TX	60	R	False	1	1				History & Physical	9.6.1.16
HL7 Definition: Document Title: This field contains a unique document title which must match an existing title in the TIU DOCUMENT DEFINITION file #8925.1 at the receiving location. If this title does not exactly match the title in TIU, the HL7 record will be rejected. Note that the location of this title within the TIU document class hierarchy determines the type of document that will be created, not the content of the HL7 message.												

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Document Completion Status	17	ID	2	RE	False	0	1	0271			LA	9.6.1.17
HL7 Definition: Signed document: This field should be set to LA/Legally Authenticated if it is to be stored as a signed document. The document must be signed manually or electronically in the vendor package by the individual who is legally responsible for that document (TXA.Originator) and who has signature authority in VistA. If the author has an electronic signature in VistA, it will be applied to the document. If the VistA user does not have a valid electronic signature, the document can still be created, but it will not be signed. TIU will get the date/time of the signature from TXA Authentication Person, Time Stamp. TIU will ignore this field if it is blank or any other value.												
Document Confidentiality Status	18	ID	2	NS	False	0	0	0272				9.6.1.18
Document Availability Status	19	ID	2	RE	False	0	1	0273			AV	9.6.1.19
HL7 Definition: Progress Note: TIU will use this field to determine if a document should be stored when an existing visit cannot be located AV - Available: create document. If a visit cannot be located, a new historical visit will be created using today's date (NOW). The document will be attached to this new visit. CA - Cancel (or blank): do not create document. If a visit cannot be located, the document will not be created and a reject Application ACK will be returned.												
Document Storage Status	20	ID	2	NS	False	0	0	0275				9.6.1.20
Document Change Reason	21	ST	30	NS	False	0	0					9.6.1.21
Authentication Person, Time Stamp	22	PPN	250	RE	True	0	*					9.6.1.22.1
Implementation Note: must be in order, signer first, cosigner second HL7 Definition: Signed date/time: Used in conjunction with TXA.9 Originator Code/Name field. Contains date and time document was signed by EXPECTED SIGNER in the vendor package. If TXA.17 Document Completion Status is LA - legally authenticated, TIU will look for TXA.22.15 Date/Time Action Performed and will apply VistA electronic signature information to the TIU field EXPECTED SIGNER.												

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
ID number (ST)	1	ST	10	NS		0	0					
family name	2	FN	3	NS		0	0					
given name	3	ST	3	NS		0	0					
second and further given names or initials thereof	4	ST	3	NS		0	0					
suffix (e.g., JR or III)	5	ST	3	NS		0	0					
prefix (e.g., DR)	6	ST	3	NS		0	0					
degree (e.g., MD)	7	IS	3	NS		0	0	0360				
source table	8	IS	3	NS		0	0	0297				
assigning authority	9	HD	3	NS		0	0					
name type code	10	ID	3	NS		0	0	0200				
identifier check digit	11	ST	3	NS		0	0					
code identifying the check digit scheme employed	12	ID	3	NS		0	0	0061				
identifier type code (IS)	13	IS	10	RE		0	1				SIGNER	
HL7 Definition: Could be SIGNER or COSIGNER. This indicates that the Date/Time Action Performed represents signature by the EXPECTED SIGNER (represented by the Originator Code/Name) or by the EXPECTED COSIGNER (represented by the Assigned Document Authenticator)												
assigning facility	14	HD	3	NS		0	0					
Date/Time Action Performed	15	TS	14	RE		0	1					
HL7 Definition: The date/time the document was signed. Will be stored in TIU DOCUMENT file #8925, field 1501 SIGNATURE DATE/TIME												

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Date/Time	1	NM	14	RE		0	1				200501281230	TIU DOCUMENT file #8925, field 1501
Implementation Note: YYYYMMDD[HHHMM[SS[.SSSS]]][+-ZZZZ]												
degree of precision	2	ST	0	NS		0	0					
Name Representation code	16	ID	3	NS		0	0	0465				
name context	17	CE	3	NS		0	0	0448				
name validity range	18	DR	3	NS		0	0					
name assembly order	19	ID	3	NS		0	0	0444				
Authentication Person, Time Stamp_rep	22	PPN	250	C	False	0	1		Optional when the status of TXA-17 Document Completion Status is LA - Legally Authenticated.			9.6.1.22.2
HL7 Definition: Cosigned date/time. Used in conjunction with Cosigner information in TXA.10 Assigned Document Authenticator. Contains date and time document was signed by EXPECTED COSIGNER in the vendor package. If TXA.17 Document Completion Status is LA - legally authenticated, TIU will look for TXA.22(1).15.1 Date/Time Action Performed and will apply electronic signature to the TIU field EXPECTED COSIGNER.												
ID number (ST)	1	ST	10	NS		0	0					
family name	2	FN	3	NS		0	0					
given name	3	ST	3	NS		0	0					
second and further given names or initials thereof	4	ST	3	NS		0	0					

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
suffix (e.g., JR or III)	5	ST	3	NS		0	0					
prefix (e.g., DR)	6	ST	3	NS		0	0					
degree (e.g., MD)	7	IS	3	NS		0	0	0360				
source table	8	IS	3	NS		0	0	0270				
assigning authority	9	HD	3	NS		0	0					
name type code	10	ID	3	NS		0	0	0200				
identifier check digit	11	ST	3	NS		0	0					
code identifying the check digit scheme employed	12	ID	3	NS		0	0	0061				
identifier type code (IS)	13	IS	10	RE		0	1				COSIGNER	
assigning facility	14	HD	3	NS		0	0					
Date/Time Action Performed	15	TS	20	RE		0	1					
HL7 Definition: The date/time the document was cosigned. Will be stored in TIU DOCUMENT file #8925, field 1507 COSIGNATURE DATE/TIME												
Date/Time	1	NM	14	RE		0	1				20050128130005	TIU DOCUMENT file #8925, field 1507 COSIGNATURE
Implementation Note: YYYYMMDD[HHHMM[SS[.SSSS]]][+-ZZZZ]												
degree of precision	2	ST	0	NS		0	0					
Name Representation code	16	ID	3	NS		0	0	0465				
name context	17	CE	3	NS		0	0	0448				
name validity range	18	DR	3	NS		0	0					

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
name assembly order	19	ID	3	NS		0	0	0444				
Distributed Copies (Code and Name of Recipients)	23	XCN	3	NS	False	0	0					9.6.1.23

Segment: OBX

Description: Observation/Result

Optionality: R

Repeatable: True

Minimum: 1

Maximum: *

Reference: 7.4.2

Fields

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
Set ID - OBX	1	SI	4	R	False	1	1				1	7.4.2.1
HL7 Definition: This field contains the sequence number. For compatibility with ASTM.												
Value Type	2	ID	2	R	False	1	1	0125			TX	7.4.2.2
HL7 Definition: TX is the only allowed valued and is used to send large amounts of text. In the TX data type, the repeat delimiter can only be used to identify paragraph breaks. Value Type should be TX - string data meant for user display (on a terminal or printer). Leading spaces should be included. Trailing spaces should be removed.												
Observation Identifier	3	CE	88	RE	False	0	1					7.4.2.3
HL7 Definition: Subject: This field will be used to pass an optional subject for the document. Non-standard use. Optional.												
identifier	1	ST	8	RE		0	1				Subject	
text	2	ST	80	RE		0	1				My Special Subject for this & Document	
name of coding system	3	IS	3	NS		0	0	0396				

Appendix B: Testing

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
alternate identifier	4	ST	3	NS		0	0					
alternate text	5	ST	3	NS		0	0					
name of alternate coding system	6	IS	3	NS		0	0	0396				
Observation Sub-Id	4	ST	20	NS	False	0	0					7.4.2.4
Observation Value	5	TX	80	R	True	1	*				This is the first line of the note| The patient shows signs of....	7.4.2.5

Implementation Note:

One Observation Value for each line of text

HL7 Definition:

Text of TIU document. Only one OBX segment will be included in the message.

This text will be stored in TIU DOCUMENT file #8925, field 2 REPORT TEXT

The Observation Value element is repeatable and is Used to transmit document text. Each Observation Value should contain a single line of the text document. Leading spaces should be included. Trailing spaces should be removed.

The sending package will substitute the appropriate escape sequences for every field separator and encoding character in this and any other text field in the message. The receiving package will change every escape sequence back to the appropriate special character.

Observation Value_rep	5	TX	80	R	False	1	1				Line 2 test special characters: ^ \ | ~ &	
Observation Value_rep	5	TX	80	R	False	1	1				This is the third line of the report... the patient has symptoms of...	
Observation Value_rep	5	TX	80	R	False	1	1					

HL7 Definition:

This is a blank line for testing

Observation Value_rep	5	TX	80	R	False	1	1				This is the last line of the report...in conclusion,...	
Units	6	CE	250	NS	False	0	0					7.4.2.6

Name	Seq	DT	Len	Opt	Rep	Min	Max	Tbl	Predicate	Fixed Val	Ex Val	Reference
References Range	7	ST	60	NS	False	0	0					7.4.2.7
Abnormal Flags	8	IS	5	NS	False	0	0	0078				7.4.2.8
Probability	9	NM	5	NS	False	0	0					7.4.2.9
Nature of Abnormal Test	10	ID	2	NS	False	0	0	0080				7.4.2.10
Observation Result Status	11	ID	1	NS	False	0	0	0085				7.4.2.11
Date Last Observation Normal Value	12	TS	3	NS	False	0	0					7.4.2.12
User Defined Access Checks	13	ST	3	NS	False	0	0					7.4.2.13
Date/Time of the Observation	14	TS	26	NS	False	0	0					7.4.2.14
Producer's ID	15	CE	250	NS	False	0	0					7.4.2.15
Responsible Observer	16	XCN	250	NS	False	0	0					7.4.2.16
Observation Method	17	CE	3	NS	False	0	0					7.4.2.17
Equipment Instance Identifier	18	EI	22	NS	False	0	0					7.4.2.18
Date/Time of the Analysis	19	TS	26	NS	False	0	0					7.4.2.19

Appendix B: Testing

Sample Test Plan

A test plan should contain the following elements:

1) Manual entry of TIU titles. Any HL7 application will contain one or more titles that are unique to it. These titles must be entered into TIU on the VistA system and must match exactly what the HL7 vendor application sends.
2) Set up and configure the HL7 logical link for the application to be tested.
3) Set up of application parameters for TIUHL7 and vendor application to be tested.
4) Set up of protocol event drivers for the application to be tested.
5) Set up of protocol subscribers for the application to be tested.
6) Alpha test plan.
7) Beta test plan.
8) Information regarding students and expected cosigners.
9) TIU Team points of contact.
10) Application team points of contact.

Among the information that the following test plan leaves out, but must be present (by implication) is a set of test users. This includes test patients with valid veteran's IDs, test signers, and test cosigners. You may use providers already in the system for test signers and cosigners, but you must not use actual patients. You must set up test patients with names and IDs that are easily identified with your test application.

A standard for test patients used within VHA is to use the application name as part of the test patient last name, and use a number spelled out as the first name. Example: CPRSPatient, One. This way it is entirely unambiguous who is a test patient. Similarly, the test Social Security Number assigned to test patients should start with either 666 or 000—number sequences not used by the Social Security Administration.

Once established, test patients need to be coordinated with the application vendor.

The following is verbatim from the ROES project testing document:

Introduction

This implementation and test plan covers the following areas:

1) Manual entry of ROES TIU titles
2) Set up of logical link for Denver Distribution Center
3) Set up of application parameters for TIUHL7 and ROES-PN applications
4) Set up of 4 protocol event drivers for ROES progress note project
5) Set up of 4 protocol subscribers for ROES progress note project
6) Alpha test plan
7) Beta test plan
8) Information regarding students and expected cosigners
9) TIU Team points of contact
10) DDC points of contact

Supplemental Implementation Steps (to be performed by IRM or CAC working with ASPS):

1) ROES Standardized Local Titles

Local titles cannot be distributed via VistA patches. The TIU Team is attempting to get the ROES titles approved by data standardization which would bring the status of 'national title' to them, permitting them to be distributed electronically. It is unlikely that this will happen prior to testing.

Manual input of 4 ROES standardized local titles is needed to ensure that the HL7 messages and the TIU progress notes contain the correct titles and can be processed correctly. Creation of a new TIU document would occur in the TIU package. Menu tree options are TIU IRM MAINTENANCE MENU>DOCUMENT DEFINITION MGR>CREATE DDEFS MGR.

If your site organizes these progress note titles under a specific document class, you will need to identify the appropriate document class name at your site under which Audiology or Audiology & Speech Pathology progress notes would be filed. This document class would be a parent to the ROES titles. If no document class exists at your site for Audiology or ASPS progress notes, the parent could be just the class 'Progress Notes' or you could **create a new document class** for Audiology (ASPS) progress notes if desired.

Creation of these new documents (optional document class and the 4 titles) will need to be performed by an individual at each site with the appropriate privileges and menu access. When installed manually, the titles should be entered by **cutting and pasting** them from this document to ensure that there are no typographic errors. The following listing documents the recommendations on title names and ancillary information:

Appendix B: Testing

Document Type = "DOCUMENT CLASS" (this may all ready exist at your site OR is an optional entry).
Parent Document Type = "CLASS".
Parent = "PROGRESS NOTE".
Name (of document class) = "**AUDIOLOGY SERVICE NOTES**" (or variant "**AUDIOLOGY & SPEECH PATHOLOGY SERVICE NOTES**"). Please cut and paste this name from this document if creating manually.
Status = "ACTIVE".
Menu Text = "ASPS SERVICE NOTES"

The next 4 titles MUST be input to make this implementation of TIU patch 200 work for ROES progress notes.

Document Type = "TITLE".
Parent Document Type = "DOCUMENT CLASS" (optional) OR "CLASS".
Parent = "AUDIOLOGY SERVICE NOTES" (variant "AUDIOLOGY & SPEECH PATHOLOGY SERVICE NOTES") OR "PROGRESS NOTE".
Name (of document title) = "**AUDIOLOGY ROES HEARING AID ORDER NOTE**". Please cut and paste this name from this document if creating manually.
Status = "Active".
Print Name = "AUDIOLOGY ROES HEARING AID ORDER NOTE".

Document Type = "TITLE".
Parent Document Type = "DOCUMENT CLASS" (optional) OR "CLASS".
Parent = "AUDIOLOGY SERVICE NOTES" (variant "AUDIOLOGY & SPEECH PATHOLOGY SERVICE NOTES") OR "PROGRESS NOTE".
Name (of document title) = "**AUDIOLOGY ROES HEARING AID ISSUE NOTE**". Please cut and paste this name from this document if creating manually.
Status = "ACTIVE".
Print Name = "AUDIOLOGY ROES HEARING AID ISSUE NOTE".

Document Type = "TITLE".
Parent Document Type = "DOCUMENT CLASS" (optional) OR "CLASS".
Parent = "AUDIOLOGY SERVICE NOTES" (variant "AUDIOLOGY & SPEECH PATHOLOGY SERVICE NOTES") OR "PROGRESS NOTE".
Name (of document title) = "**AUDIOLOGY ROES HEARING AID MODEL CHANGE NOT**E". Please cut and paste this name from this document if creating manually.
Status = "ACTIVE".
Print Name = "AUDIOLOGY ROES HEARING AID MODEL CHANGE NOTE".

Document Type = "TITLE".
Parent Document Type = "DOCUMENT CLASS".
Parent Document Type = "DOCUMENT CLASS" (optional) OR "CLASS".
Parent = "AUDIOLOGY SERVICE NOTES" (variant "AUDIOLOGY & SPEECH PATHOLOGY SERVICE NOTES") OR "PROGRESS NOTE".
Name (of document title) = "**AUDIOLOGY ROES HEARING AID SERVICE REQUEST NOTE**".
Please cut and paste this name from this document if creating manually.
Status = "ACTIVE".
Print Name = "AUDIOLOGY ROES HEARING AID SERVICE REQUEST NOTE".

2) The HL7 Logical Link File #870 – Link for DDC

Logical links describe the complete network path to a given system. The ROES sending application is configured to receive APPLICATION ACKNOWLEDGMENTS (AA) over the same port it is sending HL7 messages, so only one LOGICAL LINK is necessary. Your site should already have a link ready for this use.

- The Logical Link for DDC is VADDC.
- TCP/IP Service Type for the link must be set as "Client (Sender)".
- The IP address should be set to 10.224.54.3.

If DDC determines that a second link is necessary for APPLICATION ACKNOWLEDGMENTS (AA), the DDC POC will contact you regarding the correct name, IP Address and Port # to be used. If you had to edit the TCP/IP Service Type or IP address for this link save the changes and return to the HL7 Main Menu Option.

From the HL7 Main Menu option, select the Filer and Link Management Options menu. To test the link, select "Ping (TCP Only)" and at the prompt "Select HL LOGICAL LINK NODE:" enter VADDC. The message "PING Worked" should be displayed. If you do not see this message, ensure that the receiving system has been configured and setup properly. After the PING test, the link must be started. Here's the menu and option:

```
Select HL7 Main Menu Option: Filer and Link Management Options
SM Systems Link Monitor
FM Monitor, Start, Stop Filers
LM TCP Link Manager Start/Stop
SA Stop All Messaging Background Processes
RA Restart/Start All Links and Filers
DF Default Filers Startup
SL Start/Stop Links
PI Ping (TCP Only)
ED Link Edit
ER Link Errors ...

Select Filer and Link Management Options Option: SL Start/Stop Links

[This option is used to launch the lower level protocol for the appropriate
device. Please select the node with which you want to communicate, in this case,
VADDC.]

Select HL LOGICAL LINK NODE: VADDC
```

3) The HL7 Application Parameter File #771 – TIUHL7 and ROES-PN applications

Entries in this file are used to define the sending and receiving applications for VistA HL7. Each sending and receiving application must be defined separately. You can edit the examples exported in the patch for both the receiving and sending applications: TIUHL7 EX RECEIVING APP and TIUHL7 EX SENDING APP. From the HL7 Main Menu Option, select the Interface Developer Options menu. To set up HL7 Applications or edit the HL7 Example Applications, use the "EA Application Edit" option, on the Interface Developer Options menu:

```
Select Interface Developer Options Option: EA Application Edit

Select HL7 APPLICATION PARAMETER NAME: TIUHL7 EX RECEIVING APP

                                                    HL7 APPLICATION EDIT
------------------------------------------------------------------------------
-----------------------------------

      NAME: TIUHL7 EX RECEI                    ACTIVE/INACTIVE: INACTIVE

      FACILITY NAME:                                 COUNTRY CODE: USA

      HL7 FIELD SEPARATOR:                      HL7 ENCODING CHARACTERS: ~|\&

       MAIL GROUP:
_______________________________________________________________________________
```

Rename the receiving example application TIUHL7. This application will always be the receiving application for the TIU Generic HL7 Interface. Change the status to ACTIVE. The Facility Name must be entered for routing information used by the VistA Interface Engine (VIE). [If your site is not routing messages through a local VIE this field is optional.] The HL7 Field Separator and HL7 Encoding Characters do not need to be changed. Please see the HL7 Site Manager & Developer Manual for more information.

Example Facility Name: **666~TESTLAB.FO-SLC.MED.VA.GOV~DNS.**
Example Facility Name: **621~ MTN-HOME.MED.VA.GOV~DNS.**
Example Facility Name: 5**54~ DENVER.MED.VA.GOV~DNS.**

The receiving application should look like the following when finished editing:

```
                                                    HL7 APPLICATION EDIT
------------------------------------------------------------------------------

      NAME: TIUHL7                             ACTIVE/INACTIVE: ACTIVE

      FACILITY NAME:    <your facility>      COUNTRY CODE: USA

      HL7 FIELD SEPARATOR:                      HL7 ENCODING CHARACTERS: ~|\&

       MAIL GROUP:
```

Repeat this step for the Sending Application; rename the TIUHL7 EX SENDING APP to: ROES-PN. This name was used for the Sending Application from the ROES Progress Note project. The status should be set to ACTIVE, use the same country code and HL7 encoding characters. The FACILITY NAME should be set to: 791~VISTA.DDC.OAMM.VA.GOV~DNS.

The sending application should look like the following when finished editing:

```
                                                        HL7 APPLICATION EDIT
------------------------------------------------------------------------------

      NAME: ROES-PN                      ACTIVE/INACTIVE: ACTIVE

      FACILITY NAME:    791~VISTA.          COUNTRY CODE: USA
                                          DDC.OAMM.VA.GOV~DNS

      HL7 FIELD SEPARATOR:                     HL7 ENCODING CHARACTERS: ~|\&

       MAIL GROUP:
```

4) & 5) The Protocol File #101 – ROES Event & Subscriber Protocols

Entries in this file are used to define each transaction/message type. For the ROES Progress Note project, there are 4 distinct transaction/message types. There are two entries in this file included in the TIU*1.0*200 distribution that need to be edited:

TIUHL7 EXAMPLE MDM SUB
TIUHL7 EXAMPLE MDM EVENT

You will need to edit each to create the event and subscriber protocols for the first ROES message type (order):

TIUHL7 ROES-PN ORDER MDM SUB (subscriber protocol)
TIUHL7 ROES-PN ORDER MDM Event (event protocol).

Clone the edited protocols to create the other event and subscriber protocols for the other three ROES progress note transactions/message types.

[Note: if you are all ready testing this patch with other partners, you may have edited the sample protocols in the patch for your first test partner. In that case, just clone all 4 ROES message type protocols for event and subscriber as described below.]

From the HL7 Main Menu Option, select the Interface Developer Options menu. To set up or edit HL7 Protocols, use the “Protocol Edit” option, on the Interface Developer Options menu:

```
Select Interface Developer Options Option: Protocol Edit

Select PROTOCOL NAME: TIUHL7 EXAMPLE MDM SUB


                        HL7 INTERFACE SETUP                              PAGE 1 OF 2
-------------------------------------------------------------------------------

            NAME: TIUHL7 EXAMPLE MDM SUB

DESCRIPTION (wp):   (empty)

ENTRY ACTION:

 EXIT ACTION:

        TYPE: subscriber
```

The following naming convention is being used for protocols for the TIUHL7 ROES Interface:

TIUHL7 <sending app> MDM <type>,

where

<sending app> specifies the ROES application and ROES application message type

And

<type> specifies the type of protocol (either Subscriber or Event).

The first ROES subscriber protocol is: TIUHL7 ROES-PN ORDER MDM SUB. Please edit the example name for the first subscribing protocol to
TIUHL7 ROES-PN ORDER MDM SUB.

[Later clone the name for the other three subscribing protocols; these will be new entries from this same menu option:
TIUHL7 ROES-PN ISSUE MDM SUB
TIUHL7 ROES-PN MODEL CHANGE MDM SUB
TIUHL7 ROES-PN SERVICE REQUEST MDM SUB.]

Tab down to the Type field and press <Enter> or <Return> to accept 'subscriber' entry. The option then presents Page 2 to edit the fields specific to the subscriber type of the selected protocol:

```
                              HL7 SUBSCRIBER
      PAGE 2 OF 2
                            TIUHL7 ROES-PN ORDER MDM SUB
-------------------------------------------------------------------------------
---------------------------------

RECEIVING APPLICATION: TIUHL7

RESPONSE MESSAGE TYPE: ACK                              EVENT TYPE: T02

SENDING FACILITY REQUIRED?: YES       RECEIVING FACILITY     REQUIRED?: YES

SECURITY REQUIRED?: NO

               LOGICAL LINK: VADDC

 PROCESSING RTN: D PROCMSG^TIUHL7P1

 ROUTING LOGIC:
```

Enter TIUHL7 as the RECEIVING APPLICATION. [If your site is not using a VIE to route HL7 messages, the Sending and Receiving Facilities Required fields may be set to NO. This is NOT the usual case.] Replace the LOGICAL LINK and enter the name of the DDC logical link created/edited earlier to send Application Acknowledgments to the sending application. Do not change any of the other fields. Save the changes to the subscriber protocol.

[When cloning/creating new subscriber protocol entries, you must type in the word 'subscriber' in the type field on page 1 and then press <Enter> to get into page 2.]

Begin editing the example event protocol **TIUHL7 EXAMPLE MDM EVENT** as follows:

```
Select PROTOCOL NAME: TIUHL7 EXAMPLE MDM EVENT

                        HL7 INTERFACE SETUP                                  PAGE
1 OF 2
-------------------------------------------------------------------------------

            NAME: TIUHL7 EXAMPLE MDM EVENT

DESCRIPTION (wp):   (empty)


ENTRY ACTION:

 EXIT ACTION:

        TYPE: event driver
```

The following naming convention is suggested for protocols for the TIUHL7 Interface:

`TIUHL7 <sending app> MDM <type>,`

Where

<sending app> specifies the ROES application and ROES application message type

And

<type> specifies the type of protocol (either Subscriber or Event).

The first ROES event protocol is: **TIUHL7 ROES-PN ORDER MDM EVENT**. This name was used for the first event protocol for messages from the ROES Progress Note project.

[Later clone the name for the other three protocol event drivers; these will be new entries from this same menu option:

TIUHL7 ROES-PN ISSUE MDM EVENT
TIUHL7 ROES-PN MODEL CHANGE MDM EVENT
TIUHL7 ROES-PN SERVICE REQUEST MDM EVENT.]

Tab down to the Type field and press <Enter> or <Return> to accept the 'event' entry. The option then presents Page 2 to edit the fields specific to the event type of the selected protocol:

```
                          HL7 EVENT DRIVER                                PAGE
2 OF 2
                        TIUHL7 ROES-PN ORDER MDM EVENT
--------------------------------------------------------------------------------
      SENDING APPLICATION: ROES-PN
 TRANSACTION MESSAGE TYPE: MDM                      EVENT TYPE: T02
        MESSAGE STRUCTURE:
            PROCESSING ID:                         VERSION ID: 2.4
          ACCEPT ACK CODE: AL             APPLICATION ACK TYPE: NE

 RESPONSE PROCESSING RTN:
                          SUBSCRIBERS
  TIUHL7 ROES-PN ORDER MDM SUB
```

Edit the Sending Application to ROES-PN. The SUBSCRIBERS should reflect the new name created earlier for the subscribing protocol, TIUHL7 ROES-PN ORDER MDM SUB. Make these same types of entries for the other three protocol event drivers. See sample screen prints for each ROES event driver and subscriber protocol at the end of this document.

[When cloning/creating new event driver protocol entries, you must type in the word 'event' in the type field on page 1 and then press <Enter> to get into page 2.]

At the end of this process you should have:

Two applications:
TIUHL7
ROES-PN

Four event protocols:
TIUHL7 ROES-PN ORDER MDM EVENT
TIUHL7 ROES-PN ISSUE MDM EVENT
TIUHL7 ROES-PN MODEL CHANGE MDM EVENT
TIUHL7 ROES-PN SERVICE REQUEST MDM EVENT

And four subscribing protocols:
TIUHL7 ROES-PN ORDER MDM SUB
TIUHL7 ROES-PN ISSUE MDM SUB
TIUHL7 ROES-PN MODEL CHANGE MDM SUB
TIUHL7 ROES-PN SERVICE REQUEST MDM SUB.

Subscriptions should be as follows:

- The ROES ORDER subscriber protocol should be subscribing to the ROES ORDER event driver protocol.
- The ROES ISSUE subscriber protocol should be subscribing to the ROES ISSUE event driver protocol.
- The ROES MODEL CHANGE subscriber protocol should be subscribing to the ROES MODEL CHANGE event driver protocol.
- The ROES SERVICE REQUEST subscriber protocol should be subscribing to the ROES SERVICE REQUEST event driver protocol.

Testing Plans for ROES progress note project

6) Alpha Test Phase:

1. Ensure each site has installed TIU*1*200 in production environment.
2. Ensure that supplemental implementation steps (above) have been completed.
3. Audiology & Speech Pathology Service POC will identify 3-6 of each type of ROES transaction: order, issue, model change, and service request. ID by veteran name/SSN, date, type of transaction, audiologist. These transactions need to have been completed recently (2-4 weeks). Some transactions are done in higher volumes. If possible supply larger numbers of these test transactions.
4. Please transmit this information to < names & addresses removed for privacy reasons >. Please transmit this information starting the week of 17-October.
5. DDC HL7 messaging routines will be run against the appropriate ROES transactions to generate the HL7 messages.
6. HL7 messages will be transmitted through the VIE framework from DDC to testing site for upload.

7. The local IRM or CAC POC may need to confirm message upload in TIU and/or investigate potential problems with upload at local site – problems would be reported to the TIU Team (contacts listed below) and < names & addresses removed for privacy reasons >.
8. Once upload has been confirmed, the Audiology & Speech Pathology Service POC will be asked to review the notes and supply feedback on content, note layout, etc. to < names & addresses removed for privacy reasons >.

7) Beta Test Phase:

1. Ensure that the Alpha Test Phase is complete and that all issues have been resolved prior to starting the Beta Test Phase.
2. DDC internal triggers for ROES HL7 messages will be turned ON for the 3 beta test sites. This will be done on or about 31-October.
3. DDC will trigger ROES HL7 messages for all ROES orders, issues, model changes, and service requests for repair done at the three test sites.
4. DDC will collect identifying information about each message (veteran name/SSN, date, type of transaction, and audiologist).
5. Each local site will receive a list of ROES transactions for which an HL7 message was generated (by identifiers described above). This will probably be done once every day or two for at least one week, starting the week of 31-October.
6. The local site will be asked to confirm that the messages did upload and that the content and format are correct (as agreed upon when the alpha test phase was completed).

8) Information Regarding Students

Students cannot legally sign progress notes. If a student enters a ROES transaction that could result in a ROES progress note and the student is recorded as the "Requested By" person for the ROES transaction, the student MUST input an EXPECTED COSIGNER into the ROES system. The ROES custom/digital hearing aid order and ROES service request order screens are being modified to collect this data. In addition, checks are being inserted to ensure that an expected cosigner is input when the "Requested By" person is listed in the ROES system with a title of STUDENT. The student cannot get past the first ROES order page without inputting an expected cosigner.

The only way these checks will work and ensure that expected cosigners are present when required is if all students have been input correctly into the ROES system with a "Title" = "STUDENT." It is imperative that all ROES supervisors check the "Title" setting for all students in the ROES Station Parameters Enter/Edit page. [ROES Desktop>Station Actions>Station Parameters is the path to this page.] The "Title" must be set = "STUDENT."

Taking this action will NOT affect the students privileges in ROES; these are separate settings (on the same page) and each student should be given and/or retain the privileges deemed necessary and permissible by the supervisor.

Contact Information

9) TIU Team Contacts:

< Names & addresses removed for privacy reasons. >

10) DDC Contacts:

< Names & addresses removed for privacy reasons. >

Sample ROES Event and Subscriber Protocol Screen Prints

ROES Order Event Protocol:

```
                        HL7 INTERFACE SETUP                                  PAGE
1 OF 2
-------------------------------------------------------------------------------
            NAME: TIUHL7 ROES-PN ORDER MDM EVENT

DESCRIPTION (wp):   [Empty.]


ENTRY ACTION:

 EXIT ACTION:


        TYPE: event driver


                           HL7 EVENT DRIVER                                  PAGE
2 OF 2
                          TIUHL7 ROES-PN ORDER MDM EVENT
-------------------------------------------------------------------------------
SENDING APPLICATION: ROES-PN
 TRANSACTION MESSAGE TYPE: MDM                        EVENT TYPE: T02
        MESSAGE STRUCTURE:
            PROCESSING ID:                           VERSION ID: 2.4
          ACCEPT ACK CODE: AL                APPLICATION ACK TYPE: NE

 RESPONSE PROCESSING RTN:
                           SUBSCRIBERS
  TIUHL7 ROES-PN ORDER MDM SUB
```

ROES Order Subscriber Protocol:

```
                    HL7 INTERFACE SETUP                          PAGE 1 OF 2
--------------------------------------------------------------------------------
            NAME: TIUHL7 ROES-PN ORDER MDM SUB
DESCRIPTION (wp):   [Empty]

ENTRY ACTION:
 EXIT ACTION:

        TYPE: subscriber



                           HL7 SUBSCRIBER                          PAGE 2
OF 2
                          TIUHL7 ROES-PN ORDER MDM SUB
--------------------------------------------------------------------------------
      RECEIVING APPLICATION: TIUHL7
      RESPONSE MESSAGE TYPE: ACK                        EVENT TYPE: T02
 SENDING FACILITY REQUIRED?: YES          RECEIVING FACILITY REQUIRED?: YES
         SECURITY REQUIRED?: NO
               LOGICAL LINK: VADDC
 PROCESSING RTN:    D PROCMSG^TIUHL7P1
  ROUTING LOGIC:
```

ROES Issue Event Protocol:

```
                    HL7 INTERFACE SETUP                          PAGE 1
OF 2
--------------------------------------------------------------------------------
            NAME: TIUHL7 ROES-PN ISSUE MDM EVENT
DESCRIPTION (wp):   [Empty.]

ENTRY ACTION:
 EXIT ACTION:

        TYPE: event driver
```

```
                          HL7 EVENT DRIVER                                PAGE 2
OF 2
                        TIUHL7 ROES-PN ISSUE MDM EVENT
--------------------------------------------------------------------------------
      SENDING APPLICATION: ROES-PN
 TRANSACTION MESSAGE TYPE: MDM                       EVENT TYPE: T02
        MESSAGE STRUCTURE:
            PROCESSING ID:                          VERSION ID: 2.4
          ACCEPT ACK CODE: AL              APPLICATION ACK TYPE: NE

 RESPONSE PROCESSING RTN:
                          SUBSCRIBERS
  TIUHL7 ROES-PN ISSUE MDM SUB
```

ROES Issue Subscriber Protocol:

```
                       HL7 INTERFACE SETUP                               PAGE 1
OF 2
--------------------------------------------------------------------------------

            NAME: TIUHL7 ROES-PN ISSUE MDM SUB

DESCRIPTION (wp):   [Empty]


ENTRY ACTION:

 EXIT ACTION:


        TYPE: subscriber




                           HL7 SUBSCRIBER                                  PAGE 2
OF 2
                         TIUHL7 ROES-PN ISSUE MDM SUB
--------------------------------------------------------------------------------

      RECEIVING APPLICATION: TIUHL7

      RESPONSE MESSAGE TYPE: ACK                          EVENT TYPE: T02

 SENDING FACILITY REQUIRED?: YES          RECEIVING FACILITY REQUIRED?: YES

         SECURITY REQUIRED?: NO

               LOGICAL LINK: VADDC

 PROCESSING RTN:    D PROCMSG^TIUHL7P1
```

```
  ROUTING LOGIC:
```

ROES Model Change Event Protocol:

```
                        HL7 INTERFACE SETUP                                  PAGE 1
OF 2
-------------------------------------------------------------------------------

            NAME: TIUHL7 ROES-PN MODEL CHANGE MDM EVENT

DESCRIPTION (wp):   [Empty.]


ENTRY ACTION:

 EXIT ACTION:


        TYPE: event driver




                          HL7 EVENT DRIVER                                   PAGE 2
OF 2
                         TIUHL7 ROES-PN MODEL CHANGE MDM EVENT
-------------------------------------------------------------------------------
      SENDING APPLICATION: ROES-PN
 TRANSACTION MESSAGE TYPE: MDM                        EVENT TYPE: T02
        MESSAGE STRUCTURE:
            PROCESSING ID:                           VERSION ID: 2.4
          ACCEPT ACK CODE: AL                APPLICATION ACK TYPE: NE

 RESPONSE PROCESSING RTN:
                             SUBSCRIBERS
  TIUHL7 ROES-PN MODEL CHANGE MDM SUB
```

ROES Model Change Subscriber Protocol:

```
                        HL7 INTERFACE SETUP                                  PAGE 1
OF 2
-------------------------------------------------------------------------------

            NAME: TIUHL7 ROES-PN MODEL CHANGE MDM SUB

DESCRIPTION (wp):   [Empty]


ENTRY ACTION:

 EXIT ACTION:


        TYPE: subscriber
```

```
                          HL7 SUBSCRIBER                                PAGE 2
OF 2
                       TIUHL7 ROES-PN MODEL CHANGE MDM SUB
--------------------------------------------------------------------------------

     RECEIVING APPLICATION: TIUHL7

     RESPONSE MESSAGE TYPE: ACK                          EVENT TYPE: T02

 SENDING FACILITY REQUIRED?: YES          RECEIVING FACILITY REQUIRED?: YES

        SECURITY REQUIRED?: NO

              LOGICAL LINK: VADDC

 PROCESSING RTN:    D PROCMSG^TIUHL7P1

  ROUTING LOGIC:
```

ROES Service Request Event Protocol:

```
                      HL7 INTERFACE SETUP                                PAGE
1 OF 2
--------------------------------------------------------------------------------

           NAME: TIUHL7 ROES-PN SERVICE REQUEST MDM EVENT

DESCRIPTION (wp):   [Empty.]


ENTRY ACTION:

 EXIT ACTION:


        TYPE: event driver




                         HL7 EVENT DRIVER                                PAGE
2 OF 2
                      TIUHL7 ROES-PN SERVICE REQUEST MDM EVENT
--------------------------------------------------------------------------------
     SENDING APPLICATION: ROES-PN
 TRANSACTION MESSAGE TYPE: MDM                      EVENT TYPE: T02
       MESSAGE STRUCTURE:
           PROCESSING ID:                          VERSION ID: 2.4
         ACCEPT ACK CODE: AL              APPLICATION ACK TYPE: NE

 RESPONSE PROCESSING RTN:
```

```
                          SUBSCRIBERS
  TIUHL7 ROES-PN SERVICE REQUEST MDM SUB
```

ROES Service Request Subscriber Protocol:

```
                        HL7 INTERFACE SETUP                                PAGE
1 OF 2
-------------------------------------------------------------------------------

            NAME: TIUHL7 ROES-PN SERVICE REQUEST MDM SUB

DESCRIPTION (wp):   [Empty]

ENTRY ACTION:

 EXIT ACTION:

        TYPE: subscriber



                             HL7 SUBSCRIBER                                PAGE
2 OF 2
                           TIUHL7 ROES-PN SERVICE REQUEST MDM SUB
-------------------------------------------------------------------------------

      RECEIVING APPLICATION: TIUHL7

      RESPONSE MESSAGE TYPE: ACK                          EVENT TYPE: T02

 SENDING FACILITY REQUIRED?: YES          RECEIVING FACILITY REQUIRED?: YES

         SECURITY REQUIRED?: NO

               LOGICAL LINK: VADDC

 PROCESSING RTN:    D PROCMSG^TIUHL7P1

  ROUTING LOGIC:
```

Index

Appendix B: Testing

Appendix B: Testing