

# **Department of Veterans Affairs**

## **Non-VA Care Interface Support**

### **CPRS - HCPS**

#### **System Design Document**



**February 2014**

**Version 1.4**

## Revision History

Note: The revision history cycle begins once changes or enhancements are requested after the System Design Document has been baselined.

CREATION DATE	VERSION No.	DESCRIPTION/COMMENTS	AUTHOR(s)	REVIEWER(s)	REVIEW TYPE	ISSUE DATE
2/24/2014	1.4	Updated HN text per S. Ackerman.	[REDACTED]	VA	Formal	3/5/2014
2/10/2014	1.3	Included Hospital Notification in Appendix	[REDACTED]	VA	Formal	2/18/2014
1/14/2014	1.2	Updated figure 3	[REDACTED]	[REDACTED]	PM	1/15/2014
11/27/2013	1.1	Incorporated feedback from customer	[REDACTED]	VA	Formal	12/20/2013
11/27/13	1.0	Baseline Draft	[REDACTED]	[REDACTED]	Formal	11/27/13
11/27/13	0.3	Updated per tech writer review	[REDACTED]	[REDACTED]	PM	11/27/13
11/18/2013	0.2	Updated per peer review	[REDACTED]	[REDACTED]	Peer	11/27/2013
10/22/2013	0.1	Initial Document	[REDACTED]	[REDACTED]	Peer	11/13/13

## Artifact Rationale

The System Design Document (SDD) is a dual-use document that provides the conceptual design as well as the as-built design. This document will be updated as the product is built, to reflect the as-built product. Per the Project Management Accountability System (PMAS) Guide, the SDD with conceptual design is required prior to the Milestone 1 Review. The as-built for each delivery must be incorporated prior to the Milestone 2 Review.

# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>7</b>
1.1	Purpose of This Document .....	7
1.2	Identification .....	7
1.2.1	CPRS.....	7
1.2.2	Consult/Request Tracking .....	7
1.2.3	Healthcare Claims Processing System.....	7
1.3	Scope .....	7
1.4	Relationship to Other Plans.....	7
1.5	Methodology, Tools, and Techniques.....	7
1.6	Constraining Policies, Directives and Procedures .....	8
1.7	Constraints.....	8
1.8	Design Trade-offs .....	8
1.9	User Characteristics .....	8
1.10	User Problem Statement .....	8
<b>2</b>	<b>Background.....</b>	<b>8</b>
2.1	Overview of the System .....	8
2.2	Overview of the Business Process .....	9
2.2.1	Referral to HCPS.....	9
2.3	Assumptions .....	9
2.4	Legacy System Retirement.....	9
<b>3</b>	<b>Conceptual Design.....</b>	<b>10</b>
3.1	Conceptual Application Design .....	10
3.1.1	Application Context.....	10
3.1.2	High-Level Application Design .....	12
3.1.3	Application Locations .....	14
3.1.4	Application Users .....	14
3.2	Conceptual Data Design.....	15
3.2.1	Project Conceptual Data Model .....	15
3.2.2	Database Information .....	15
3.2.3	User Interface Data Mapping .....	16
3.3	Conceptual Infrastructure Design .....	16
3.3.1	System Criticality and High Availability.....	16
3.3.2	Special Technology .....	16
3.3.3	Technology Locations.....	16
3.3.4	Conceptual Infrastructure Diagram.....	18
<b>4</b>	<b>System Architecture .....</b>	<b>19</b>

4.1	Hardware Architecture .....	19
4.2	Software Architecture.....	19
4.3	Communications Architecture.....	19
5	Data Design .....	19
6	Detailed Design .....	20
6.1	Hardware Detailed Design.....	20
6.2	Software Detailed Design.....	20
6.2.1	Conceptual Design .....	20
6.2.2	Specific Requirements .....	24
6.3	Communications Detailed Design.....	42
6.3.1	Communications Methods .....	43
6.3.2	Performance Requirements .....	43
7	External Interface Design .....	44
7.1	Interface Architecture.....	44
7.2	Interface Detailed Design .....	44
7.2.1	Message/File Requirements.....	44
7.3.2	Interface Verification .....	68
8	Human-Machine Interface .....	68
8.1	Interface Design Rules .....	68
8.2	Inputs .....	68
8.3	Outputs .....	68
8.4	Navigation Hierarchy .....	68
8.4.1	Screen [x.1] .....	68
9	System Integrity Controls .....	69
10	Approval Signatures .....	70
A.	Additional Information.....	71
A.1.	HL7 Supporting Tables.....	71
A.2.	Business Process Flow - Hospital Notification .....	76
A.3.	Example HL7 messages .....	76
A.4.	Request/Consultation (#123) file DD .....	76
A.5.	RTM .....	77
A.6.	Packaging and Installation.....	77
A.7.	Design Metrics .....	77
A.8.	Acronym List and Glossary .....	77
A.9.	Required Technical Documents .....	78

## Figures

Figure 1: NVCIS to FBCS interface – Overview .....	9
Figure 2: NVCIS to HCPS interface – Overview .....	9
Figure 3: VA Provider Referral - Two Way Interface from VistA to HCPS .....	9
Figure 4: Application Context Diagram .....	10
Figure 5: High Level Application Design – Consult to FBCS and HCPS .....	12
Figure 6: Project Conceptual Data Model.....	15
Figure 7: Conceptual Networks and Environments.....	18
Figure 8: Conceptual CPRS/Consult to HCPS String Diagram .....	18

## Tables

Table 1: Scope Inclusions .....	7
Table 2: Scope Exclusion .....	7
Table 3: Application Context Description .....	10
Table 4: Objects in the High Level Application Design - Consult to FBCS and HCPS .....	13
Table 5: Internal Data Stores- Consult to FBCS and HCPS.....	13
Table 6: Application Locations .....	14
Table 7: Application Users .....	14
Table 8: Database Inventory.....	15
Table 9: Technology Location Details .....	16
Table 10: Software Package Versioning.....	21
Table 11: Routine GMRCHL7P .....	25
Table 12: Routine GMRCHL7H .....	26
Table 13: Routine GMRGUILB.....	27
Table 14: Routine GMRCACMT .....	28
Table 15: Mail Groups.....	29
Table 16: Security Keys.....	30
Table 17: Protocol – GMRC Consults to HCP .....	31
Table 18: GMRC HCP REF-I12 Server .....	32
Table 19: Protocol - GMRC HCP REF-I12 Client.....	33
Table 20: Protocol - GMRC HCP REF-I13 Server .....	34
Table 21: Protocol – GMRC HCP REF-I13 Client.....	35
Table 22: Protocol - GMRC HCP REF-I14 Server .....	36
Table 23: Protocol - GMRC HCP REF-I14 Client.....	37
Table 24: HL7 Application Parameter – GMRC HCP Send .....	40
Table 25: HL7 Application Parameter - GMRC HCP Receive .....	40
Table 26: HL7 Logical Link - GMRCHCP.....	41
Table 27: COTS Interface.....	41
Table 28: Message Definition Table – REF^I12.....	46
Table 29: RF1 - Referral Information Segment - REF^I12.....	48
Table 30: PRD - Provider Data Segment (same for all message types).....	49
Table 31: PID-Patient Id Segment (generated by the VistA API; same for all message types) .....	50
Table 32: DG1 - Diagnosis Segment (same for all message types).....	51
Table 33: OBR - Observation Request Segment (same for all message types).....	51
Table 34: PV1 - Patient Visit Segment (Same for all message types).....	52
Table 35: NTE - Notes and Comments segment for REF^I12.....	52
Table 36: MSH - Message Header Segment.....	53
Table 37: RF1 – Referral Information Segment for REF^I13 .....	54

Table 38: PRD - Provider Data Segment (Same for all message types) .....	55
Table 39: PID – Patient Id Segment (generated by the VistA API; Same for all message types) .....	56
Table 40: DG1 – Diagnosis Segment (Same for all message types).....	57
Table 41: OBR – Observation Request Segment (Same for all message types).....	57
Table 42: PV1 - Patient Visit Segment (Same for all message types).....	58
Table 43: NTE – Notes and Comments Segment for REF^I13 .....	59
Table 44: MSH - Message Header Segment.....	60
Table 45: RF1 – Referral Information Segment for REF^I14 .....	61
Table 46: PRD – Provider Data Segment (same for all message types).....	62
Table 47: PID – Patient Id Segment (generated by the VistA API) (same for all message types) .....	63
Table 48: DG1 - Diagnosis Segment (Same for all message types).....	64
Table 49: OBR – Observation Request Segment (Same for all message types).....	64
Table 50: PV1 – Patient Visit Segment (Same for all message types) .....	65
Table 51: NTE – Notes and Comments Segment for REF^I14 .....	65
Table 52: MSH - Message Header Segment for ACK .....	66
Table 53: MSA - Message Acknowledgment Segment .....	67
Table 54: ERR - Error Segment .....	67
Table 55: HL7 Table 0357 - Message Error Condition Codes.....	67
Table 57: HL7 Table 0200 - Name Type.....	71
Table 58: User-Defined Table 0005 - Race.....	71
Table 58: Race and Ethnicity Collection Method List.....	71
Table 59: Ethnicity List .....	72
Table 59: HL7 Table 0201 - Telecommunication Use Code .....	72
Table 60: HL7 Table 0202 - Telecommunication Equipment Type .....	72
Table 61: User-defined Table 002 - Marital Status .....	73
Table 9: Religion List.....	74
Table 62: Acronym List.....	77
Table 63: Glossary .....	78

# 1 Introduction

The Non-VA Care Interface Support Program (NVCIS) design elements in this document detail the enhancements to be made to the Computerized Patient Record System (CPRS) system to support a bi-directional interface to the Healthcare Claims Processing (HCP) system.

## 1.1 Purpose of This Document

The purpose of this document is to translate the requirements in sufficient detail in order to provide the developers with a blueprint to create the actual system. It identifies the top-level architecture, hardware, software, communication, and interface components.

## 1.2 Identification

The following systems and software packages apply to this document:

### 1.2.1 CPRS

System	Details
Title	Computerized Patient Record System
Abbreviation	CPRS (OR)
Version number	3.0
Release number	V29
Point of Contact	
Standards	Standards and Conventions (SAC) for M and Graphical User Interface (GUI)

### 1.2.2 Consult/Request Tracking

System	Details
Title	Consult/Request Tracking
Abbreviation	GMRC
Version number	3.0
Release number	GMRC*3*74 (Iteration 1), GMRC*3*75 (Iteration 2)
Point of Contact	
Standards	SAC for M and GUI, Health Level 7 (HL7)

### 1.2.3 Healthcare Claims Processing System

System	Details
Title	Healthcare Claims Processing System
Abbreviation	HCPS
Point of Contact	
Standards	One VA Technical Reference Model (TRM)

## 1.3 Scope

This SDD details the design for the following CPRS interfaces in accordance with the contract:

Table 1: Scope Inclusions

Includes
VistA Consult-HCPS Bi-directional Interface

Table 2: Scope Exclusion

Excludes

## 1.4 Relationship to Other Plans

The NVCIS Base Year Increment 2 SDD is based on the business needs of the customer/business owner described in the following documents:

Expanded Fee Pilot CPRS Integration Referral and Authorization BRD  
<http://>

NVCIS CPRS RSD

[Non-VA Care Enhancements Team Library SharePoint RSDs](#)

NVCIS CPRS RTM

[Non-VA Care Enhancements Team Library SharePoint RTMs](#)

## 1.5 Methodology, Tools, and Techniques

The CPRS to HCP bi-directional interface GMRC\*3.0\*75 patch will be developed using the waterfall approach.

## 1.6 Constraining Policies, Directives and Procedures

- Health Insurance Portability and Accountability Act (HIPAA) Compliance mandates for EDI transactions
- VA Technical Reference Model (TRM)
- American National Standards Institute (ANSI) X12 278 – Health Care Services Review standards

## 1.7 Constraints

The following constraints will affect this project:

- The Health Level 7 (HL7) Version 2.5 standards
- VA Standards and Conventions for Massachusetts General Hospital Utility Multi-Programming System (MUMPS or just M) development
- VA Standards and Conventions for Graphical User Interface (GUI) development

The following external partners and organizations must be able to accommodate the modifications made within the VistA, CPRS, and Consult/Request Tracking applications within the deadlines for the NVCIS project:

- HCP
- Financial Services Center (FSC)

## 1.8 Design Trade-offs

It was decided during Increment 1 that the option for sending HL7 consult messages to the HCPS will use new messages attached to the OR and GMRC events rather than using existing VistA Interfacility consults.

## 1.9 User Characteristics

The Non-VA Care Interface Support will adopt the existing user community for CPRS, Consult/Request Tracking, Fee Basis Claims System (FBCS), and HCPS. The following table shows some of the primary and secondary users:

Name	Description
Primary Users	VA Providers Fee Basis Claims System Clerks HCP/RAS clerks Consult administrator
Secondary Users	Chief Business Office (CBO) Information Resources Management (IRM) FSC Personnel

## 1.10 User Problem Statement

Referral and Authorization integration with CPRS will assure that outpatient fee care is properly justified and authorized. In the Base Year Increment 2, this integration involves the VistA Consult-HCPS Bi-directional Interface.

# 2 Background

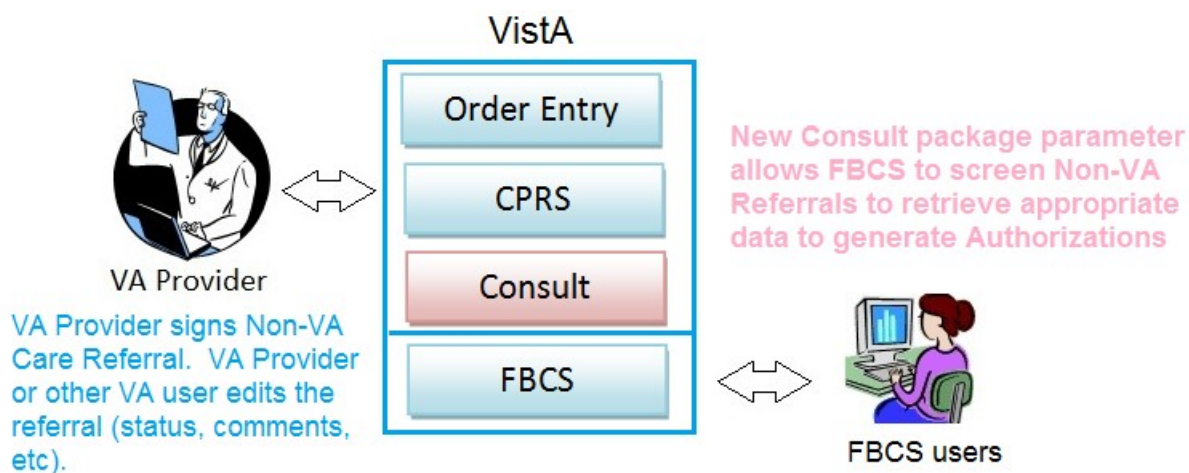
The Fee Program is an umbrella for a number of programs supplementing VA provided care to eligible Veterans. It covers the entire range of health care services to include inpatient care, outpatient care, long term care, dental, and pharmacy. It is locally managed at approximately 150 VAMCs with guidance and limited oversight provided by a program office within the VHA Deputy CBO for Purchased Care. The Purchased Care Non-VA Care (Fee Basis) Program has seen exponential growth in the past five years, from \$3.8B in annual expenditures to an excess of \$4.8B in FY13. The purpose of the NVCIS project in regards to CPRS is to integrate CPRS with referral authorization and claim processing systems to automate justification, authorization, coordination, and documentation of fee care.

## 2.1 Overview of the System

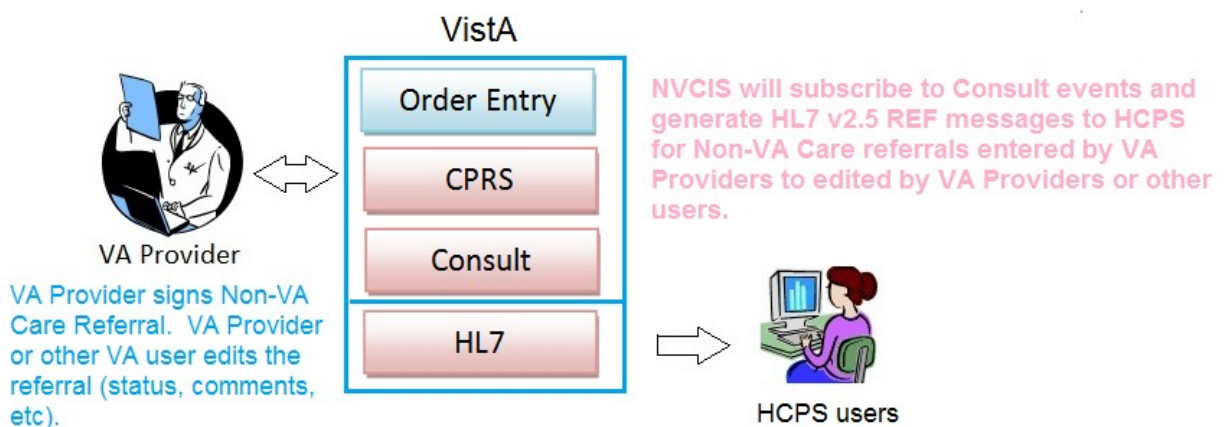
The Base Year enhancements of the NVCIS project with regards to CPRS focus on the VA Provider referral entry from the CPRS/Consult package to FBCS and HCPS. Reference to FBCS is included throughout this document to provide a more thorough understanding of the data flow and/or processes behind it; however, a one-way interface from CPRS/Consult to FBCS was released under patch GMRC\*3.0\*74 on October 30, 2012. The bi-directional interface between CPRS/Consult and HCPS is being developed under patch GMRC\*3.0\*75.

The following figure depicts the very high level overview of the NVCIS, and its purpose. This figure is only to demonstrate the purpose of the NVCIS and may not reflect the actual system boundaries. The system overview shows only the CPRS Base Year integration efforts.





**Figure 1: NVCIS to FBCS interface – Overview**



**Figure 2: NVCIS to HCPS interface – Overview**

CPRS provides clinicians, managers, support staff, researchers, and others an integrated patient record system. VistA software for Pharmacy, Lab, Radiology, Allergy Tracking, Consults, Dietetics, Progress Notes, Problem List, Scheduling, Bed Control Admission, Discharge, and Transfer (A/D/T), Kernel, VA FileMan, Vitals, Primary Care Management Module (PCMM), Patient Care Encounter (PCE), Text Integration Unit (TIU), Authorization Subscription Utilities (ASU) and Clinical Lexicon packages was written or modified to support and communicate with CPRS. Order Entry/Results Reporting (OE/RR) is the VistA package that supports the CPRS GUI. Together, these clinical components of VistA provide a single interface for physicians to manage patient care and records, as well as an efficient means for others to access and use patient information.

A fully functional consulting package is included with CPRS. Integrated tightly with CPRS, the Consults package provides consult events such as ordering/requesting, tracking, and resulting. Consult events trigger notifications to appropriate health care providers who can then quickly react to the request or result.

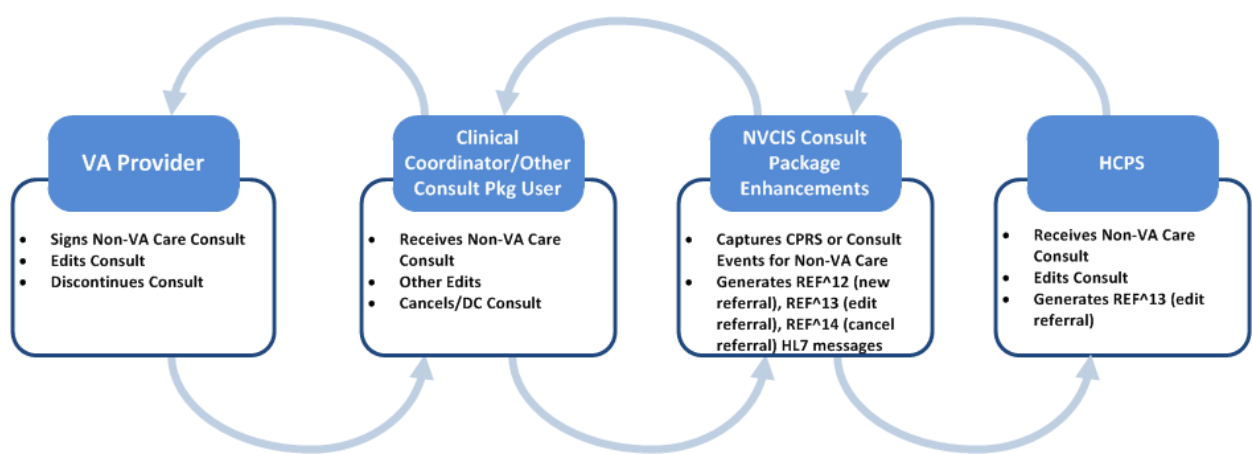
Communication between VistA packages participating in CPRS is accomplished through event-driven HL7 messaging. This approach allows multiple processes to subscribe to a single CPRS event. The structure and content of the HL7 message provides consistent data for processes subscribing to an event. Additional application programming interfaces (APIs) exist between OE/RR and ancillary packages to provide data not supported by HL7.

## 2.2 Overview of the Business Process

The Base Year enhancements of the NVCIS project with regards to CPRS will focus on the VA Provider referral entry from the CPRS/Consult package to FBCS and HCPS.

### 2.2.1 Referral to HCPS

The GMRC (Consult) VistA Parameter will be used to screen VistA Consult events (sign consult, update status, etc) that will be sent to HCPS via HL7. The consult event to HL7 message process for HCPS is illustrated below.



**Figure 3: VA Provider Referral - Two Way Interface from VistA to HCPS**

## 2.3 Assumptions

Development will occur within the VistA Consult package, namespace GMRC for the Base year. This package is a Cache M-based product. Build components, necessary for the design, will be packaged into GMRC patches to be released using the Forum National Patch Module (NPM).

## 2.4 Legacy System Retirement

N/A

### 3 Conceptual Design

#### 3.1 Conceptual Application Design

This section provides the conceptual design of the application that is being produced by this project. The interface between FBCS and VistA CPRS/Consult was accomplished via patch GMRC\*3.0\*74. The interface between CPRS/Consult and HCPS via ECD will be accomplished via patch GMRC\*3.0\*75.

##### 3.1.1 Application Context

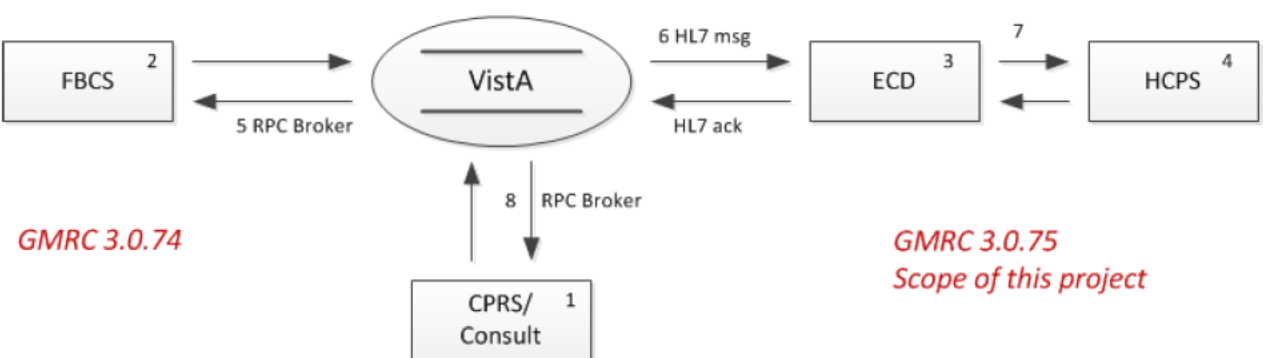


Figure 4: Application Context Diagram

Table 3: Application Context Description

Object				
ID	Name	Description	Interface Name	Interface System
1	CPRS/Consult	Clinical Patient Records System (CPRS)/Consult is a VistA module that provides VAMC's capability to electronically capture patient records and referral templates.	TBD	HCPS
2	FBCS	Fee Basis Claims System (FBCS) is an interim solution utilizing a Delphi-based GUI to legacy VistA Fee Basis providing a full implementation of results reporting and order entry. It communicates with CPRS server processes through the Kernel Broker client-server utility and exchanges data via remote procedure calls. Previously released patch GMRC*3.0*74 includes all modifications required to support the FBCS to CPRS interface.	RPC Broker	Vista/FBCS
3	ECD	Electronic Commerce Division (ECD) framework processes electronic messages across the VA WAN. The ECD packages handle all flow control for sending, receiving, error control, message recovery and acknowledgements for HL7 messages sent to VA systems from external systems, and provide secure messaging services for millions of messages across the VA enterprise.	HL7	Vista/HCPS
4	HCPS	Healthcare Claims Processing System (HCPS) is a centralized, automated system that will support the management of purchased care referrals/authorizations.	Service Oriented Architecture (SOA)	ECD/HCPS
5	RPC Broker	Remote Procedure Call Broker is used by FBCS to retrieve user ID and Consult data		
6	HL7 Msg	Health Level Seven is a standard for exchanging information between medical applications. This standard defines a format for the transmission of health-related information. This exchange of information is required to facilitate integration of Non VA Care consults between CPRS and HCPS.		
7	HL7 Ack	Acknowledgements returned to sender of an HL7 Msg.		
8	RPC Broker	Remote Procedure Call Broker is used by FBCS to update Consult data		

### Interfaces External to OIT

ID	Name	Related Object	Input Messages	Output Messages	External Party
6	HL7 to ECD	ECD	HL7 message containing Consult	HL7 Acknowledgement	HCPS
7	SOA	HCPS	Proprietary message to HCPS	None	

### Interfaces Internal to OIT

ID	Name	Related Object	Input Messages	Output Messages	Internal Party
8	RPC Broker	CPRS/Consult	Remote procedures	Consult sign/update, etc.	FBCS
5	RPC Broker	FBCCS	Remote procedures	DSIF rpc similar to ORQQCN LIST	

### Externally Shared Data Stores\*

ID	Name	Data Stored	Owner	Access

\* Table will be updated as development progresses.

### 3.1.2 High-Level Application Design

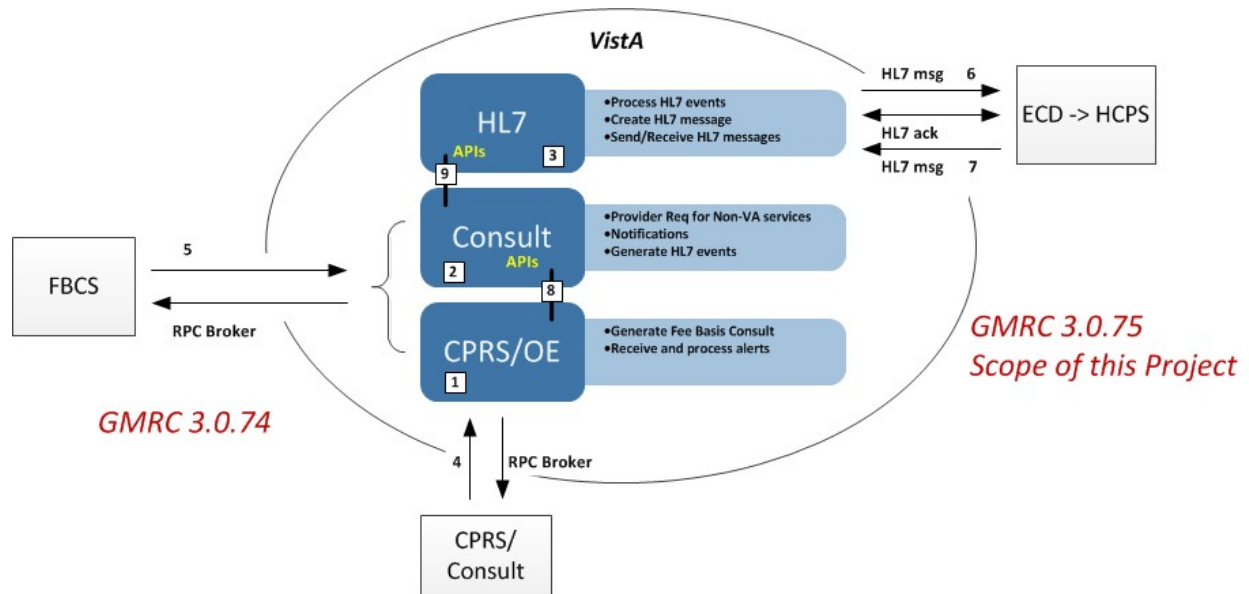


Figure 5: High Level Application Design – Consult to FBCS and HCPS

**Table 4: Objects in the High Level Application Design - Consult to FBCS and HCPS**

ID	Name	Description	Service or Legacy Code	External Interface Name	External Interface ID	Internal Interface Name	Internal Interface ID	SDP Sections 1&2
1	CPRS/Order Entry (OE)	Generates consult orders	Legacy		4	RPC Broker	N/A	N/A
2	Consult/Request Tracking	Consult data, consult events	Legacy		5	M API's	7	N/A
3	VistA HL7	Process HL7 Messages	Legacy		6	M API's	8	N/A

**Table 5: Internal Data Stores- Consult to FBCS and HCPS**

ID	Name	Data Stored	Steward	Access
1	Order, #100	Order data, orderable items	OE/RR	Read (R)
2	Request/Consultation #123	Consult data, consult status and activity	GMRC	Create (C), R, Update
2	Request Services #123.5	Consult Service hierarchy, notifications inter-facility parameters	GMRC	Read (R)
3	HL7 Message Administration, #773	Header information for outbound HL7 messages	HL7	C
3	HL7 Message Text, #772	Message text and other HL7 processing information	HL7	C

### 3.1.3 Application Locations

The following applications are being modified by the NVCIS project:

**Table 6: Application Locations**

Application Component	Description	Location at Which Component is Run	Type
CPRS/Consult Interface	Interface for Class 1 software performing consult entry for purchased care	Existing local or regional Vista databases for VAMC	InterSystems Cache post-relational database.

### 3.1.4 Application Users

The following table identifies user roles of the individuals who will use the new functionality.

**Table 7: Application Users**

Application Component	Location	User
CPRS/Consult	Local Vista	VA Providers (including residents, attending providers, and so forth), FBCS Clerks, HCPS Clerks, Consult/Request Tracking Users, and IRM will be using or consuming the data that originates from these application enhancements.



## 3.2 Conceptual Data Design

### 3.2.1 Project Conceptual Data Model

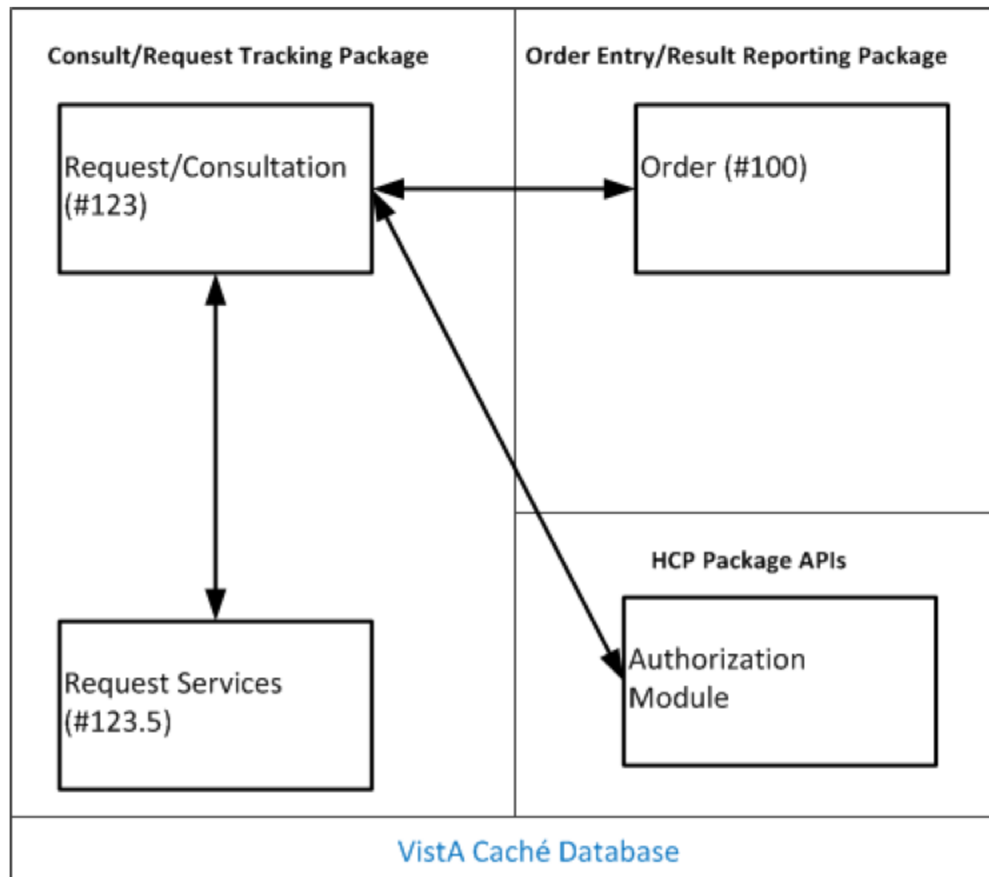


Figure 6: Project Conceptual Data Model

### 3.2.2 Database Information

The following table identifies all databases that will be created, replaced, interfaced with, or whose structure will be modified as part of this effort.

Table 8: Database Inventory

Database Name	Description	Type	Steward
Local VistA	Contains Consult data	Interface	Local OIT

### 3.2.3 User Interface Data Mapping

N/A

#### 3.2.3.1 Application Screen Interface

N/A

#### 3.2.3.2 Application Report Interface

N/A

#### 3.2.3.3 Unmapped Data Element

N/A

## 3.3 Conceptual Infrastructure Design

The infrastructure for the NVCIS project enhancements will not change. The existing VistA Cache database will be modified for the CPRS application (namely, Consults). The NVCIS project is dependent on HCPS development.

### 3.3.1 System Criticality and High Availability

The existing CPRS/Consult system currently in use at VA is being modified to include new HL7 messages. There are no new systems. The existing VistA availability including scheduled down-times will not impact the NVCIS project enhancements.

### 3.3.2 Special Technology

None required.

### 3.3.3 Technology Locations

The following table describes various technology components that will be used.

**Table 9: Technology Location Details**

Technology Component Production	Location	Usage (CPRS→HCPS Interface)
Workstations	Local VA	Consult creation
Interface Processors	VA datacenters	Existing infrastructure is being used to send messages to external systems
Legacy Mainframe	National or Regional Cache servers	Hosts VistA Cache
Legacy Application Server	InterSystems Cache	Existing InterSystems Cache dbs used for CPRS/Consults
Legacy Databases	VistA Consult w/ VistA Cache db	Legacy application within VistA for consult processing



<b>Technology Component Production</b>	<b>Location</b>	<b>Usage (CPRS→HCPS Interface)</b>
Other	ECD interface support at FSC	Routes HL7 messages from VistA to HCPS

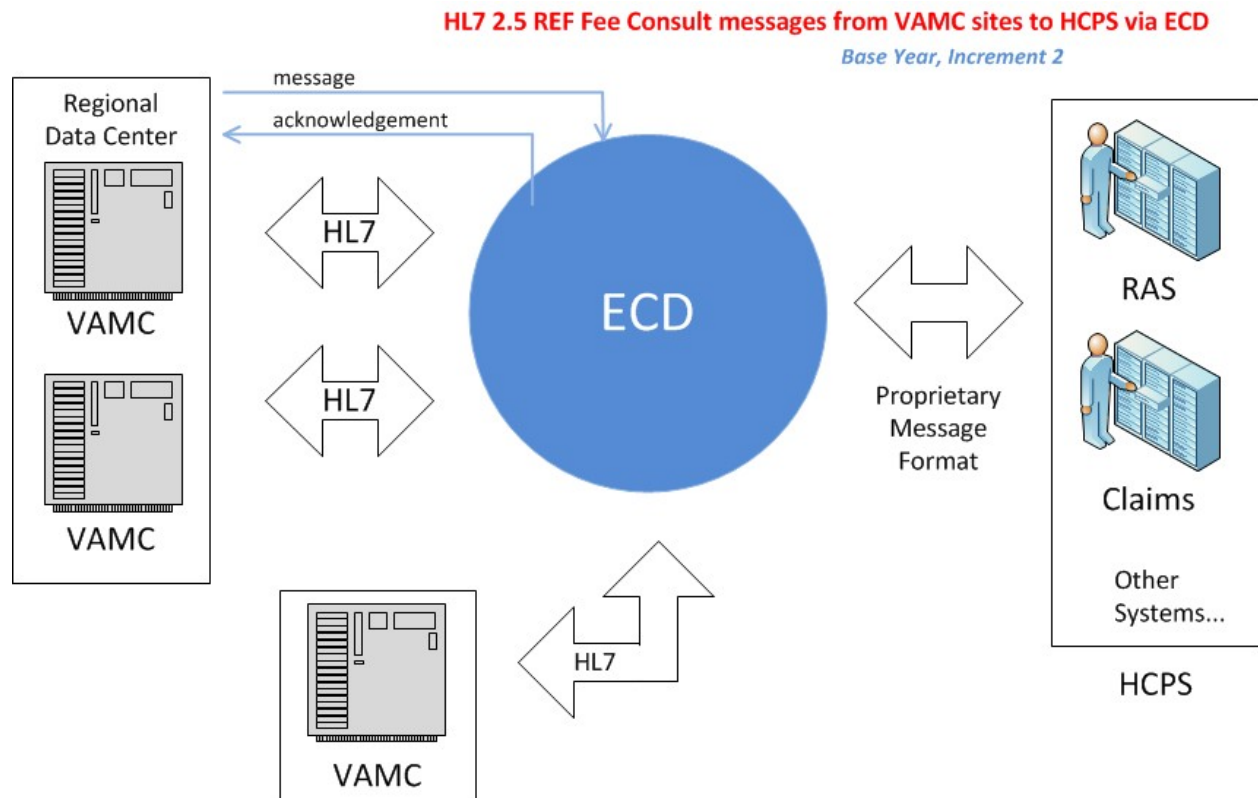
<b>Technology Component Certification</b>	<b>Location</b>	<b>Usage</b>

<b>Technology Component Education</b>	<b>Location</b>	<b>Usage</b>
	VistA Test and Production db	Training for application users will occur in existing VistA test and/or production accounts

<b>Technology Component Test</b>	<b>Location</b>	<b>Usage</b>
	Bay Pines Test Lab	Harris team internal QA will run test scripts to assure compliance to requirements; and conduct Component Integration Testing

<b>Technology Component Development</b>	<b>Location</b>	<b>Usage</b>
	Albany	Development and unit testing of new interface and modifications made to CPRS

### 3.3.4 Conceptual Infrastructure Diagram

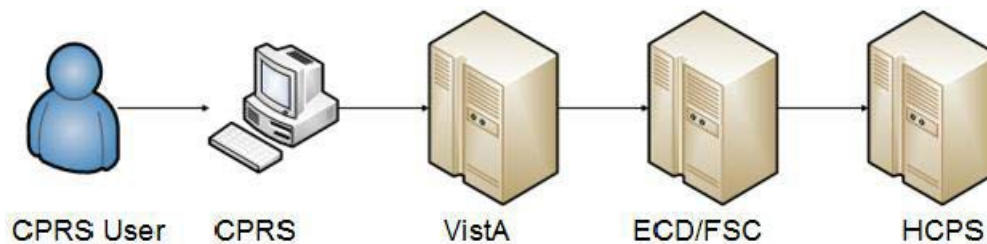


**Figure 7: Conceptual Networks and Environments**

#### 3.3.4.1 Location of Environments and External Interfaces

VistA Cache instances are located at VA Medical Centers or co-located at Regional Data Centers (e.g. many Region 1 sites are hosted at the Denver RDC). The ECD and HCPS are located in Austin at the FSC.

#### 3.3.4.2 Conceptual Production String Diagram



**Figure 8: Conceptual CPRS/Consult to HCPS String Diagram**

## **4 System Architecture**

The system architecture for the NVCIS project enhancements will not change. The existing VistA Cache database will be modified in the CPRS/Consult application. The NVCIS project is dependent on development of HCPS receiver interface.

### **4.1 Hardware Architecture**

There are no hardware requirements for the NVCIS project enhancements as hardware configuration varies from site to site.

### **4.2 Software Architecture**

There are no software architecture changes for the NVCIS project enhancements. The existing VistA Cache database will be modified using patches in the GMRC (Consults) namespace to provide GMRC protocols and HL7 messages to be used/sent to HCPS. The NVCIS project is dependent on development by HCPS.

### **4.3 Communications Architecture**

The NVCIS project enhancements do not require any new communication methods.

## **5 Data Design**

The following data fields have been selected by the Purchased Care Business Office as the clinical fields to be sent to HCPS. These data fields are not currently part of a Non-VA Care consult as discreet data elements, nor will they be discreet data elements during any part of the Base Year or Option Year 1 Iterations for the NVCIS project. The data fields may be available as part of the Request/Consultation (#123) file, Reason for Request (#20) field, which is a VistA word processing field, after completion of the NVCC (national template roll-out) project. Until the NVCC roll-out, data within a Non-VA Care referral may be anything deemed important to a site, but not nationally consistent:

- Type of Service
- Specialty Service
- Sub-specialty Service
- Procedure Code 1
- Procedure Code 2
- Procedure Code 3
- Quantity/Frequency
- VA Referring Provider NPI
- Designated Facility Number
- Facility Station Number
- Tooth Number
- Area
- Surface
- All Skilled Service questions under GEC

- Test
- Specimen Type
- Location
- DME Adaptive Equipment
- Adaptive Evaluation & Training
- Dialysis Authorization Number

The Reason for Request field will be available to FBCS via an RPC Broker API and will be sent to HCPS in the HL7 v.2 REF message using multiple NTE segments.

## **6 Detailed Design**

### **6.1 Hardware Detailed Design**

The NVCIS project enhancements use existing VistA databases and have no additional hardware requirements.

### **6.2 Software Detailed Design**

This section of the SDD provides the following conceptual and detailed design associated with the software deliverable.

#### **6.2.1 Conceptual Design**

##### **6.2.1.1 Product Perspective**

The VA implementation of HL7 requires understanding of event, server, and client Protocols, Applications, Logical Links, and other settings such as VistA HL7 Transport Layers and Lower Layer Protocols. New NVCIS protocols will be attached to the GMRC EVSEND OR event to capture consult messages when entries are filed, updated, or cancelled. The new events will convert the current ORR and ORM message to the appropriate HL7 v2.5 REF message (I12, I13, I14) depending on the event, and send the message to the VistA HL7 queue to be sent to HCPS.

##### **6.2.1.1.1 User Interfaces**

The CPRS and Consult/Request Tracking applications utilize both a Character-based User Interface (CHUI) and GUI. The Consult/Request Tracking GUI is accessed via CPRS. HCP/RAS utilizes a GUI.

To maintain consistency within and across VistA, the CPRS and Consult/Request Tracking user interface and design elements will conform to the SAC standards. The interface employs characteristics as close to MS Windows-based applications as possible. Users will find that some functionality may not be common to MS Windows-based applications, but common to VistA. Standard VA FileMan lookups are used at prompts when required.

##### **6.2.1.1.2 Hardware Interfaces**

N/A

#### 6.2.1.1.3 Software Interfaces

CPRS and Consults require the following versions (or higher) of VA software packages for proper implementation (See Table 10). The software listed is not included in this build and must be installed for the build to be completely functional:

**Table 10: Software Package Versioning**

<b>Software</b>	<b>Version</b>
Adverse Reaction Tracking	4.0
BCMA	3.0
Decision Support System	3.0
Fee Basis	3.5
HL7	1.6
Integrated Funds Control, Accounting, and Procurement	5.1
Inpatient Medications	5.0
Integrated Billing	2.0
Kernel	8.0
Laboratory	5.2
Mailman	8.0
National Drug File	4.0
Nursing Service	4.0
Order Entry/Results Reporting	3.0
Outpatient Pharmacy	7.0
Patient Information Management Systems	5.3
Pharmacy Data Management	1.0
RPC Broker (32-bit)	1.1
Text Integration Utilities	1.0
Toolkit	7.3
VA FileMan	22.0
VistA Imaging	3.0
Accounts Receivable	4.5

##### 6.2.1.1.3.1 CPRS/Consult→HCPS

NVCIS will provide an interface to allow the submission of the referral to HCPS via HL7 v2.5 REF messages. The HL7 components necessary for this interface will be released via patch GMRC\*3.0\*75. The following HL7 messages will be utilized:

- REF^I12 will be used to send new referrals to HCPS
- REF^I13 will be used to send and receive updated referrals
- REF^I14 will be used to send cancelled or discontinued referrals to HCPS

#### **6.2.1.1.3.1.1 Local Data Structures**

The project team will create GMRC entries in the following files to process consult events to HCPS:

- PROTOCOL (#101)
- HL7 APPLICATION PARAMETER (#771)
- HL LOGICAL LINK (#870)

There are no new VistA data files. The new mail group will be contained in the existing MAIL GROUP File #3.8. The new HL7 components will be contained in the existing PROTOCOL File #101. The new logical link will be contained in the HL LOGICAL LINK File #870.

#### **6.2.1.1.3.1.2 GMRC Fee Services Parameter**

A new system parameter, GMRC FEE SERVICES was created in GMRC\*3.0\*74 to indicate services that are used for a Non-VA Care (Fee Basis) consult as the 'To Service'. This parameter is managed by menu option, Define Fee Services [GMRC FEE PARAM] placed under the GMRC MGR option. The data contained in this parameter is a list of pointers to REQUEST SERVICES (#123.5) file.

Upon selecting the Define Fee Services [GMRC FEE PARAM] option, the user is given the ability to edit the list of services being referred to Non-VA providers. This list presents only Non-VA Care consults and can be used to filter the retrieval or transmitting of data to HCPS.

#### **6.2.1.1.3.2 HCPS → CPRS/Consult**

HCPS will provide an interface to provide updates to the Consult package.

HCPS will send a REF^I13 to CPRS for updates to the referral. The updates will be notes/comments and status changes that have been added in HCPS. Progress notes will also include Hospital Notifications based upon the manual process/workaround detailed in the Business Processes Flow diagram. Refer to section A.2 (Business Process Flow Diagram).

The workaround to support hospital notifications will be processed utilizing the MAKEADD^TIUSRVP2 API to create an addendum in CPRS. This workaround is dependent upon the patient existing in RAS so that a HN can be created and the authorization approved. Once approved, a new Progress Note for the patient in CPRS is created using existing functionality. In RAS, a user records the decision and clinical notes. The signed/completed Progress Note in RAS triggers the transmission of the appropriate note(s), known as Addendums, to CPRS including the identifier of the previously created Progress Note automatically.

These changes will be stored in VistA/CPRS upon processing the incoming message from HCPS. No other data fields in the Consult will be changed from HCPS. Any updates coming from HCPS will **ONLY** be added as a note/comment in the Consult. Please refer to section 7.2.1.1 ([Data Assembly Characteristics – REF Message](#)) for the required segments that will be included in the HL7 message. The DG1 segment is optional and HCPS will not be sending this segment back. For the most part, HCPS will send original information sent in the initial REF^I12 from VistA for all required fields. Non-required fields will be ignored (a blank will be sent from HCPS).

The interface is triggered when an update is made to the consult within HCPS such as adding an appointment date/time, referral status or other basic communication. The consult message update data will then be processed and stored in the VistA database.

#### **6.2.1.1.4 Communications Interfaces**

The following communication interfaces will be utilized during development:

- Non-VA Provider Referral Request Enhancement – ANSI X12
- CPRS-HCP Interface – HL7

#### **6.2.1.1.5 Memory Constraints**

N/A

#### **6.2.1.1.6 Special Operations**

N/A

#### **6.2.1.2 Product Features**

Modifications related to GMRC\*3.0\*75 include the following features:

- A new bi-directional interface between CPRS and HCPS shall provide the following capabilities:
  - Sends CPRS/Consult information and status to update HCPS
  - Sends HCPS Authorization information and status to update CPRS/Consult
  - Provides Station specific capability to configure which Referral Templates are sent from CPRS to HCPS

#### **6.2.1.3 User Characteristics**

VA Providers (including residents, attending providers, and so forth), HCP Clerks, Consult/Request Tracking Users, and Information Resources Management (IRM) will be using these application enhancements.

#### **6.2.1.4 Dependencies and Constraints**

The following constraints will affect this project:

- Health Insurance Portability and Accountability Act (HIPAA) Compliance mandates for EDI transactions
- ANSI X12 278 – Health Care Services Review standards

- The Health Level 7 (HL7) Version 2.5 standards
- VA Standards and Conventions for Massachusetts General Hospital Utility Multi-Programming System (MUMPS or just M) development
- VA Standards and Conventions for Generic User Interface (GUI) development
- VA Technical Reference Model (TRM)

The following external partners and organizations must be able to accommodate the modifications made within the VistA CPRS and Consult/Request Tracking applications within the deadlines for the NVCIS project:

- HCP
- FSC

## **6.2.2 Specific Requirements**

### **6.2.2.1 Database Repository**

### **6.2.2.2 System Features**

Existing VistA applications are being modified for this enhancement to support a bi-directional interface between CPRS and HCPS.



### 6.2.2.3 Design Element Tables

#### 6.2.2.3.1 Routines (Entry Points)

**Table 11: Routine GMRCHL7P**

Routines	Activities
Routine Name	GMRCHL7P      New
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	

Related Routines	Routines “Called By”	Routines “Called”
	GMRCHL7H	

Routines	Activities
Data Dictionary (DD) References	
Related Protocols	
Related Integration Control Registrations (ICRs)	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local
Input Attribute Name and Definition	Name: Definition:
Output Attribute Name and Definition	Name: Definition:

Current Logic

Modified Logic (Changes are in bold)

**Table 12: Routine GMRCHL7H**

Routines	Activities
Routine Name	GMRCHL7H                      New
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	

Related Routines	Routines "Called By"	Routines "Called"
	GMRCACMT, GMRCGUIB	GMRCHL7P

Routines	Activities
Data Dictionary (DD) References	
Related Protocols	
Related Integration Control Registrations (ICRs)	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local
Input Attribute Name and Definition	Name: Definition:
Output Attribute Name and Definition	Name: Definition:

Current Logic

Modified Logic (Changes are in bold)

**Table 13: Routine GMRCGUIB**

Routines	Activities
Routine Name	GMRCGUIB      Modified
Enhancement Category	<input type="checkbox"/> New <input checked="" type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	

Related Routines	Routines "Called By"	Routines "Called"
		GMRCHL7H

Routines	Activities
Data Dictionary (DD) References	
Related Protocols	
Related Integration Control Registrations (ICRs)	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local
Input Attribute Name and Definition	Name: Definition:
Output Attribute Name and Definition	Name: Definition:

Current Logic

Modified Logic (Changes are in bold)

**Table 14: Routine GMRCACMT**

Routines	Activities
Routine Name	GMRCACMT      Modified
Enhancement Category	<input type="checkbox"/> New <input checked="" type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
RTM	
Related Options	

Related Routines	Routines "Called By"	Routines "Called"
		GMRCHL7H

Routines	Activities
Data Dictionary (DD) References	
Related Protocols	
Related Integration Control Registrations (ICRs)	
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output Reference <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local
Input Attribute Name and Definition	Name: Definition:
Output Attribute Name and Definition	Name: Definition:

Current Logic

Modified Logic (Changes are in bold)

#### 6.2.2.3.2 Templates

N/A

#### 6.2.2.3.3 Bulletins

N/A

#### 6.2.2.3.4 Data Entries Affected by the Design

N/A

#### 6.2.2.3.5 Unique Record(s)

N/A

#### 6.2.2.3.6 File or Global Size Changes

There will be no impact to the files and global sizes. Since the record entries are already currently added to the existing files during manual entry, automating that process via the interface will not add any additional records.

#### 6.2.2.3.7 Mail Groups

**Table 15: Mail Groups**

Mail Groups	Activities
Mail Group Name	GMRC HCP HL7 MESSAGES
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Related Options	

Related Routines	Routines "Called By"	Routines "Called"

Mail Groups	Instructions
Data Dictionary (DD) References	
Related Protocols	
Mail Group Description	
Self-Enrollment Allowed	<input type="checkbox"/> Yes <input type="checkbox"/> No
Type	<input type="checkbox"/> Public <input type="checkbox"/> Private

### 6.2.2.3.8 Security Keys

Table 16: Security Keys

Security Keys	Activities
Security Key Name	N/A
Enhancement Category	<input type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Related Options	

Related Routines	Routines "Called By"	Routines "Called"

Security Keys	Activities
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local Reference
Security Key Description	
Subordinate Keys	
Mutually Exclusive Keys	
Granting Condition Logic	

Current Logic

Modified Logic (Changes are in bold)

Security Keys	Activities
Hierarchical Precedence	

### 6.2.2.3.9 Options

N/A

### 6.2.2.3.10 Protocols

**Table 17: Protocol – GMRC Consults to HCP**

<b>Protocols</b>	<b>Activities</b>
<b>Protocol Name</b>	GMRC CONSULTS TO HCP
<b>Enhancement Category</b>	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
<b>Associated Protocols</b>	
<b>Data Passing</b>	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input type="checkbox"/> Local Reference
<b>Item Text Description</b>	N/A
<b>Protocol Type</b>	<input checked="" type="checkbox"/> Action <input type="checkbox"/> Menu <input type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
<b>Associated Routine</b>	GMRCHL7H

#### **Current Entry Action Logic**

Creates and sends an REF^I12, REF^I13, or REF^I14 HL7 message to the Healthcare Claims Processing System when a consult is generated for a fee basis service.

#### **Modified Entry Action Logic (Changes are in bold)**

--

#### **Current Exit Action Logic**

--

#### **Modified Exit Action Logic (Changes are in bold)**

--

**Table 18: GMRC HCP REF-I12 Server**

<b>Protocols</b>	<b>Activities</b>
<b>Protocol Name</b>	GMRC HCP REF-I12 SERVER
<b>Enhancement Category</b>	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
<b>Associated Protocols</b>	GMRC HCP REF-I12 Client
<b>Data Passing</b>	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
<b>Item Text Description</b>	Sends HL7 REF^I12 v2.5 messages to HCP application for new Non-VA Care Referrals.
<b>Protocol Type</b>	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input checked="" type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
<b>Associated Routine</b>	GMRCHL7H

<b>Current Entry Action Logic</b>
N/A

<b>Modified Entry Action Logic (Changes are in bold)</b>

<b>Current Exit Action Logic</b>
N/A

<b>Modified Exit Action Logic (Changes are in bold)</b>



**Table 19: Protocol - GMRC HCP REF-I12 Client**

Protocols	Activities
Protocol Name	GMRC HCP REF-I12 CLIENT
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	GMRC HCP REF-I12 Server
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
Item Text Description	Sends HL7 REF^I12 v2.5 messages to HCP application for new Non-VA Care Referrals.
Protocol Type	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input checked="" type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	N/A

Current Entry Action Logic
N/A

Modified Entry Action Logic (Changes are in bold)

Current Exit Action Logic
N/A

Modified Exit Action Logic (Changes are in bold)

**Table 20: Protocol - GMRC HCP REF-I13 Server**

Protocols	Activities
<b>Protocol Name</b>	GMRC HCP REF-I13 SERVER
<b>Enhancement Category</b>	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
<b>Associated Protocols</b>	GMRC HCP REF-I13 Client
<b>Data Passing</b>	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
<b>Item Text Description</b>	Sends HL7 REF^I13 v2.5 messages to HCP application for updated Non-VA Care Referrals.
<b>Protocol Type</b>	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input checked="" type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
<b>Associated Routine</b>	GMRCHL7H

Current Entry Action Logic
N/A

Modified Entry Action Logic (Changes are in bold)

Current Exit Action Logic
N/A

Modified Exit Action Logic (Changes are in bold)

**Table 21: Protocol – GMRC HCP REF-I13 Client**

Protocols	Activities
Protocol Name	GMRC HCP REF-I13 CLIENT
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	GMRC HCP REF-I13 Server
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
Item Text Description	Sends HL7 REF^I13 v2.5 messages to HCP application for updated Non-VA Care Referrals.
Protocol Type	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input checked="" type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	N/A

Current Entry Action Logic
N/A

Modified Entry Action Logic (Changes are in bold)

Current Exit Action Logic
N/A

Modified Exit Action Logic (Changes are in bold)

**Table 22: Protocol - GMRC HCP REF-I14 Server**

Protocols	Activities
Protocol Name	GMRC HCP REF-I14 SERVER
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
Associated Protocols	N/A
Data Passing	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
Item Text Description	Sends HL7 REF^I14 v2.5 messages to HCP application for canceled or discontinued Non-VA Care Referrals.
Protocol Type	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input checked="" type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
Associated Routine	GMRCHL7H

Current Entry Action Logic
No current entry action.

Modified Entry Action Logic (Changes are in bold)

Current Exit Action Logic

Modified Exit Action Logic (Changes are in bold)

**Table 23: Protocol - GMRC HCP REF-I14 Client**

Protocols	Activities
<b>Protocol Name</b>	GMRC HCP REF-I14 CLIENT
<b>Enhancement Category</b>	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change
<b>Associated Protocols</b>	N/A
<b>Data Passing</b>	<input type="checkbox"/> Input <input type="checkbox"/> Output <input type="checkbox"/> Both <input type="checkbox"/> Global Reference <input checked="" type="checkbox"/> Local Reference
<b>Item Text Description</b>	Sends HL7 REF^I14 v2.5 messages to HCP application for canceled or discontinued Non-VA Care Referrals.
<b>Protocol Type</b>	<input type="checkbox"/> Action <input type="checkbox"/> Menu <input checked="" type="checkbox"/> Protocol <input type="checkbox"/> Protocol Menu <input type="checkbox"/> Limited Protocol <input type="checkbox"/> Extended Action <input type="checkbox"/> Dialog <input type="checkbox"/> Other
<b>Associated Routine</b>	N/A

Current Entry Action Logic
No current entry action.

Modified Entry Action Logic (Changes are in bold)

Current Exit Action Logic
No current exit action.

Modified Exit Action Logic (Changes are in bold)

#### **6.2.2.3.11 Remote Procedure Call (RPC)**

The NVCIS project enhancements do not require any new communication methods. The HL7 interface to HCPS will modify the GMRC (Consult) namespace to add HL7 components and use the existing VistA HL7 package for communications.

#### **6.2.2.3.12 Constants Defined in Interface**

N/A

#### **6.2.2.3.13 Variables Defined in Interface**

N/A

#### **6.2.2.3.14 Types Defined in Interface**

N/A

#### **6.2.2.3.15 GUI**

N/A

#### **6.2.2.3.16 GUI Classes**

N/A

#### **6.2.2.3.17 Current Form**

N/A

#### **6.2.2.3.18 Modified Form**

N/A

#### **6.2.2.3.19 Components on Form**

N/A

#### **6.2.2.3.20 Events**

N/A

#### **6.2.2.3.21 Methods**

N/A

#### **6.2.2.3.22 Special References**

N/A

#### **6.2.2.3.23 Class Events**

N/A

#### **6.2.2.3.24 Class Methods**

N/A

**6.2.2.3.25 Class Properties**

N/A

**6.2.2.3.26 Uses Clause**

N/A

**6.2.2.3.27 Forms**

N/A

**6.2.2.3.28 Functions**

N/A

**6.2.2.3.29 Dialog**

N/A

**6.2.2.3.30 Help Frame**

N/A

### 6.2.2.3.31 HL7 Application Parameter

**Table 24: HL7 Application Parameter – GMRC HCP Send**

<b>HL7 Application Parameter Name</b>	<b>GMRC HCP SEND</b>	
<b>Enhancement Category</b>	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change	
<b>Enhancement Category</b>	<b>Current</b>	<b>Modified</b>
<b>Application Status</b>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Active <input type="checkbox"/> Inactive	
<b>Facility Name</b>		
<b>Country Code</b>	USA	
<b>HL7 Field Separator</b>		
<b>HL7 Encoding Characters</b>	~^\\&	
<b>Mail Group</b>		

**Table 25: HL7 Application Parameter - GMRC HCP Receive**

<b>HL7 Application Parameter Name</b>	<b>GMRC HCP RECEIVE</b>	
<b>Enhancement Category</b>	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change	
<b>Enhancement Category</b>	<b>Current</b>	<b>Modified</b>
<b>Application Status</b>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Active <input type="checkbox"/> Inactive	
<b>Facility Name</b>		
<b>Country Code</b>	USA	
<b>HL7 Field Separator</b>		
<b>HL7 Encoding Characters</b>	~^\\&	
<b>Mail Group</b>		



### 6.2.2.3.32 HL7 Logical Link

**Table 26: HL7 Logical Link - GMRCHCP**

HL7 Logical Link	Description	
HL7 Logical Link Parameter Name	GMRCHCP	
Enhancement Category	<input checked="" type="checkbox"/> New <input type="checkbox"/> Modify <input type="checkbox"/> Delete <input type="checkbox"/> No Change	
Enhancement Category	Current	Modified
Node		
Institution		
Domain		
Autostart		
Queue Size		
LLP Type		

### 6.2.2.3.33 COTS Interface

**Table 27: COTS Interface**

COTS Interface	Description
Communication Method: HL7	The HL7 interface to HCPS will modify the GMRC (Consult) namespace to add HL7 components and use the existing Vista HL7 package for communications.
Application Interface	GMRCHCP

## 6.3 Communications Detailed Design

The NVCIS project enhancements do not require any new communication methods. The HL7 interface to HCPS will modify the GMRC (Consult) namespace to add HL7 components and use the existing VistA HL7 package for communications.

Communication between CPRS/Consult and HCPS will take place through new HL7 v2.5 REF messages sent from CPRS/Consult to HCPS when a Consult event (signed order, status update, etc) is created in the CPRS/Consult package.

The VistA Consult package contains the GMRC EVSEND OR event in the PROTOCOL (#101) file to notify subscribers when consult events are triggered (signed consult, status update, completed consult, etc).

The NVCIS development team will create a protocol that can be added in the ITEM multiple of the GMRC EVSEND OR protocol to capture consult events for HCPS. The following VistA HL7 components will be created for this enhancement:

### HL7 Applications:

NAME: GMRC HCP SEND

HL7 ENCODING CHARACTERS: ~^&

HL7 FIELD SEPARATOR: |

NAME: GMRC HCP RECEIVE

HL7 ENCODING CHARACTERS: ~^&

HL7 FIELD SEPARATOR: |

### HL Logical Link:

NODE: GMRCHCP

LLP TYPE: TCP

DEVICE TYPE: Non-Persistent Client

AUTOSTART: Enabled

TCP/IP SERVICE TYPE: CLIENT (SENDER)

PERSISTENT: NO

RETENTION: 30

**\*\*Note\*\* This entry must have an IP and Port assigned during site testing for sites that will be testing the HCP Pilot only.**

### Protocols:

NAME: GMRC CONSULTS TO HCP

ITEM TEXT: Consults to HCP

TYPE: action

ENTRY ACTION: D EN^GMRCHL7H(.XQORMSG)

**\*\*Note\*\* This entry will be manually added to the GMRC EVSEND OR protocol during site testing and roll-out for the HCP Pilot.**

NAME: GMRC HCP REF-I12 SERVER

ITEM TEXT: Consult REF-I12 Message to HCP

SUBSCRIBERS: GMRC HCP REF-I12 CLIENT

NAME: GMRC HCP REF-I12 CLIENT

ITEM TEXT: Consult REF-I12 Message to HCP

NAME: GMRC HCP REF-I13 SERVER

ITEM TEXT: Consult REF-I13 Updates to HCP

SUBSCRIBERS: GMRC HCP REF-I13 CLIENT

NAME: GMRC HCP REF-I13 CLIENT

ITEM TEXT: Consult REF-I13 Updates to HCP

NAME: GMRC HCP REF-I14 SERVER  
ITEM TEXT: Consult REF-I14 Cancel Message to HCP  
SUBSCRIBERS: GMRC HCP REF-I12 CLIENT

NAME: GMRC HCP REF-I14 CLIENT  
ITEM TEXT: Consult REF-I14 Cancel Message to HCP

### **6.3.1 Communications Methods**

CPRS/Consult and HCPS communicate through the VistA HL7 package interface using TCP/IP asynchronous communication.

ECD must provide the TCP/IP Address and TCP/IP Port that the link will use to send REF messages and receive ACK responses. See the VistA HL7 package documentation for details on interface communications.

#### **Interface Initiation**

The HL7 interface to HCPS will be initiated by events generated by the Consult/Request Tracking package using the GMRC EVSEND OR protocol. Protocol events will be processed and HL7 v2.5 REF messages will be created and sent to the VistA HL7 package using the GENERATE^HLMA supported API for delivery to HCPS.

#### **Flow Control**

VistA HL7 handles all flow control for sending, receiving, error control, message recovery and commit acknowledgements for HL7 messages sent from VA system to system. The data will not overflow any VistA HL7 parameters for the maximum length of the message or a segment.

### **6.3.2 Performance Requirements**

Transmission of the HL7 v2.5 REF messages from CPRS/Consult to HCPS will take place on a near real-time basis after Non-VA Care Consult events are triggered within VistA. This transmission will be for a single record and will not adversely affect the VA network.

Processing time is dependent on VA network capabilities. These are outside the control of the NVCIS project. See the VistA HL7 manuals for information on retries, timeouts, and network issues. Typically once the number of retries is exceeded the link is shut down, saving the messages in the queue to be processed once technical issues with the interface are resolved. For benchmarking of typical VistA → VA network system HL7 messages contact the HL7 Administration team or FSC administrators receiving HL7 messages from other VistA packages (e.g., Integrated Billing).

## 7 External Interface Design

The CPRS enhancement will include specifications for the HL7 message to be sent from Vista Consult to HCPS.

### 7.1 Interface Architecture

Interfaces being created or modified by the NVCIS project include:

1. New HL7 messages from CPRS/Consult to HCPS.
2. New HL7 messages from HCPS to CPRS/Consult.

### 7.2 Interface Detailed Design

#### 7.2.1 Message/File Requirements

Data pertaining to the Consult will be sent via HL7 v2.5 REF messages. The following new messages will be developed to support this enhancement:

- REF-I12 will be sent from CPRS to HCPS for new referrals (signed Non-VA Care Consult). NTE segments will contain “Reason for Request” header and Non-VA Care Referral template data.
- REF-I13 will be sent from CPRS to HCPS for status updates and resubmitted referrals. NTE segments will contain “Activity Comment” header and Non-VA Care Referral template data.
- REF-I13 will be sent from CPRS to HCPS for complete and addended note referrals. NTE segments will contain “Progress Note” header and Non-VA Care Referral template data.
- REF-I13 will be sent from HCPS to CPRS for status updates.
- REF-I14 will be sent from CPRS to HCPS for cancelled or discontinued referrals. NTE segments will contain “Activity Comment” header and Non-VA Care Referral template data.
- HL7 v2.5 ACK messages will be returned HCPS in enhanced mode as follows:
  - Commit accept (CA) in MSA-1 acknowledgment code if the message can be accepted for processing
  - Commit reject (CR) is MSA-1 acknowledgment code if one of the values of MSH-9 message type, MSH-12 version ID or MSH-11 processing ID is not acceptable to the receiving application
  - Commit error (CE) in MSA-1 acknowledgment code if the message cannot be accepted for any other reason
- HL7 v2.5 ACK messages will be returned to Vista from ECD when parsing issues occur.

Each HL7 REF message contains data pertaining to the creation, modification, or cancelling of a Fee Basis referral.

Data is retrieved from the following VistA files:

- REQUEST/CONSULTATION (#123),
- PATIENT (#2), and
- NEW PERSON (#200)

The PID segment is built using the VistA HL7 standard API BLDPID^VAFCQRY. See Appendix B for the VistA File #123 Data Dictionary.

### 7.2.1.1 Data Assembly Characteristics – REF Message

A standard HL7 v2.5 REF message will be generated for each consult event required by HCPS. The REF message will contain the following standard segments:

MSH – Message Header	REQUIRED
RF1 – Referral Information	REQUIRED
PRD – Provider Data	REQUIRED
PID – Patient Identification	REQUIRED
DG1 – Diagnosis	OPTIONAL
OBR – Observation Request	REQUIRED
PV1 – Patient Visit	REQUIRED
NTE – Notes and Comments	REQUIRED

### 7.2.1.2 Data Assembly Characteristics – ACK Message

A standard HL7 v2.5 ACK message will be returned by HCPS for each consult message received. The ACK message will contain the following standard segments:

MSH – Message Header	REQUIRED
MSA – Message Acknowledgment	REQUIRED
ERR – Error	OPTION

The following tables contain the HL7 message definition for the REF/ACK messages.

The table columns are:

1. **SEQ** = HL7 sequence#
2. **LEN** = HL7 field length
3. **DT** = HL7 data type
4. **R/O** = R=Require, O=Optional, C=Conditional, NS=Not supported
5. **TBL** = HL7 table definition
6. **Element Name** = HL7 field name
7. **VistA Description** = information on what will be pulled from VistA for this element, or hard-coded data.

LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
-----	----	-----	------	--------------	-------------------

Example HL7 messages are in Appendix B.

### 7.2.1.3 Message Definition Tables for REF^I12

**MSH - Message Header Segment** (generated by the VistA HL7 package using the HL7 Application and Protocol entries for the GMRC components)

**Table 28: Message Definition Table – REF^I12**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	1	ST	R		Field Separator	
2	4	ST	R		Encoding Characters	~^\\&
3	15	ST	R		Sending Application	<b>GMRC HCP SEND</b>
4	20	ST	R		Sending Facility	Sending Facility, from the FACILITY NAME field of the HL7 APPLICATION entry GMRC HCP SEND
5	30	ST	R		Receiving Application	<b>GMRC HCP RECEIVE</b>
6	30	ST	NS		Receiving Facility	Receiving Facility, from the FACILITY NAME field of the HL7 APPLICATION entry GMRC HCP RECEIVE
7	26	TS	R		Date/Time Of Message	System date/time generated by the VistA HL7 package
8	40	ST	NS		Security	Not used
9	7	CM	R	0076 0003	Message Type	REF^I12
10	20	ST	R		Message Control ID	Facility and sequence number automatically generated by the VistA HL7 Package
11	1	ID	R		Processing ID	P for Production, T for Test
12	8	ID	R	0104	Version ID	2.5
13	15	NM	NS		Sequence Number	Not used
14	180	ST	NS		Continuation Pointer	Not used
15	2	ID	R	0155	Accept Acknowledgment Type	AL=Always
16	2	ID	R	0155	Application Acknowledgment Type	AL=Always
17	3	ID	R	0399	Country Code	USA

(MSH fields past MSH.17 are not used and not shown to save space)

VistA MSH.16 does not support ER to just return Application Acknowledgments for errors, so all messages required acknowledgment – either AA or AE in the MSA.

**Table 29: RF1 - Referral Information Segment - REF^I12**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	250	CE	O		Referral Status	NW^CPRS RELEASED ORDER
2	250	CE	O	0280	Referral Priority	From File 123, Field 5 (Urgency). Values are: 1 WEEK, NEXT AVAILABLE, ROUTINE, STAT, TODAY, TOMORROW AM, WITHIN 1 MONTH, WITHIN 1 WEEK, WITHIN 24 HOURS, WITHIN 72 HOURS
3	250	CE	O		Referral Type	Service IEN^Service Name^^Template IEN ^Template Name Service IEN is pointer to File 123.5, Template IEN is pointer to File 8927.
4	250	CE	NS		Referral Disposition	Not used
5	250	CE	O	0284	Referral Category	I for Inpatient, O for Outpatient based on File 123, field 14 (Service Rendered as In or Out). This could be different than the PV1.1 current patient status.
6	30	EI	R		Originating Referral Identifier	IEN to File 123
7	26	TS	O		Effective Date	Referral Date of Request from File 123, field .01
8	26	TS	NS		Expiration Date	Not used
9	26	TS	NS		Process Date	Not used
10	250	CE	NS		Referral Reason	Not used
11	30	EI	NS		External Referral Identifier	Not used



**Table 30: PRD - Provider Data Segment (same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	250	CE	R	0286	Provider Role	RP for Referring Provider
2	250	XPB	O		Provider Name	Provider Last Name^Provider First Name^Provider Middle Initial^^^^^Provider DUZ Provider from File 123, field 10
3	250	XAD	O		Provider Address	Street Address 1^Street Address 2^City^State^Zip from File 2, fields .111, .112, .114, .115, .116
4	60	PL	NS		Provider Location	Not used
5	250	XTN	O		Provider Communication Information	^^^Email Address^^Office Phone Area Code^Office Phone Number from File 2, fields .151, .132
6	250	CE	NS		Preferred Method of Contact	Not used
7	100	PLN	NS		Provider Identifiers	Not used
8	26	TS	NS		Effective Start Date of Provider Role	Not used
9	26	TS	NS		Effective End Date of Provider Role	Not used

**Table 31: PID-Patient Id Segment (generated by the VistA API; same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	O		Set ID – PID	Sequential Number
2	20	CX	R		Patient ID	ICN, including V checksum for backwards compatibility
3	250	CX	R		Patient Identifier List (list is not in any specified order) NI=ICN PI=Patient DFN SS=SSN PN=Claim Number	Integration Control Number (including V and checksum), Social Security Number, DFN, Claim Number, all entries in the ICN History Multiple, and all alias SSNs which will correspond directly to the alias name in the name field (pid-5).
4	20	CX	NS		Alternate Patient ID – PID	Not used
5	250	XP	R		Patient Name	Patient Name and all Alias entries
6	250	XP	O		Mother's Maiden Name	Mother's Maiden Name
7	26	TS	O		Date/Time of Birth	Date of Birth
8	1	IS	O	0001	Administrative Sex	Sex
9	250	XP	NS		Patient Alias	Not used. Alias is passed in PID-5
10	250	CE	O	0005	Race	Race Information. Example: 2106-3-SLF^^0005^2106-3^^CDC See Appendix A for coded values. 0005 and CDC are hardcoded.
11	250	XAD	O		Patient Address	P=Permanent Address~N=Place of Birth~Confidential Address
12	4	IS	O	0289	County Code	County
13	250	XTN	O		Phone Number – Home	Home Phone~Work Phone~Cell Phone~Pager^NET^INTERNE T^email
14	250	XTN	O		Phone Number – Business	Work Phone (backward compatibility)
15	250	CE	NS	0296	Primary Language	Not used
16	250	CE	O	0002	Marital Status	Marital Status^^^^^M
17	250	CE	O	0006	Religion	Religious Preference (code)
18	250	CX	NS		Patient Account Number	Not used
19	16	ST	R		SSN Number – Patient	SSN
20	25	DLN	NS		Driver's License Number – Patient	Not used
21	250	CX	NS		Mother's Identifier	Not used
22	250	CE	O	0189	Ethnic Group	Ethnicity Information. Example: 2186-5-SLF^^0189^2186-5^^CDC See Appendix A for coded values. 2186 and CDC are hardcoded.
23	250	ST	O		Birth Place	Place of birth city and place of birth state

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
24	1	ID	O	0136	Multiple Birth Indicator	Multiple Birth Indicator [Y for multiple birth]

(PID fields past PID.24 not used and not shown to save space)

**Table 32: DG1 - Diagnosis Segment (same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – DG1	1
2	2	ID	NS		Diagnosis Coding Method	Not used
3	250	CE	R		Diagnosis Code – DG1	Provisional Diagnosis Code^Diagnosis Description from File 123, field 30

(DG1 fields past DG1.3 are not used and not shown to save space)

**Table 33: OBR - Observation Request Segment (same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – OBR	1
2	22	EI	R		Placer Order Number	Order entry internal number;Orderable Item entry^OR from File 123, field .03
3	22	EI	R		Filler Order Number	Consult entry internal number;GMRC^GMRC
4	250	CE	NS		Universal Service Identifier	Not used
5	2	ID	NS		Priority – OBR	Not used
6	26	TS	O		Requested Date/Time	Earliest Date from File 123, field 17

(OBR fields past OBR.6 are not used and not shown to save space)

**PV1 – Patient Visit Segment** (same for all message types)

The PV1 segment data is created using the IN5^VADPT call to determine current inpatient status. See PIMS technical manual for definition of the returned array VAIP. Fields not returned by the IN5^VADPT API are not used in the PV1 segment.

**Table 34: PV1 - Patient Visit Segment (Same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – PV1	1
2	1	IS	R	0004	Patient Class	I: inpatient O: outpatient
3	80	PL	O		Assigned Patient Location	Location of last inpatient movement event from VAIP(5)
4	2	IS	NS		Admission Type	Not used
5	250	CX	NS		Preadmit Number	Not used
6	80	PL	NS		Prior Patient Location	Not used
7	250	XCN	O	0010	Attending Doctor	Attending Provider from VAIP(18)
8	250	XCN	O	0010	Referring Doctor	Not used (Referring provider sent in PRD segment)
9	250	XCN	NS		Consulting Doctor	Not used
10	3	IS	NS		Hospital Service	Not used
11	80	PL	NS		Temporary Location	Not used
12	2	IS	NS		Preadmit Test Indicator	Not used
13	2	IS	NS		Re-admission Indicator	Not used
14	6	IS	NS	7.3	Admit Source	Not used
15	2	IS	NS		Ambulatory Status	Not used
16	2	IS	O	0099	VIP Indicator	R if patient restricted/sensitive
17	250	XCN	O		Admitting Doctor	Primary Physician for admission from VAIP(13,5)

(PV1 fields past PV1.17 are not used and not shown to save space)

**Table 35: NTE - Notes and Comments segment for REF^I12**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	O		Set ID – NTE	Sequential Number 1-n
2	8	ID	O	0105	Source of Comment	P for Placer
3	65536	FT	O		Comment	Reason for Request from file 123, field 20
4	250	CE	O		Comment Type	Not used.

### 7.3.1.1 Message Definition Tables for REF^I13

**MSH – Message Header Segment** (generated by the VistA HL7 package using the HL7 Application and Protocol entries for the GMRC components).

**Table 36: MSH - Message Header Segment**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	1	ST	R		Field Separator	
2	4	ST	R		Encoding Characters	~^&
3	15	ST	R		Sending Application	<b>GMRC HCP SEND</b>
4	20	ST	R		Sending Facility	Sending Facility, from the FACILITY NAME field of the HL7 APPLICATION entry GMRC HCP SEND
5	30	ST	R		Receiving Application	<b>GMRC HCP RECEIVE</b>
6	30	ST	NS		Receiving Facility	Receiving Facility, from the FACILITY NAME field of the HL7 APPLICATION entry GMRC HCP RECEIVE
7	26	TS	R		Date/Time Of Message	System date/time generated by the VistA HL7 package
8	40	ST	NS		Security	Not used
9	7	CM	R	0076 0003	Message Type	REF^I13
10	20	ST	R		Message Control ID	Facility and sequence number automatically generated by the HL7 Package
11	1	ID	R		Processing ID	P for Production, T for Test
12	8	ID	R	0104	Version ID	2.5
13	15	NM	NS		Sequence Number	Not used
14	180	ST	NS		Continuation Pointer	Not used
15	2	ID	R	0155	Accept Acknowledgment Type	AL=Always
16	2	ID	R	0155	Application Acknowledgment Type	AL=Always
17	3	ID	R	0399	Country Code	USA

(MSH fields past MSH.17 are not used and not shown to save space)

MSH.16 does not support ER to just return Application Acknowledgements for errors, so all messages required acknowledgement – either AA or AE in the MSA.

**Table 37: RF1 – Referral Information Segment for REF^I13**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	250	CE	O		Referral Status	SC^RECEIVED SC^SCHEDULED IP^RESUBMITTED IP^COMMENT XX^FORWARDED CM^COMPLETE CM^ADDED
2	250	CE	O	0280	Referral Priority	From File 123, Field 5 (Urgency). Values are: 1 WEEK, NEXT AVAILABLE, ROUTINE, STAT, TODAY, TOMORROW AM, WITHIN 1 MONTH, WITHIN 1 WEEK, WITHIN 24 HOURS, WITHIN 72 HOURS
3	250	CE	O		Referral Type	Service IEN^Service Name^^Template IEN ^Template Name Service IEN is pointer to File 123.5, Template IEN is pointer to File 8927.
4	250	CE	NS		Referral Disposition	Not used
5	250	CE	O	0284	Referral Category	I for Inpatient, O for Outpatient based on File 123, field 14 (Service Rendered as In or Out). This could be different than the PV1.1 current patient status.
6	30	EI	R		Originating Referral Identifier	IEN to File 123
7	26	TS	O		Effective Date	Referral Date of Request from File 123, field .01
8	26	TS	NS		Expiration Date	Not used
9	26	TS	NS		Process Date	Not used
10	250	CE	NS		Referral Reason	Not used
11	30	EI	NS		External Referral Identifier	Not used

HCPS will send the Originating Referral Identifier that was sent in the initial REF^I12 from VistA and blanks for everything else.

**Table 38: PRD - Provider Data Segment (Same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	250	CE	R	0286	Provider Role	RP for Referring Provider
2	250	XPB	O		Provider Name	Provider Last Name^Provider First Name^Provider Middle Initial^^^^^^Provider DUZ Provider from File 123, field 10
3	250	XAD	O		Provider Address	Street Address 1^Street Address 2^City^State^Zip from File 2, fields .111, .112, .114, .115, .116
4	60	PL	NS		Provider Location	Not used
5	250	XTN	O		Provider Communication Information	^^^Email Address^^Office Phone Area Code^Office Phone Number from File 2, fields .151, .132
6	250	CE	NS		Preferred Method of Contact	Not used
7	100	PLN	NS		Provider Identifiers	Not used
8	26	TS	NS		Effective Start Date of Provider Role	Not used
9	26	TS	NS		Effective End Date of Provider Role	Not used

HCPS will send the Provider Role that was sent in the initial REF^I12 from VistA and blanks for everything else.



**Table 39: PID – Patient Id Segment (generated by the VistA API; Same for all message types)**

(PID fields past PID.24 not used and not shown to save space)

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – PID	Sequential Number
2	20	CX	R		Patient ID	ICN, including V checksum for backwards compatibility
3	250	CX	R		Patient Identifier List (list is not in any specified order) NI=ICN PI=Patient DFN SS=SSN PN=Claim Number	Integration Control Number (including V and checksum), Social Security Number, DFN, Claim Number, all entries in the ICN History Multiple, and all alias SSNs which will correspond directly to the alias name in the name field (pid-5).
4	20	CX	NS		Alternate Patient ID – PID	Not used
5	250	XPN	R		Patient Name	Patient Name and all Alias entries
6	250	XPN	O		Mother's Maiden Name	Mother's Maiden Name
7	26	TS	O		Date/Time of Birth	Date of Birth
8	1	IS	O	0001	Administrative Sex	Sex
9	250	XPN	NS		Patient Alias	Not used. Alias is passed in PID-5
10	250	CE	O	0005	Race	Race Information. Example: 2106-3-SLF^^0005^2106-3^^CDC See Appendix A for coded values. 0005 and CDC are hardcoded.
11	250	XAD	O		Patient Address	P=Permanent Address~N=Place of Birth~Confidential Address
12	4	IS	O	0289	County Code	County
13	250	XTN	O		Phone Number – Home	Home Phone~Work Phone~Cell Phone~Pager^NET^INTERNET^email
14	250	XTN	O		Phone Number – Business	Work Phone (backward compatibility)
15	250	CE	NS	0296	Primary Language	Not used
16	250	CE	O	0002	Marital Status	Marital Status^M
17	250	CE	O	0006	Religion	Religious Preference (code)
18	250	CX	NS		Patient Account Number	Not used
19	16	ST	R		SSN Number – Patient	SSN



SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
20	25	DLN	NS		Driver's License Number – Patient	Not used
21	250	CX	NS		Mother's Identifier	Not used
22	250	CE	O	0189	Ethnic Group	Ethnicity Information. Example: 2186-5-SLF^^0189^2186-5^^CDC See Appendix A for coded values. 2186 and CDC are hardcoded.
23	250	ST	O		Birth Place	Place of birth city and place of birth state
24	1	ID	O	0136	Multiple Birth Indicator	Multiple Birth Indicator [Y for multiple birth]

HCPS will only send the original information in the initial REF^I12 from VistA for sequences 1, 2, 3, 5, and 19.

**Table 40: DG1 – Diagnosis Segment (Same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – DG1	1
2	2	ID	NS		Diagnosis Coding Method	Not used
3	250	CE	R		Diagnosis Code – DG1	Provisional Diagnosis Code^Diagnosis Description from File 123, field 30

(DG1 fields past DG1.3 are not used and not shown to save space)

**Table 41: OBR – Observation Request Segment (Same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – OBR	1
2	22	EI	R		Placer Order Number	Order entry internal number;Orderable Item entry^OR from File 123, field .03
3	22	EI	R		Filler Order Number	Consult entry internal number;GMRC^GMRC
4	250	CE	NS		Universal Service Identifier	Not used
5	2	ID	NS		Priority – OBR	Not used
6	26	TS	O		Requested Date/Time	Earliest Date from File 123, field 17

HCPS will only send the original information in the initial REF^I12 from VistA for sequences 1, 2, and 3.

(OBR fields past OBR.6 are not used and not shown to save space)

**PV1 – Patient Visit Segment** (same for all message types)

The PV1 segment data is created using the IN5^VADPT call to determine current inpatient status. See PIMS technical manual for definition of the returned array VAIP.

Fields not returned by the IN5^VADPT API are not used in the PV1 segment.

**Table 42: PV1 - Patient Visit Segment (Same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – PV1	1
2	1	IS	R	0004	Patient Class	I: inpatient O: outpatient
3	80	PL	O		Assigned Patient Location	Location of last inpatient movement event from VAIP(5)
4	2	IS	NS		Admission Type	Not used
5	250	CX	NS		Preadmit Number	Not used
6	80	PL	NS		Prior Patient Location	Not used
7	250	XCN	O	0010	Attending Doctor	Attending Provider from VAIP(18)
8	250	XCN	O	0010	Referring Doctor	Not used (Referring provider sent in PRD segment)
9	250	XCN	NS		Consulting Doctor	Not used
10	3	IS	NS		Hospital Service	Not used
11	80	PL	NS		Temporary Location	Not used
12	2	IS	NS		Preadmit Test Indicator	Not used
13	2	IS	NS		Re-admission Indicator	Not used
14	6	IS	NS		Admit Source	Not used
15	2	IS	NS		Ambulatory Status	Not used
16	2	IS	O	0099	VIP Indicator	R if patient restricted/sensitive
17	250	XCN	O	0010	Admitting Doctor	Primary Physician for admission from VAIP(13,5)

HCPS will only send the original information in the initial REF^I12 from VistA for sequences 1 and 2.

(PV1 fields past PV1.17 are not used and not shown to save space)

**Table 43: NTE – Notes and Comments Segment for REF^I13**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	O		Set ID – NTE	Sequential Number 1-n
2	8	ID	O	0105	Source of Comment	P for Placer L for Ancillary
3	65536	FT	O		Comment	Based on message type, Resubmitted consults messages (RF1.1= IP^RESUBMITTED) will contain Reason for Request from file 123, field 20, Completed or Added (RF1.1= CM^COMPLETE CM^ADDED) will contain TIU Progress Note from file 8925 (signed notes/addendums only). All other I13 messages will contain Activity Comments from file 123, subfile 123.25 field 5.
4	250	CE	O		Comment Type	Not used.

HCPS will send Notes/Comments/Status changes made in the Referral in HCPS.

### 7.3.1.2 Message Definition Tables for REF^I14

**MSH - Message Header Segment** (generated by the VistA HL7 package using the HL7 Application and Protocol entries for the GMRC components).

**Table 44: MSH - Message Header Segment**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	1	ST	R		Field Separator	
2	4	ST	R		Encoding Characters	~^\\&
3	15	ST	R		Sending Application	<b>GMRC HCP SEND</b>
4	20	ST	R		Sending Facility	Sending Facility, from the FACILITY NAME field of the HL7 APPLICATION entry GMRC HCP SEND
5	30	ST	R		Receiving Application	<b>GMRC HCP RECEIVE</b>
6	30	ST	NS		Receiving Facility	Receiving Facility, from the FACILITY NAME field of the HL7 APPLICATION entry GMRC HCP RECEIVE
7	26	TS	R		Date/Time Of Message	System date/time generated by the VistA HL7 package
8	40	ST	NS		Security	Not used
9	7	CM	R	0076 0003	Message Type	REF^I14
10	20	ST	R		Message Control ID	Facility and sequence number automatically generated by the VistA HL7 Package
11	1	ID	R		Processing ID	P for Production, T for Test
12	8	ID	R	0104	Version ID	2.5
13	15	NM	NS		Sequence Number	Not used
14	180	ST	NS		Continuation Pointer	Not used
15	2	ID	R	0155	Accept Acknowledgment Type	AL=Always
16	2	ID	R	0155	Application Acknowledgment Type	AL=Always
17	3	ID	R	0399	Country Code	USA

**Table 45: RF1 – Referral Information Segment for REF^I14**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	250	CE	O		Referral Status	CA^CANCELLED DC^DISCONTINUED
2	250	CE	O	0280	Referral Priority	From File 123, Field 5 (Urgency). Values are: 1 WEEK, NEXT AVAILABLE, ROUTINE, STAT, TODAY, TOMORROW AM, WITHIN 1 MONTH, WITHIN 1 WEEK, WITHIN 24 HOURS, WITHIN 72 HOURS
3	250	CE	O		Referral Type	Service IEN^Service Name^^Template IEN ^Template Name Service IEN is pointer to File 123.5, Template IEN is pointer to File 8927.
4	250	CE	NS		Referral Disposition	Not used.
5	250	CE	O	0284	Referral Category	I for Inpatient, O for Outpatient based on File 123, field 14 (Service Rendered as In or Out). This could be different than the PV1.1 current patient status.
6	30	EI	R		Originating Referral Identifier	IEN to File 123
7	26	TS	O		Effective Date	Referral Date of Request from File 123, field .01
8	26	TS	NS		Expiration Date	Not used
9	26	TS	NS		Process Date	Not used
10	250	CE	NS		Referral Reason	Not used
11	30	EI	NS		External Referral Identifier	Not used

**Table 46: PRD – Provider Data Segment (same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	250	CE	R	0286	Provider Role	RP for Referring Provider
2	250	XPN	O		Provider Name	Provider Last Name^Provider First Name^Provider Middle Initial^^^^^^Provider DUZ Provider from File 123, field 10
3	250	XAD	O		Provider Address	Street Address 1^Street Address 2^City^State^Zip from File 2, fields .111, .112, .114, .115, .116
4	60	PL	NS		Provider Location	Not used
5	250	XTN	O		Provider Communication Information	^^^Email Address^^Office Phone Area Code^Office Phone Number from File 2, fields .151, .132
6	250	CE	NS		Preferred Method of Contact	Not used
7	100	PLN	NS		Provider Identifiers	Not used
8	26	TS	NS		Effective Start Date of Provider Role	Not used
9	26	TS	NS		Effective End Date of Provider Role	Not used

**Table 47: PID – Patient Id Segment (generated by the VistA API) (same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – PID	Sequential Number
2	20	CX	R		Patient ID	ICN, including V checksum for backwards compatibility
3	250	CX	R		Patient Identifier List (list is not in any specified order) NI=ICN PI=Patient DFN SS=SSN PN=Claim Number	Integration Control Number (including V and checksum), Social Security Number, DFN, Claim Number, all entries in the ICN History Multiple, and all alias SSNs which will correspond directly to the alias name in the name field (pid-5).
4	20	CX	NS		Alternate Patient ID – PID	Not used
5	250	XP	R		Patient Name	Patient Name and all Alias entries
6	250	XP	O		Mother's Maiden Name	Mother's Maiden Name
7	26	TS	O		Date/Time of Birth	Date of Birth
8	1	IS	O	0001	Administrative Sex	Sex
9	250	XP	NS		Patient Alias	Not used. Alias is passed in PID-5
10	250	CE	O	0005	Race	Race Information. Example: 2106-3-SLF^^0005^2106-3^^CDC See Appendix A for coded values. 0005 and CDC are hardcoded.
11	250	XAD	O		Patient Address	P=Permanent Address~N=Place of Birth~Confidential Address
12	4	IS	O	0289	County Code	County
13	250	XTN	O		Phone Number – Home	Home Phone~Work Phone~Cell Phone~Pager^NET^INTERNE T^email
14	250	XTN	O		Phone Number – Business	Work Phone (backward compatibility)
15	250	CE	NS	0296	Primary Language	Not used
16	250	CE	O	0002	Marital Status	Marital Status^M
17	250	CE	O	0006	Religion	Religious Preference (code)
18	250	CX	NS		Patient Account Number	Not used
19	16	ST	R		SSN Number – Patient	SSN
20	25	DLN	NS		Driver's License Number – Patient	Not used
21	250	CX	NS		Mother's Identifier	Not used
22	250	CE	O	0189	Ethnic Group	Ethnicity Information. Example: 2186-5-SLF^^0189^2186-5^^CDC See Appendix A for coded values. 2186 and CDC are hardcoded.
23	250	ST	O		Birth Place	Place of birth city and place of birth state



SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
24	1	ID	O	0136	Multiple Birth Indicator	Multiple Birth Indicator [Y for multiple birth]

(PID fields past PID.24 not used and not shown to save space)

**Table 48: DG1 - Diagnosis Segment (Same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – DG1	1
2	2	ID	NS		Diagnosis Coding Method	Not used
3	250	CE	R		Diagnosis Code – DG1	Provisional Diagnosis Code^Diagnosis Description from File 123, field 30

(DG1 fields past DG1.3 are not used and not shown to save space)

**Table 49: OBR – Observation Request Segment (Same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – OBR	1
2	22	EI	R		Placer Order Number	Order entry internal number;Orderable Item entry^OR from File 123, field .03
3	22	EI	R		Filler Order Number	Consult entry internal number;GMRC^GMRC
4	250	CE	NS		Universal Service Identifier	Not used
5	2	ID	NS		Priority – OBR	Not used
6	26	TS	O		Requested Date/Time	Earliest Date from File 123, field 17

(OBR fields past OBR.6 are not used and not shown to save space)



**PV1 – Patient Visit Segment** (same for all message types)

The PV1 segment data is created using the IN5^VADPT call to determine current inpatient status. See PIMS technical manual for definition of the returned array VAIP.

Fields not returned by the IN5^VADPT API are not used in the PV1 segment.

**Table 50: PV1 – Patient Visit Segment (Same for all message types)**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	R		Set ID – PV1	1
2	1	IS	R	0004	Patient Class	I: inpatient O: outpatient
3	80	PL	O		Assigned Patient Location	Location of last inpatient movement event from VAIP(5)
4	2	IS	NS		Admission Type	Not used
5	250	CX	NS		Preadmit Number	Not used
6	80	PL	NS		Prior Patient Location	Not used
7	250	XCN	O	0010	Attending Doctor	Attending Provider from VAIP(18)
8	250	XCN	NS		Referring Doctor	Not used (Referring provider sent in PRD segment)
9	250	XCN	NS		Consulting Doctor	Not used
10	3	IS	NS		Hospital Service	Not used
11	80	PL	NS		Temporary Location	Not used
12	2	IS	NS		Preadmit Test Indicator	Not used
13	2	IS	NS		Re-admission Indicator	Not used
14	6	IS	NS		Admit Source	Not used
15	2	IS	NS		Ambulatory Status	Not used
16	2	IS	O	0099	VIP Indicator	R if patient restricted/sensitive
17	250	XCN	O	0010	Admitting Doctor	Primary Physician for admission from VAIP(13,5)

(PV1 fields past PV1.17 are not used and not shown to save space)

**Table 51: NTE – Notes and Comments Segment for REF^I14**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	VistA DESCRIPTION
1	4	SI	O		Set ID – NTE	Sequential Number 1-n
2	8	ID	O	0105	Source of Comment	L for Ancillary
3	65536	FT	O		Comment	Activity Comments from file 123, subfile 123.25 field 5
4	250	CE	O		Comment Type	Not used.

### 7.3.1.3 Message Definition Tables for ACK

The acknowledgment response (ACK message) will be sent from the ECD back to the VistA Application. Accept Acknowledgment (AA) will be returned for messages that are parsed correctly and sent to HCPS. Application Error (AE) will be returned when a parsing issue is discovered, such as missing a required field. When VistA receives an AE message, analysis must be performed by qualified personnel depending on the error – Information Resource Management (IRM) personnel, Clinical Application Coordinators (CACs) and others (NVCIS, ECD or HCPS development for example) may be involved. Some solutions may involve the provider cancelling and re-ordering the consult. Some solutions may require message edit and for the message to be resent by IRM or an HL7 team member. Until end-to-end testing between VistA and HCPS is complete, the NVCIS team will not know what types of errors to expect or how to process each type.

There are COTS products that could monitor, report, edit, and have the ability to resend messages from VistA.

**Table 52: MSH - Message Header Segment for ACK**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	DESCRIPTION
1	1	ST	R		Field Separator	
2	4	ST	R		Encoding Characters	~^&
3	15	ST	R		Sending Application	<b>GMRC HCP RECEIVE</b>
4	20	ST	R		Sending Facility	Sending Facility
5	30	ST	R		Receiving Application	<b>GMRC HCP SEND</b>
6	30	ST	NS		Receiving Facility	Receiving Facility
7	26	TS	R		Date/Time Of Message	System date/time
8	40	ST	NS		Security	Not used
9	7	CM	R	0076 0003	Message Type	ACK
10	20	ST	R		Message Control ID	Return the Message Control ID from the REF^I1n message received from VistA
11	1	ID	R		Processing ID	P for Production, T for Test
12	8	ID	R	0104	Version ID	2.5
13	15	NM	NS		Sequence Number	Not used
14	180	ST	NS		Continuation Pointer	Not used
15	2	ID	R	0155	Accept Acknowledgment Type	AL
16	2	ID	R	0155	Application Acknowledgment Type	NE
17	3	ID	R	0399	Country Code	USA

**Table 53: MSA - Message Acknowledgment Segment**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	DESCRIPTION
1	2	ID	R	0008	Acknowledgment Code	AA for Application Accept AE for Application Error
2	20	ST	R		Message Control ID	Same as MSH.10 above
3	80	ST	NS		Text Message	Not supported
4	15	NM	NS		Expected Sequence Number	Not used
5			NS		Delayed Acknowledgment Type	Not used
6	250	CE	NS		Error Condition	Not used

**Table 54: ERR - Error Segment**

SEQ	LEN	DT	R/O	TBL#	ELEMENT NAME	DESCRIPTION
1	493	ELD	NS		Error Code and Location	Not used
2	18	ERL	O		Error Location	Segment^Sequence^Field^Fld Repetition^Component^Sub-component
3	705	CWE	R	0357	HL7 Error Code	Value^Description See table 0357 below

(ERR fields past ERR.3 are not used and not shown to save space)

**Table 55: HL7 Table 0357 - Message Error Condition Codes**

Value	Description	Comment
0	Message Accepted	Success. Optional, as the AA conveys success. Used for systems that must always return a status code.
100	Segment Sequence Error	Error: The message segments were not in proper order, or required segments are missing.
101	Required Field Missing	Error: A required field is missing from a segment.
102	Data Type Error	Error: The field contained data of the wrong data type, e.g., an NM field contained "FOO".
103	Table Value Not Found	Error: A field of data type ID or IS was compared against the corresponding table, and no match was found.
200	Unsupported Message Type	Rejection: The Message Type is not supported.
201	Unsupported Event Code	Rejection: The Event Code is not supported.
202	Unsupported Processing ID	Rejection: The Processing ID is not supported.

Value	Description	Comment
203	Unsupported Version ID	Rejection: The Version ID is not supported.
204	Unknown Key Identifier	Rejection: The ID of the patient, order, etc., was not found. Used for transactions <i>other than</i> additions, e.g., transfer of a non-existent patient.
205	Duplicate Key Identifier	Rejection: The ID of the patient, order, etc., already exists. Used in response to addition transactions (Admit, New Order, etc.)
206	Application Record Locked	Rejection: The transaction could not be performed at the application storage level, e.g., database locked.
207	Application Internal Error	Rejection: A catchall for internal errors not explicitly covered by other codes.

### 7.3.2 Interface Verification

The NVCIS Project team will create an extensive suite of tests to verify the functionality of the interfaces described in this document. This suite includes a granular unit test, functional tests, round-trip write/read tests, and integration tests in a deployed environment. Test scripts will use inspection and review of the transactions to/from the systems involved in this effort. Performance requirements will be tested in the deployed environment.

## 8 Human-Machine Interface

N/A

### 8.1 Interface Design Rules

N/A

### 8.2 Inputs

N/A

### 8.3 Outputs

N/A

### 8.4 Navigation Hierarchy

N/A

#### 8.4.1 Screen [x.1]

N/A

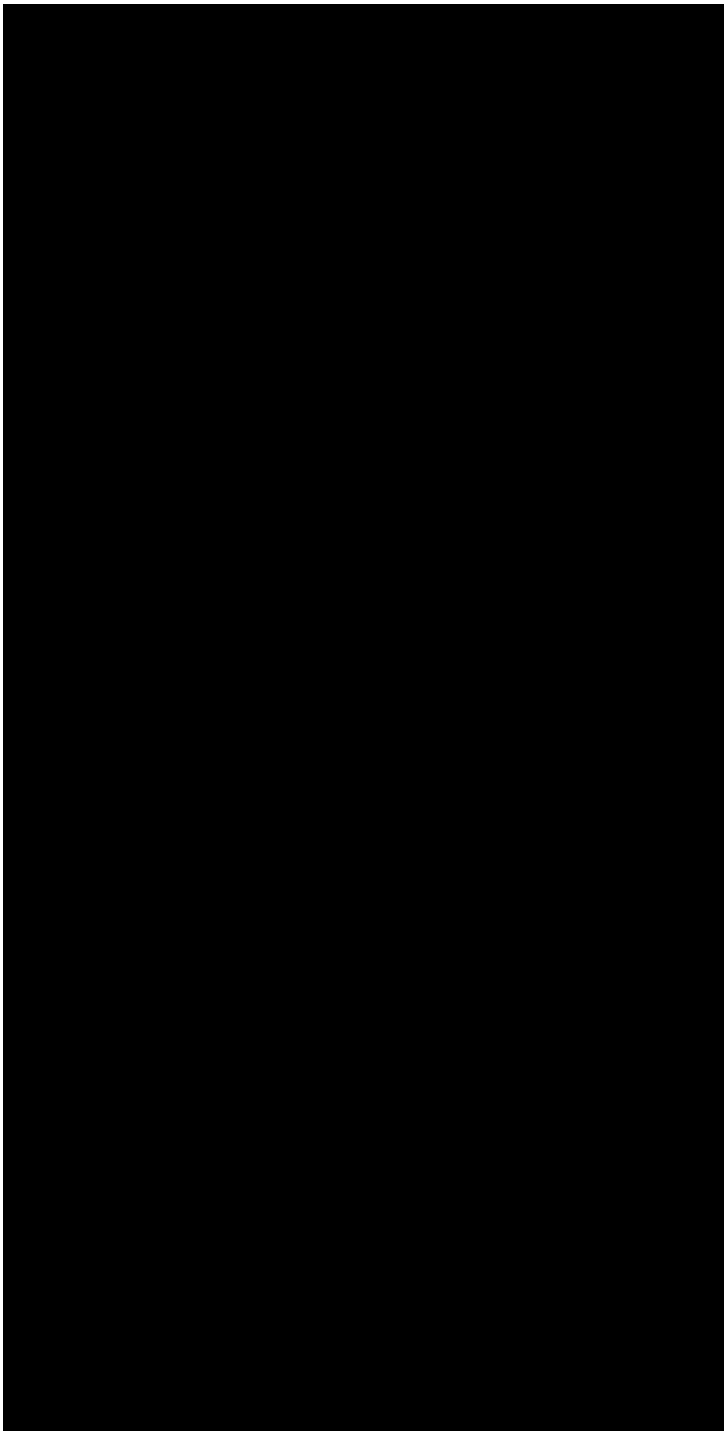
## **9 System Integrity Controls**

The design for the NVCIS enhancement uses existing HL7 interface and communications with security measures in place for this technology within VA.

## 10 Approval Signatures

The signature below is an acknowledgement that the signatory understands the purpose and content of this document.

Signed: \_\_\_\_\_



Business Sponsor

Date

Date

Date

Date

Date

Date

## A. Additional Information

### A.1. HL7 Supporting Tables

**Table 56: HL7 Table 0200 - Name Type**

Value	Description	Comment
A	Alias Name	
B	Name at Birth	
C	Adopted Name	
D	Display Name	
I	Licensing Name	
L	Legal Name	
M	Maiden Name	
N	Nickname/"Call Me"/Street Name	
P	Name of Partner/Spouse - Obsolete	Deprecated in V2.4
R	Registered Name (Animals Only)	
S	Coded Pseudo-Name To assure Anonymity	
T	Indigenous/Tribal/Community Name	
U	Unspecified	

**Table 57: User-Defined Table 0005 - Race**

Value	Description
1002-5	American Indian or Alaska Native
2028-9	Asian
2054-5	Black or African American
2076-8	Native Hawaiian or Other Pacific Islander
2106-3	White
2131-1	Other Race

**Table 58: Race and Ethnicity Collection Method List**

Value	Description
OBS	Observer
PRX	Proxy

Value	Description
SLF	Self Identification
UNK	Unknown

**Table 59: Ethnicity List**

Value	Description
0000-0	Declined to Answer
2135-2	Hispanic or Latino
2186-5	Not Hispanic or Latino
9999-4	Unknown by Patient

**Table 60: HL7 Table 0201 - Telecommunication Use Code**

Value	Description	Comment
PRN	Primary Residence Number	
ORN	Other Residence Number	
WPN	Work Number	
VHN	Vacation Home Number	
ASN	Answering Service Number	
EMR	Emergency Number	
NET	Network (email) Address	
BPN	Beeper Number	

**Table 61: HL7 Table 0202 - Telecommunication Equipment Type**

Value	Description
PH	Telephone
FX	Fax
MD	Modem
CP	Cellular Phone
BP	Beeper
Internet	Internet Address: Use Only If Telecommunication Use Code Is NET
X.400	X.400 Email Address: Use Only If Telecommunication Use Code Is NET



Value	Description
TDD	Telecommunication Device for the Deaf
TTY	Teletypewriter

**Table 62: User-defined Table 002 - Marital Status**

Value	Description	Comment
A	Separated	
D	Divorced	
M	Married	
S	Single	
W	Widowed	
C	Common Law	
G	Living Together	
P	Domestic Partner	
R	Registered Domestic Partner	
E	Legally Separated	
N	Annulled	
I	Interlocutory	
B	Unmarried	
U	Unknown	
O	Other	
T	Unreported	

**Table 63: Religion List**

<b>Code</b>	<b>Description</b>
9	Adventist
32	African Religion
33	Afro-Caribbean Religion
34	Agnosticism
36	Animism
83	Asked but declined to answer
10	Assembly of God
37	Atheism
38	Babi & Baha'i Faiths
3	Baptist
39	Bon
11	Brethren
40	Cao Dai
41	Celticism
42	Christian (Non-Specific)
12	Christian Scientist
13	Church of Christ
14	Church of God
43	Confucianism
44	Congregational
45	Cyberculture Religions
15	Disciples of Christ
46	Divination
2	Eastern Orthodox
8	Episcopalian
16	Evangelical Covenant
47	Fourth Way
48	Free Deism
17	Friends
49	Full Gospel
50	Gnosis

<b>Code</b>	<b>Description</b>
51	Hinduism
52	Humanism
53	Independent
20	Islam
54	Jainism
18	Jehovah's Witnesses
1	Judaism
19	Latter Day Saints
5	Lutheran
55	Mahayana
56	Meditation
57	Messianic Judaism
4	Methodist
58	Mithraism
30	Native American
21	Nazarene
59	New Age
60	Non-Roman Catholic
61	Occult
62	Orthodox
22	Other
63	Paganism
23	Pentecostal
6	Presbyterian
64	Process, The
24	Protestant
25	Protestant, No Denomination
26	Reformed
65	Reformed/Presbyterian
0	Roman Catholic Church
27	Salvation Army
66	Satanism

Code	Description
67	Scientology
68	Shamanism
69	Shiite (Islam)
70	Shinto
71	Sikhism
72	Spiritualism
73	Sunni (Islam)
74	Taosim
75	Theravada
28	Unitarian-Universalism
7	United Church of Christ
76	Universal Life Church
29	Unknown/No Preference
77	Vajrayana (Tibetan)
78	Veda
79	Voodoo
80	Wicca
81	Yaohushua
31	Zen Buddhism
82	Zoroastrianism

## A.2. Business Process Flow - Hospital Notification



Business Process  
Flow - Hospital Noti

## A.3. Example HL7 messages



Example HL7  
Messages.docx

## A.4. Request/Consultation (#123) file DD



Request\_Consultation #123 File DD.doc

## A.5. RTM

[Non-VA Care Enhancements Team Library RTMs](#)

## A.6. Packaging and Installation

N/A

## A.7. Design Metrics

N/A

## A.8. Acronym List and Glossary

Table 64: Acronym List

Term	Definition
AA	Accept Acknowledgement
A/D/T	Admission, Discharge, and Transfer
AE	Application Error
ANSI	American National Standards Institute
API	Application Programming Interfaces
ASU	Authorization Subscription Utilities
CAC	Clinical Application Coordinators
CBO	Chief Business Office
CHUI	Character-based User Interface
CPRS	Computerized Patient Record System
DSIF	Remote namespace used in VistA for remote procedure call which will return a list of pending consults by service
ECD	Electronic Commerce Division
FBCS	Fee Basis Claims System
FSC	Financial Services Center
GMRC	Namespace of Consult/Request Tracking Package
GUI	Graphical User Interface
HCP/HCPS	Healthcare Claims Processing System
HIPAA	Health Insurance Portability and Accountability Act
HL7	Health Level 7
IRM	Information Resources Management

Term	Definition
M	Massachusetts General Hospital Utility Multi-Programming System (also known as MUMPS)
NPM	National Patch Module
NVCC	Non-VA Medical Care Coordination Model and Process
NVCIS	Non-VA Interface Support Program
OE/RR	Order Entry/Results Reporting
OIT	Office of Information and Technology
ORQQCN LIST	M Code: Consults for a Patient Remote Procedure Call
PCE	Patient Care Encounter
PCMM	Primary Care Management Module
RDC	Regional Data Centers
SAC	Standards and Conventions
TIU	Text Integration Unit
TRM	Technical Reference Model
VA	Department of Veterans Affairs
VHA	Veterans Health Administration
VistA	Veterans Health Information Systems and Technology Architecture

**Table 65: Glossary**

Term	Meaning
Post-relational database	A multi-dimensional array that supports direct global access/manipulation, SQL access and manipulation, and object access and manipulation. The database is geared for heavy volume transaction processing using sophisticated standard indexes and bit-map indexes.

## A.9. Required Technical Documents

The following documents must be submitted for review to support complete project approval:

- Requirements Specification Document
- Requirements Traceability Matrix
- System Design Document
- Interface Control Document

- Primary Developer checklist
- Secondary Developer Checklist
- Software Quality Assurance (SQA) Checklist
- Product Component Testing Results
- Software Source Code
- Master Test Plan
- Test Evaluation Document
- Production Operations Manual
- User Guide
- Technical Manual
- Security Guide
- CI/ST Defect Log
- CI/ST Evaluation Summary
- CI/ST Execution Log
- User Functionality Defect Tracking Spreadsheet
- User Functionality Defect Log
- User Functionality Evaluation Summary
- User Functionality Execution Log
- Deployment Plan
- Version Description Document
- Defect Resolution Plan
- Defect/Fix Status Report
- Final Software Source Code
- Initial Operating Capability Entry Request and Exit Summary
- Package/Patch Completion Transition Document
- National Deployment Addendum Issue Brief
- Software Release Request
- Knowledge Transfer Training Material