



CLINICAL CASE REGISTRIES HEPATITIS C (HEP C) INSTALLATION / IMPLEMENTATION GUIDE

Version 1.0

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VistA System Design & Development

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Preface

The Veterans Health Information System and Architecture (VistA) Clinical Case Registries Installation Guide provides assistance for installing, implementing and maintaining the Hepatitis C Registry software.



Throughout this document Clinical Case Registries is always referred to in the context of a Hepatitis C registry as the creation of the Hepatitis C registry is primary motivation for this document.

Hepatitis C Registry V1.0 for Hepatitis C Installation Guide Orientation:

Pre-installation Information section provides information needed beforehand to install Hepatitis C Registry for Hepatitis C ROR1_0.KID.

Installation Instructions section contains instructions and examples of ROR1_0.KID installation process.

Implementation Instructions provides directions for implementing Hepatitis C Registry software.

Recommended Users

The Information Resource Management (IRM) staff is required for installing and supporting VistA Hepatitis C Registry.

Related Manuals

Hepatitis C Registry User Manual
Hepatitis C Registry Technical Guide

Software and Manual Retrieval

The VistA Clinical Case Registries software files and Installation and Implementation Guide (i.e., ROR1_OIG.PDF) are available on the following Office of Information Field Offices (OIFOs) ANONYMOUS SOFTWARE directories.

OIFO	FTP Address	Directory
Albany	ftp.fo-albany.med.va.gov	anonymous.software
Hines	ftp.fo-hines.med.va.gov	anonymous.software
Salt Lake City	ftp.fo-slc.med.va.gov	anonymous.software

VistA Hepatitis C Case Registry software and documentation are distributed as the following set of files:

File Name	Contents	Retrieval Format
ROR1_0.KID	ROR KIDS build	ASCII
ROR1_0GUI.ZIP	ROR ZIPPED GUI distributive	BINARY
- ROR1_OIG.PDF	<i>ROR Installation Guide</i>	BINARY
- ROR1_0TM.PDF	<i>ROR Technical Manual</i>	BINARY
- ROR1_0UM.PDF	<i>ROR User Manual</i>	BINARY

VISTA Intranet

Online Documentation for this product is available on the intranet at the following address: <http://vista.med.va.gov/vdl/>. This address takes you to the VistA Documentation Library (VDL), which has a listing of all the clinical software manuals. Click on the Clinical Case Registries link and it will take you to the Hepatitis C Case Registry documentation.

You can also access the Hepatitis C Case Registry home page by using the following address: <http://vista.med.va.gov/clinicalspecialties/>.

Online Help

Instructions, procedures, and other information are available from the Hepatitis C Registry online help file. You may access the help file by clicking on Help|Contents from the menu bar or by pressing the F1 key while you have any Hepatitis C Registry dialog open. Much of the information in this User Manual is also in the Hepatitis C Registry online help.

Screen Displays and Text Notes

The user's response in this manual is in **bold** type, but does not appear on the screen as bold. The bold part of the entry is the letter or letters that you must type so that the computer can identify the response. In most cases, you need only enter the first few letters. This increases speed and accuracy.

Every response you type must be followed by pressing the return key (or enter key for some keyboards). Whenever the return or enter key should be pressed, you will see the symbol **<RET>**. This symbol is not shown but is implied if there is bold input.

Within the roll and scroll part of the system, help frames may be accessed from most prompts by entering one, two, or three question marks (?, ??, ???).

Within the examples representing actual terminal dialogues, the author may offer information about the dialogue. You can find this information enclosed in brackets, for example, *{type ward name here}*, and will not appear on the screen.

The computer dialogue appears in `Courier font`.



This *boxed* element highlights special details about the current topic.

Introduction

Hepatitis C Case Registry Features

- Creates a local Hepatitis C Case Registry List (automatically identified by positive screening laboratory test results and/or diagnostic codes within VistA/CPRS).
- Provides ability to manually add/edit patients into the Hepatitis C Case Registry List.
- Extracts predefined data elements from VistA and transmits them through HL7 to a central VA data repository.

Overview

The Hepatitis C Case Registry contains important demographic and clinical data on all VHA patients identified with Hepatitis C infection. The registry extracts VistA pharmacy, laboratory, and pathology databases in order to provide the key clinical information needed to track disease stage, disease progression, and response to treatment. Data from the Hepatitis C Case Registry is used on the national, regional, and local level to track and optimize clinical care of Hepatitis C infected veterans served by VHA. National summary information (without personal identifiers) will be available to VA Central Office for overall program management as well as to inform Veterans Service Organizations, Congress, and to other federal public health and health care agencies.

This VistA software package provides several key functions:

- Automatically develops a list of patients with Hepatitis C infection,
- Provides a GUI interface for local facility staff to add/edit the list.
- Allows the local designation of whether a patient is on an investigational drug for Hepatitis C.
- Sets up the nightly transmission of data elements for the patients on this list to a national database. Those data elements basically include: patient demographic information, reason the patient was added to the registry list (ICD code, lab test, or manually), pharmacy utilization, radiology test utilization, and whether or not a patient underwent liver biopsy (based on pathology info) and a limited set of lab tests and test results.
- Generation of three local reports—
 - one which provides a list of patients on the registry (with ability to select a subset based on when they were added to the list),
 - the second provides a list of patients on the registry who have received Hepatitis C therapy within a chosen time period,
 - the third provides a local software activity and error report.

- Technical improvements including:
 - The nightly updates to the list and transmission of data
 - Use of a uniform M (formerly MUMPS) program backbone that can be used for other disease case registries
 - The transformation of VistA data into standard HL7 formatted messages for transmission (including limited validation checks, error messaging, etc.)

Treatment Recommendations for Patients with Chronic Hepatitis C

VA treatment guidelines for Hepatitis C care can be viewed at the following World Wide Web (WWW) address: http://www.va.gov/hepatitisc/pved/treatmntgdlnes_00.htm.

Pre-Installation Information

The following information contains recommendations and requirements for the installation of the VistA for Hepatitis C Registry software.

IRM Staff

IRM staff is recommended for installing and supporting Hepatitis Case Registry.

- We recommend that you install the Hepatitis C Registry first in training or test account that is a mirror of your production account.
- The install itself should take no longer than thirty minutes.
- Local Patient Registry Creation – After the software has been installed the ROR SETUP HEPC option needs to be run to create Hepatitis C registry.
- Historic Backfill Process – This process is tasked by the application. This process gathers data on the patients stored in the Local Patient Registry. Demographic and clinical data is gathered into a “flat” file. When the process is complete, IRM will FTP to the Austin Automation Center. This data will be the initial seeding of the Hepatitis C Case Registry national database.
- ROR TASK – This option is scheduled to run on a daily basis. It has two purposes:
 1. To update the Local Patient Registry with potentially new patients
 2. To extract on a daily basis updated and new demographic and clinical data on patients in the Local Patient Registry and transmit the data to the AAC.
- After the install is completed, there will be implementation steps, which will task off the Local Patient Registry creation and the Historic Backfill process. These processes can take some time to complete, therefore; we recommend that these processes be tasked to run over night and preferably over a weekend. The initial registry creation tasks can be suspended (i.e., in a "hang" state) during normal working hours during the week.
- We **highly recommend** the Laboratory Information Manager participate in reviewing the parameter descriptions and mapping Logical Observation Identifiers Names and Codes (LOINC®).

Test Sites

The Hepatitis C Registry software was tested at the following sites:

Test Sites	Alpha	Beta
Bay Pines, FL		✗
Bronx, NY		✗
Cincinnati, OH		✗
Fargo, ND		✗
Martinez, CA		✗
Minneapolis, MN		✗
NY Harbor, NY		✗
Palo Alto, CA	✗	✗
Salem, VA		✗
VISN 2, NY		✗

Hardware and Operating Systems Requirements

Hepatitis C Registry software runs on the standard hardware platforms used by the Department of Veterans Affairs Healthcare facilities. These systems consist of Alpha Clusters running VMS (version 7.2-1 minimum) and DSM (version 7.2.1 VA1) or an Alpha 1000A running Windows NT (service pack 6) and Cache M operating system (version 3.2.31.1)

System Performance Capacity

There are no significant changes in the performance capacity of the VistA operating system once the Hepatitis C Registry software is installed and after the registry has been created. The software should not create any appreciable global growth or network transmission problems. There are no memory constraints.

Software Installation Time

The estimated installation time is less than 30 minutes during off peak hours.

Users on the System

Users may remain on the system and no options need to be placed out of service.

Backup Routines

It is highly recommended that a backup of the transport global be performed before installing the software.

Name Space

The VistA Hepatitis C Registry software name space is ROR.

VISTA Software Requirements

Before Hepatitis C Registry can be installed, the following software applications and patches must be installed and **fully** patched in your accounts.

Application Name	Minimum Version
Automated Information Collection System (AICS)	V 3.0
Adverse Reaction Tracking (ART)	V 4.0
Authorization/Subscription Utility (ASU)	V 1.0
Consult/Request Tracking	V 3.0
Gen. Med. Rec.-Vitals	V. 4.0
Health Summary	V. 2.7
HL7	V. 1.6
Inpatient Medications (IM)	V. 5.0
Kernel	V. 8.0
Laboratory	V. 5.2
Lexicon Utility	V. 2.0
National Drug File (NDF)	V. 4.0
Order Entry/Results Reporting (OE/RR)	V. 3.0
Outpatient Pharmacy	V. 7.0
Patient Care Encounter (PCE)	V. 1.0
Pharmacy Data Management (PDM)	V. 1.0
Problem List	V 2.0
Radiology/Nuclear Medicine	V 5.0
RPC Broker	V 1.1
Registration	V 5.3
Scheduling	V 5.3
Text Integration Utilities (TIU)	V 1.0
ToolKit	V. 7.3
VA FileMan	V. 22.0
Visit Tracking	V 2.0

Required Patches

Before the installation of Hepatitis C Registry, the following patches **must** be installed.

Application Name	Patches
Health Level (HL7) V. 1.6	HL*1.6*56
	HL*1.6*57
Laboratory V. 5.2	LR*5.2*215
	LR*5.2*232
	LR*5.2*278
	LR*5.2*222 and LA*5.2*46
	LR*5.2*279
	LR*5.2*280
National Drug File V. 4.0	PSN*4*53

Mapping

The Laboratory Information Manager (LIM) must map all Hepatitis C related laboratory tests to the appropriate Logical Observation Identifiers Names And Codes (LOINC®) to comply with VHA DIRECTIVE 2001-039 June 27, 2001. LOINC training can be found at the following web address, <http://vaww.vistau.med.va.gov/VistaU/LOINC/default.htm>.

You can find a complete description and instruction about the LOINC Historical Data Mapper in the laboratory patch LR*5.2*279. It is required that the options provided by this patch be run and completed during a 24-hour period of low system usage. Normally this would be during the weekend. Patch LR*5.2*279 options must also be run and completed before ROR V.1.0 is installed.

After the successful completion of the historical LOINC mapping process, the members of the G.LMI mail group will receive two types of notifications:

1. MailMan message containing all tests that were not historically mapped.
2. MailMan message containing all mapped tests. This message is designed to be imported into a non-VistA spreadsheet program.

Using these two reports, you will be able to determine mapping completeness and identify systematic mapping errors.

Example: List of Hepatitis C tests the LIM may have to update.

Laboratory Tests (all are blood samples)

1) Hepatitis and HIV Viral Tests

Anti-Hepatitis C Antibody Test (Hepatitis C screening test)-Sites needs to map all tests that are being used by the facility

This may include: EIA, RIBA

Please note that in some places, direct RNA tests may be used for screening

Hepatitis C Virus RNA-BOTH Qualitative and Quantitative Tests (direct viral tests)

Includes: RT-PCR and bDNA techniques

Hepatitis C Virus Serotype (this identifies viral type, e.g., 1, 2, 3)

Usually EIA

Hepatitis C Virus Genotype (also identifies viral type)

Includes: hybridization and sequencing techniques

Hepatitis B Antibody tests

Both tests for surface and core (both IgM and IgG)

Hepatitis B Antigen tests

Both surface and “e” antigens

Laboratory Tests (all are blood samples) Continued

Hepatitis A Antibody tests

Both Total and IgM

HIV (Human Immunodeficiency Virus) Antibody Test
(positive result assumes EIA with confirmatory Western blot)

2) Liver Tests

Alkaline Phosphatase
Aspartate Aminotransferase (AST), aka SGOT
Alanine Aminotransferase (ALT), aka SGPT
Gamma-glutamyl transferase (GGT)
Albumin
Total bilirubin
Direct bilirubin (aka conjugated)
Prothrombin time
INR (internationalized ratio)--calculated
Alpha fetoprotein
Ferritin

3) Other Blood Tests

Hemoglobin
Total white blood cell count
 Percent neutrophils
 Percent bands
Platelets
Creatinine
Serum glucose
Thyroid stimulating hormone (TSH)
Anti-nuclear antibody (ANA)
Serum protein electrophoresis (SPEP)

Lab Search Parameters File (#789.9)

All required lab search criteria is defined in the ROR LAB SEARCH file (#798.9). This file is distributed without data.



You need to contact your Pathology and Laboratory Service LIM to ascertain the values their department uses to define a positive result for Hepatitis C related screening tests

Below are some examples of LOINC codes used at the beta test sites:

Anti-Hepatitis C Virus Ab—EIA (LOINC - 13955) this is used if ORD.

Anti-Hepatitis C Virus Ab—EIA (LOINC - 5198) this is used if QN.

Anti-Hepatitis C Virus Ab—RIBA (LOINC - 22327)

This criteria is typically something like:

If the result contains "POS" or a "pos" then it is positive.

If the result contains a "+" then it is positive.

If the result is bigger than a specified value, it is positive.

If the result contains a ">" then it is positive.

Enter the values that apply to each LOINC code using FileMan. It is possible to define several search indicators for one LOINC code.

Hep C Local Coordinators

Hep C Local coordinators must be added to the COORDINATOR field (#798.114,.01) in the ROR REGISTRY PARAMETERS file (#798.1). All users (from the NEW PERSON file (#200)) added to this multiple receive alerts in the event of problems with the regular registry updates and data transmissions.

Health Level 7 (HL7)

Hepatitis C Registry uses VistA HL7 V1.6 software application to transmit Hepatitis C data to the Austin Automation Center (AAC).

The HL7 protocol defines only the seventh level of the Open System Interconnect (OSI) Model. This is the application level. Levels 1 through 6 involve primarily communication protocols.

The TCP/IP network standard is used to support the Transport layer and Network layer of the interface. The Minimal Lower Layer Protocol (MLLP) is used to support the Presentation layer protocol for the interface and will encapsulate the HL7 V2.3.1 messages with start and end markers.

VistA will send a batch HL7 message and receive a commit acknowledgment over the same link the link will then be disconnected. The AAC will then process the batch then reconnect with the sending site using the standard HL7 logical link (port 5000) and send an application acknowledgment.



Binary mode **must** be used to transmit files with historical data by an FTP client.

Routine List

ROR	ROR01	RORACK	RORACK01	RORAPI01	RORDD
RORENV01	RORERR	RORERR10	RORERR20	ROREVT01	ROREXPR
ROREXT	ROREXT01	ROREXT02	ROREXTUT	RORHDT	RORHDT01
RORHDT02	RORHDT03	RORHDT04	RORHDT05	RORHDTAC	RORHDTUT
RORHL01	RORHL02	RORHL03	RORHL04	RORHL05	RORHL06
RORHL07	RORHL7	RORKIDS	RORLOG	RORLOG01	RORNTEG
RORPOS01	RORPOSU1	RORPRE01	RORRP1	RORRP10	RORRP2
RORRP3	RORRP4	RORRP5	RORRP6	RORRP7	RORRP8
RORRP9	RORSET01	RORSETU1	RORSETU2	RORTSITE	RORUPD
RORUPD05	RORUPD06	RORUPD07	RORUPD08	RORUPD09	RORUPD50
RORUPD01	RORUPD04	RORUPD51	RORUPD52	RORUPDUT	RORUPEX
RORUPP01	RORUPP02	RORUPR	RORUPR1	RORUTL01	RORUTL02
RORUTL03	RORUTL04	RORUTL05	RORUTL06	RORUTL07	

77routines

VISTA Hepatitis C Registry for Hepatitis C Hardware and Software Requirements



The request for workstations, servers, and cabling plants are beyond the basic upgrading of the facility's main computer cluster to the newer DEC Alpha systems to provide the additional capacity needed to run the Hepatitis C Case Registry software and related applications (e.g., CPRS, TIU, PCMM, PDM).

VHA facilities are encouraged to budget and purchase PC workstations as replacements for dumb terminals. The VHA LAN and Workstation task force report is recommended as a guide.

Hepatitis C Workstation Requirements

Software Requirements

- VistA 's Remote Procedure Call (RPC) Broker Version 1.1 or greater software **must** be properly installed and configured on the Hepatitis C workstation.
- Microsoft Word (97 or higher)
- Microsoft Windows 98 SE (2nd edition, 2000, or NT 4.0 (with service pack 6)

Workstation Hardware Requirements and Guidelines

- Color VGA monitor (set at 24 bit)
- Video card and a software driver capable of a minimum 800x600 dpi and 16-bit color display **must** be installed and properly configured.
- Printer, mouse, and keyboard
- 166 mzh processor with at least, 64 mb RAM
- 10 mb free hard drive space

Installation Instructions

VistA Clinical Case Registries uses the Kernel Installation and Distribution System (KIDS). For further instructions on using KIDS, please refer to the *Kernel V. 8.0 Systems Manual*.

You should install the Clinical Case Registries package (ROR V 1.0) during **off peak** hours when there are fewer users on the system. Installation of this software takes less than **30** minutes (disregarding the time required for initial registry population).

The installation of the software is performed via a KIDS build.

Step 1: Start the Installation

1. From the **Kernel Installation and Distribution Systems (KIDS)** menu, select the **Installation menu [XPD INSTALLATION MENU]**:

```
Edits and Distribution ...
Utilities ...
Installation ...
```

Select Kernel Installation & Distribution System Option: Installation

2. **Load the distribution to the transport global:**

```
1      Load a Distribution
2      Verify Checksums in Transport Global
3      Print Transport Global
4      Compare Transport Global to Current System
5      Backup a Transport Global
6      Install Package(s)
      Restart Install of Package(s)
      Unload a Distribution
```

Select Installation Option: **1** Load a Distribution

Enter a Host File: **ROR1_0.KID**

KIDS Distribution saved on Apr 12, 2002@15:29:35

Comment: Clinical Case Registries 1.0

This Distribution contains Transport Globals for the following

Package(s): ROR 1.0

Distribution OK!

Want to Continue with Load? YES// **<RET>**

Loading Distribution...

Build ROR 1.0 has an Enviromental Check Routine

Want to RUN the Environment Check Routine? YES// **<RET>**

ROR 1.0

Will first run the Environment Check Routine, RORENV01

Use INSTALL NAME: ROR 1.0 to install this Distribution.

3. Verify checksums in the transport global:

```
Select Installation Option: 2  Verify Checksums in Transport Global
Select INSTALL NAME: ROR 1.0      Loaded from Distribution
4/12/02@13:45:50
    => Clinical Case Registries 1.0  ;Created on Apr 12, 2002@15:29:35

This Distribution was loaded on Apr 12, 2002@13:45:50 with header of
    Clinical Case Registries 1.0  ;Created on Apr 12, 2002@15:29:35
    It consisted of the following Install(s):
        ROR 1.0

DEVICE: HOME// <RET>

PACKAGE: ROR 1.0      Apr 12, 2002 3:29 pm
PAGE 1
-----

77 Routine checked, 0 failed.
```

4. Start the installation of the package.

```
Select Installation Option: 6  Install Package(s)
Select INSTALL NAME: ROR 1.0      Loaded from Distribution
4/12/02@13:45:50
    => Clinical Case Registries 1.0  ;Created on Apr 12, 2002@15:29:35

This Distribution was loaded on Apr 12, 2002@13:45:50 with header of
    Clinical Case Registries 1.0  ;Created on Apr 12, 2002@15:29:35
    It consisted of the following Install(s):
        ROR 1.0
Checking Install for Package ROR 1.0
Will first run the Environment Check Routine, ROENV01

Install Questions for ROR 1.0

Incoming Files:

798      ROR LOCAL REGISTRY

798.1    ROR REGISTRY PARAMETERS  (including data)

798.2    ROR SELECTION RULE  (including data)

798.3    ROR PENDING PATIENT

798.4    ROR PATIENT

798.5    ROR HDT TASK
```

```

798.6      ROR PHARMACY CODE

798.7      ROR LOG

798.9      ROR LAB SEARCH  (including data)

799.1      ROR LIST ITEM  (including data)

799.2      ROR METADATA  (including data)

Want KIDS to Rebuild Menu Trees Upon Completion of Install? YES// NO

Want KIDS to INHIBIT LOGONs during the install? YES// NO
Want to DISABLE Scheduled Options, Menu Options, and Protocols? YES//
NO

Enter the Device you want to print the Install messages.
You can queue the install by enter a 'Q' at the device prompt.
Enter a '^' to abort the install.

DEVICE: HOME//  Enter printer name

Install Started for ROR 1.0 :
                Apr 12, 2002@13:46:22

Build Distribution Date: Apr 12, 2002

Installing Routines:
                Apr 12, 2002@13:46:27

Running Pre-Install Routine: START^RORPRE01

Installing Data Dictionaries:
                Apr 12, 2002@13:46:47

Installing Data:
                Apr 12, 2002@13:46:54

Installing PACKAGE COMPONENTS:

Installing SECURITY KEY

Installing PRINT TEMPLATE

Installing SORT TEMPLATE

Installing INPUT TEMPLATE

```



```
Installing HL LOGICAL LINK

Installing HL7 APPLICATION PARAMETER

Installing PROTOCOL
  Located in the ROR (CLINICAL CASE REGISTRIES) namespace.
  Located in the ROR (CLINICAL CASE REGISTRIES) namespace.

Installing REMOTE PROCEDURE

Installing OPTION

Installing PARAMETER DEFINITION
      Apr 12, 2002@13:47:10

Running Post-Install Routine: START^RORPOS01

  Updating the registry parameters...
  Parameters have been updated successfully.

  Updating the ROR PHARMACY CODE file...
  The file has been updated successfully.

Updating Routine file...

Updating KIDS files...

ROR 1.0 Installed.
      Apr 12, 2002@13:47:15

Install Message sent

Install Completed
```



Pre-install and post-install output can be a little different at some beta-test sites.

Implementation Steps

There are several pieces of information that must be obtained before the implementation of the package. The below is a list of the required information.

- Indicated Values for Positive Hepatitis C Lab Tests

Site-specific values for one or more of the Hepatitis C related screening lab tests used (denoted by LOINC codes) are entered into the ROR LAB SEARCH file (#798.9) during the second step of the installation. All possible positive result text strings are also entered along with these LOINC codes. Veterans that have lab data that contains both the LOINC code and the positive result will be entered into the registry.



This information can be gathered from a Laboratory Information Manager (LIM).

Below is an example of some of the Hepatitis C related LOINC codes used at the beta test sites.

<u>LOINC Code</u>	<u>Test Description</u>
5198	Anti-Hepatitis C Virus Ab--EIA
13955	Anti-Hepatitis C Virus Ab--EIA
22327	Anti-Hepatitis C Virus Ab--RIBA

The positive site-specific indicated value is the value that lab staff enters to the above tests when a positive result has been found (i.e., POS, REACTIVE). When collecting these values, please bear in mind that they will be entered into the database along with indicators (similar to indicators used in the EPI package) that will be applied to them. These indicators are:

Use Reference Range
Contains
Greater Than
Less Than
Equal To

The example below of values was taken from the alpha-test site.



Note that no indicated values were entered for Logical Observation Identifier Names and Codes (LOINC) codes 22327 or 5198, as Palo Alto does not use these codes. The codes used will vary from site to site.

<u>LOINC Code</u>	<u>Indicator</u>	<u>Indicated Value</u>
13955	Equal To	BORDERLINE
13955	Equal To	REACTIVE



The same LOINC code can have one or many positive indicated values. To enter more than one indicated values in FileMan enter the LOINC code surrounded by quotes i.e., "13955".

Hep C Local Coordinators

Hep C Local coordinators must be added to the COORDINATOR field (#798.114,.01) in the ROR REGISTRY PARAMETERS file (#798.1). All users (from the NEW PERSON file (#200)) added to this multiple receive alerts in the event of problems with the regular registry updates and data transmissions.

Step 2: Enter the Lab Search Parameters

1. Define the Lab search criterion in the ROR LAB SEARCH file (#798.9) using the [RORMNT MAIN] menu option.

Below is an example of entering a search indicator for the lab test that is mapped to the 13955 LOINC code:

```
CHY4D>D ^XUP

Setting up programmer environment
Terminal Type set to: C-VT320

Select OPTION NAME: RORMNT MAIN           Clinical Case Registries
Maintenance

      EAA      Edit 'Awaiting ACK' flag
      ELS      Edit Lab Search Criteria
      ERP      Edit Registry Parameters
      PLF      Print Log Files

Select Clinical Case Registries Maintenance Option: ELS  Edit Lab
Search Criteria
```

Select ROR LAB SEARCH NAME: **VA HEP C**

Select LOINC CODE: 22327//<RET>

INDICATOR: Ignore// <RET>

INDICATED VALUE: <RET>

Select LOINC CODE: ??

Choose from:

5198

13955

22327

You may enter a new LAB TEST, if you wish
Enter the numeric LOINC code (without the check
digit) of the Lab result to be searched for. If
you want to use only NLT code, enter zero as the
value of this field.

Select LOINC CODE: **13955**

INDICATOR: Ignore// **C** Contains

INDICATED VALUE: **REACT**

Select LOINC CODE: <RET>

STATUS: <RET>

Select ROR LAB SEARCH NAME: ^

2. Review the registry parameters and define a list of registry coordinators in the ROR REGISTRY PARAMETERS file (#798.1) using the [RORMNT MAIN] menu option:



At the time of installation, patient data is checked back to January 1, 1996.

```
EAA      Edit 'Awaiting ACK' flag
ELS      Edit Lab Search Criteria
ERP      Edit Registry Parameters
PLF      Print Log Files

Select Clinical Case Registries Maintenance Option: ERP  Edit
Registry Parameters

Select ROR REGISTRY PARAMETERS REGISTRY NAME: VA HEPC      Local HepC
Registry
REGISTRY UPDATED UNTIL: JAN 1,1996// <RET>
DATA EXTRACTED UNTIL: JAN 1,1996// <RET>
EXTRACT PERIOD FOR NEW PATIENT: 365// <RET>
ENABLE LOG: YES// <RET>
Select LOG EVENT TYPE: <RET>
REGISTRY STATUS: <RET>
Select COORDINATOR: SMIT, JOHN  SMIT, JOHN  swc   132   PHYSICIAN

Are you adding 'SMIT,JOHN' as a new COORDINATOR (the 1ST for this ROR
REGISTRY PARAMETERS)? No// Y (Yes)
Select COORDINATOR: <RET>
LAG DAYS: 2// <RET>
DAYS TO WAIT FOR ACK: 1// <RET>
ENABLE PROTOCOLS: YES// <RET>

Select ROR REGISTRY PARAMETERS REGISTRY NAME: ^
```

Peak Time Processing and Initial Registry Population

Some sites may not want to have several update jobs running during peak hours. Entering suspension start and stop times when using the ROR SETUP HEPC option, can alleviate this problem. During the hours in between the start and stop times, the update tasks will suspend their processing thus freeing up the processor.

The HepC Registry Setup option allows you to enter parameters of the registry set up process and schedule the task that will populate the Hepatitis C Case Registry

```
>D ^XUP

Setting up programmer environment
Terminal Type set to: C-VT320

Select OPTION NAME: ROR SETUP HEPC           HepC Registry Setup
HepC Registry Setup

Maximum number of registry update subtasks:  (0-10): 5// ?

During the initial registry population performed by the post-
install routine several registry update subtasks can be scheduled.
Enter a number between 0 and 10, 0 decimal digits.

Maximum number of registry update subtasks:  (0-10): 5// 3
Suspend the post-install during the peak hours? NO// ?

If you answer YES to this question, registry update subtasks that
populate the registry will be suspended during the peak weekday
hours to conserve the CPU resources.

The tasks will not be suspended on weekends and holidays. If the
initial registry update runs in the single-task mode, it will never
be suspended.

Two additional prompts will be displayed asking you to enter start
and end time of the suspension.
Enter either 'Y' or 'N'.

Suspend the post-install during the peak hours? NO// YES
Suspension start time:  7:00AM// ?

Registry update subtasks will be suspended after this time every
day except the weekends and holidays. However, they will be
checking for a stop request every hour during the suspension.
Enter time of the day (e.g., 8AM)

Suspension start time:  7:00AM// 8AM
Suspension end time:   6:00PM// ?
```

The registry update subtasks will be resumed at this time every day. The suspension end time must be later than the suspension start time.

Enter time of the day (e.g. 5PM)

Suspension end time: 6:00PM// **5:30PM**

Requested Start Time: NOW// **<RET>** (APR 12, 2002@13:59:54)

After the scheduled time, (no sooner than 3 minutes after) verify that the registry update task and several subtasks (if the site has more than 100,000 records in the PATIENT file (#2)) have started.

```

      Core Applications ...
      Device Management ...
FM    VA FileMan ...
      Manage Mailman ...
      Menu Management ...
      Programmer Options ...
      Operations Management ...
      Spool Management ...
      System Security ...
      Taskman Management ...
      User Management ...
HL7   HL7 Main Menu ...
NTSI  VHS&RA ADP Tracking System ...
      Application Utilities ...
      Capacity Management ...
```

Select Systems Manager Menu Option: **T**askman Management

```

      Schedule/Unschedule Options
      One-time Option Queue
      Taskman Management Utilities ...
      List Tasks
      Dequeue Tasks
      Requeue Tasks
      Delete Tasks
      Print Options that are Scheduled to run
      Cleanup Task List
      Print Options Recommended for Queueing
```

Select Taskman Management Option: **L**ist Tasks

All of one user's tasks.
One user's future tasks.
Every task.
List of tasks.
Unsuccessful tasks.
Future tasks.
Running tasks.

Select Type Of Listing: **RUN** Running tasks.

Running tasks...

41022: GO^XMKPLQ, MailMan: Background Filer (Mover). No device.
VAH,ROU. From 12/7/2001 at 4:59, By POSTMASTER. Started
running 12/7/2001 at 4:59. Job #: 553648722 PID #: 21000252

41023: GO^XMTDT, MailMan: Background Filer (Tickler). No device.
VAH,ROU. From 12/7/2001 at 4:59, By POSTMASTER. Started
running 12/7/2001 at 4:59. Job #: 553648720 PID #: 21000250

41165: **EN^XPDIJ, KIDS install.** Device NULL. VAH,ROU.
From Today at 9:31, By you. Started running Today at 9:31.
Job #: 551551811 PID #: 20E00343

41166: **SUBTASK^RORUPD05, Registry Update Subtask (1-93149).** No device.
VAH,ROU. From Today at 9:31, By you. Started running Today
at 9:31. Job #: 551552029 PID #: 20E0041D

41167: **SUBTASK^RORUPD05, Registry Update Subtask (93149-186297).**
No device. VAH,ROU. From Today at 9:31, By you. Started
running Today at 9:31. Job #: 551551807 PID #: 20E0033F

41168: **SUBTASK^RORUPD05, Registry Update Subtask (186297-).** No device.
VAH,ROU. From Today at 9:31, By you. Started running Today
at 9:31. Job #: 551552019 PID #: 20E00413

VA Alerts

You will receive VA alerts after successful completion of the Local Patient Registry update process.

The system produces the following VA Alerts:

If a patient has not passed any selection rules is manually added to the registry the user that added them is sent the following alert.

Please ensure that you add the appropriate ICD-9 code to the Problem List for: Patient Name Last four: xxxx

If a patient has passed selection rules is inactivated from the registry the following alert is sent to the local coordinator that performed the inactivation.

Patient Name xxxx has an ICD-9 code or hepatitis serology test result consistent with hepatitis C infection but has been inactivated from the Hepatitis C Case Registry. Please make sure that the patient has the correct diagnosis in the medical record.

If a patient has passed no selection rules are reactivated (within the GUI system) the following alert is sent to the local coordinator that performed the reactivation.

Please ensure that you add the appropriate ICD-9 code to the Problem List for: Patient Name Last four: xxxx

Stopping the Local Patient Registry Update Process

It is possible to stop the registry update subtasks within the Toolbox option. All tasks will be terminated when any one task is stopped. Tasks complete the patient they are currently processing before stopping so it can take a few minutes to see that these tasks have been removed from TaskMan, allow five minutes before checking TaskMan. When the update is re-started, the patients already processed during the previous stopped tasks (whether they were added to the registry or not) are skipped but only if working in multitask mode.

Step 3: Review the Results

- You will receive an alert after successful completion of the registry update.
- Review the content of the package entry in the INSTALL file (#9.7) and error logs in the ROR LOG file (#798.7). You can use Print Log Files option of the [RORMNT MAIN], Clinical Case Registries Maintenance menu to print the error logs.

Step 4: Host File System Directory for Historical Data Files

Historical data extraction tasks create files containing historical data for the patients added to the Hepatitis C registry during the initial registry population. The host file system directory for these files must be created and defined in the ROR REGISTRY PARAMETERS file (#798.1) before the Historical Data Extraction is run. The method for creating this directory will vary depending on environment, i.e., VMS or Windows NT. Please, see Step 5 for an example.

Step 5: The Historical Backfill Process

The Historic Backfill Process gathers historic data for each patient. This process runs independently of daily updates and extracts. Where as the daily jobs run automatically, this job requires the intervention of an IRM person, a basic user interface assists you with the back load process. The back load job creates flat files that you can FTP (in binary mode) to a pre-defined area at the AAC. The job extracts data patient by patient and writes it to a flat file in HL7 format.

Any data errors found will be reported on a log file, the job will continue onto the next patient on the registry to get the historical data. You can check the status of the run using the user interface. The user interface shows when the job is completed and indicates if any data errors found. You can view the log file for any errors found. The log provides enough information for the IRM to fix the errors. After errors are fixed, the job can be re-run via the interface.

This second run goes through all patients having errors during the first run. This second run automatically creates a second file. This process continues until the interface indicates that all patients are processed. You can transmit all files created by this process to the AAC after all patients have data extracted successfully. (See Appendix A)

1. Create a directory in the host file system for historical data files.



Do not forget to enable appropriate access to this directory for M (MUMPS) tasks.

Below are example within the VMS and Windows NTsystems.

Example: VMS

```
CREATE/DIR/OWNER=VISTA/PROT=(WORLD:RW) IRMS$:[RORHDT]
```

Example: Windows NT/GUI

- Double-click on the "My Computer" icon on the desktop;
- Choose a drive;
- Right click on the drive icon and select the "Properties" item from the pop-up menu;
- Make sure that the drive has enough free space (about 500Mb);
- Click on the "Cancel" button to close the "Properties" window;
- Double-click on the drive icon;
- Select the "File" option from the main menu;
- Select the "New" option from the menu;
- Select the "Folder" option from the submenu;
- Type "RORHDT" (without double quotes) over the "New Folder" name;
- Press Enter;
- Close the window.

Example: Windows NT/Command Prompt

- Click the **Start** button;
- Select the Programs option form the menu;
- Select the "Command Prompt" from the submenu;
- Most probably, the current drive will be C: and you will see the "C:\>" prompt;
- If you want to create the directory on the drive other than current, type the letter of the drive followed by the colon character and press **Enter**;
- Enter the "DIR" command to make sure that the drive has enough free space (about 500Mb). Look for the "nnnnn bytes free" message in the end of output;
- Type the "MKDIR" command followed by space and the name of directory "\RORHDT" and press **Enter**;
- Issue the "DIR \RORHDT" command to make sure that the directory has been created;
- Type **EXIT** and press Enter to close the window.

```

C:\>D:

D:\>DIR
Volume in drive D is DATA
Volume Serial Number is 924D-6524

Directory of D:\

12/18/2001  10:48a      <DIR>          CacheSys
02/22/2002  03:36p      <DIR>          DataBase
11/26/2001  10:55a      <DIR>          Documents and Settings
01/30/2002  11:28a      <DIR>          GS
02/06/2002  10:44a      <DIR>          ICR
01/18/2002  11:15a      <DIR>          Info
08/30/2001  01:32p      <DIR>          Java
08/30/2001  01:33p      <DIR>          Models
04/26/2002  07:33a      <DIR>          Patches
05/06/2002  02:49p      <DIR>          Projects
03/25/2002  01:58p      <DIR>          SHARE
08/30/2001  01:37p      <DIR>          Tomcat
02/28/2002  02:57p                64,719 Tree.Far
08/30/2001  01:37p      <DIR>          VISTA
                1 File(s)                64,719 bytes
                13 Dir(s)  16,823,896,064 bytes free

D:\>MKDIR \RORHDT

D:\>DIR \RORHDT
Volume in drive D is DATA
Volume Serial Number is 924D-6524

Directory of D:\RORHDT

05/08/2002  09:32a      <DIR>          .
05/08/2002  09:32a      <DIR>          ..
                0 File(s)                0 bytes
                2 Dir(s)  16,823,896,064 bytes free

D:\>EXIT

```

2. Using the [RORHDT MAIN], Historical Data Extraction option define parameters of the historical data extraction using the ER – Edit Registry Descriptor, ET – Edit Task Descriptor and CT – Create Extraction Tasks options (see Appendix A).
3. Schedule the historical data extraction tasks to run during the off peak hours using the ST – Start a Task option (see Appendix A).



It is possible to run these tasks at the same time if desired.

4. Review the log files for possible problems during the historical data extraction using the DL – Display Log option (see Appendix A).

Step 6: Set up the HL7 Link

Review the parameters of the package HL7 logical link and start it up. The ROR SEND link is exported with the KIDS build. The Clinical Case Registries package sends the batch HL7 messages to AAC using this link.

Go to the Filer and Link Management Options menu and start the link:

```
>D ^XUP

Setting up programmer environment
Terminal Type set to: C-VT320

Select OPTION NAME: EVE
    1  EVE          Systems Manager Menu
    2  EVENT CAPTURE (ECS) EXTRACT AU  ECX ECS SOURCE AUDIT      Event
Capture
(ECS) Extract Audit
    3  EVENT CAPTURE DATA ENTRY  ECENTER      Event Capture Data Entry
    4  EVENT CAPTURE EXTRACT  ECXEC      Event Capture Extract
    5  EVENT CAPTURE MANAGEMENT MENU  ECMGR      Event Capture
Management Menu
Press <RETURN> to see more, '^' to exit this list, OR
CHOOSE 1-5: 1  EVE          Systems Manager Menu

    FM      Core Applications ...
           Device Management ...
           VA FileMan ...
           Manage Mailman ...
           Menu Management ...
           Programmer Options ...
           Operations Management ...
           Spool Management ...
           System Security ...
           Taskman Management ...
           User Management ...
    PG      Programmer mode
           Application Utilities ...
           Capacity Management ...
           HL7 Main Menu ...

Select Systems Manager Menu Option: HL7 Main Menu
```

```
Systems Link Monitor
Filer and Link Management Options ...
Message Management Options ...
Interface Developer Options ...
Site Parameter Edit
```

Select HL7 Main Menu Option: **FILer** and Link Management Options

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

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

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

Select HL LOGICAL LINK NODE: **ROR SEND**

The LLP was last shutdown on JAN 17, 2002 11:18:11.
This LLP has been enabled!

It would be a good idea to start the link monitor and make sure that the link started:

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

Select Filer and Link Management Options Option: **SM** Systems Link Monitor

Enter the 'A' command to display all links and move to the page displaying our links using the 'N' command:

SYSTEM LINK MONITOR for HINES ISC (P System)						
NODE	MESSAGES RECEIVED	MESSAGES PROCESSED	MESSAGES TO SEND	MESSAGES SENT	DEVICE TYPE	STATE
PSD X3.2					N	Halting
PSO LLP1					N	Halting
RA-MED	0	0	675	0	PC	Open
RA-PSCRI	2	2	1569	2	PC	Halting
RA-TALK	38	38	1617	38	PC	Open
RAD HLLP	0	0	0	0	SH	OPENFAIL
ROR SEND					NC	Enabled
SPN			32	32	MM	IDLE
SR AAIS					N	Shutdown
Incoming filers running => 1				TaskMan running		
Outgoing filers running => 1				Link Manager running		
Select a Command:						
(N)EXT (B)ACKUP (A)LL LINKS (S)CREENED (V)IEWS (Q)UIT (?) HELP:						

Close the link monitor using the 'Q' command.

Step 7: Schedule the [ROR TASK], Registry Update & Data Extraction Option for Regular Nightly Run:

The [ROR TASK] menu option must be scheduled for nightly execution (using TaskMan) **after successful completion of the initial registry population** by the registry setup task. The option performs the following:

- Extracts registry names from the task parameters;
- Clears expired Awaiting Acknowledgement flags for the registries from the list;
- Excludes inactive registries and registries that have data sent to the AAC but have no acknowledgements from the list;
- Runs the registry update process for the remaining registries;
- Starts an individual data extraction task (TASK^ROREXT) for each updated registry;
- Purges the logs older than 31 day from the ROR LOG file;
- Purges the old event references from the ROR PENDING PATIENT file.

If task is terminated by a user request or because of errors during the executions, an alert is sent to the users defined as the registry coordinators (the COORDINATOR multiple of the REGISTRY PARAMETERS file) of all registries being updated.

Below is the list of the task parameters:

ZTQPARAM	String that contains a list of registry names separated by commas (required).
RORFLCLR, RORFLSET	<p>These two variables override values of the flags that control the processing. Add the flags to the RORFLCLR variable to clear them and to the RORFLSET variable to set them. Below are the possible values of the flags (can be combined):</p> <p>"E" Use the event references (file #798.3)</p> <p>If these variables are not defined (default) or they are equal to empty strings, the default flags (automatically set by the software) will be in effect.</p>
RORMNTSK	<p>Maximum number of the registry update subtasks. If this variable is less than 2, all patients will be processed by the single main task. Otherwise, all patients can be distributed among several subtasks.</p> <p>If "<i>n-m-AUTO</i>" is assigned to this variable and the difference between the end and start dates of the registry update is more than <i>m</i> days then <i>n</i> subtasks will be started. Otherwise, the single task will run.</p> <p>If this variable is not defined (default) or it is equal to an empty string, the default "2-3-AUTO" value will be used. This means that if the registries are not updated for more than 3 days then 2 subtasks will be started.</p>

RORSUSP

Suspension parameters of the registry update subtasks. The variable should contain start and end times of the suspension (in external format) separated by the "-". For example, the "7:00-18:00" value will suspend the subtasks from 7am until 6pm each day except weekends and holidays.

If this variable is not defined (default) or it is equal to an empty string then the subtasks will not be suspended.

You must define the list of registry names (ZTQPARAM) as a value of the TASK PARAMETERS field during scheduling the option.

Edit Option Schedule			
Option Name: ROR TASK		TASK ID:	
Menu Text: Registry Update & Data Extractio			
<hr/>			
QUEUED TO RUN AT WHAT TIME: APR 25,2002@01:00			
DEVICE FOR QUEUED JOB OUTPUT:			
QUEUED TO RUN ON VOLUME SET:			
RESCHEDULING FREQUENCY: 1D			
TASK PARAMETERS: VA HEPC			
SPECIAL QUEUEING:			
<hr/>			
Exit	Save	Next Page	Refresh
Enter a command or '^' followed by a caption to jump to a specific field.			
COMMAND:		Press <PF1>H for help	Insert

All other parameters are optional and can be defined on the second page of the scheduling form (as the pairs of variable names and values). **Please, note that string values must be enclosed in double quotes.**

Edit Option Schedule

Option Name: ROR TASK

VARIABLE NAME: RORFLCLR

VARIABLE NAME: RORMNTSK

VARIABLE NAME: RORSUSP

VARIABLE NAME:

VARIABLE NAME:

VALUE: "E"

VALUE: 3

VALUE: "6:00-19:00"

VALUE:

VALUE:

Exit

Save

Refresh

Enter a command or '^' followed by a caption to jump to a specific field.

COMMAND:

Press <PF1>H for help

Insert

Step 8: Data Transmission to AAC

You will create daily data transmissions using VistA HL7 software via TCP/IP communication interface to a specified queue at the Austin Automation Center (AAC).

Each Facility Director must have forwarded the name and contact information for each Hepatitis C Registry Coordinator and IRM Contact to the Implementation Manager via Outlook. Those Facility IRM contacts must, in turn, submit appropriate info (name, SSN, phone number, facility number, mail stop, job title, employer, office address, IP address of sending station) to AAC to allow transmission of historical data to the AAC. ACC will provide the Username and Password to the Facility coordinator or contact upon submission of the appropriate information.

You can transfer historical data to the AAC via FTP. The historic data files can be transferred to Austin using the Windows FTP client or if the sending system is connected to the VA network the transfer can also be performed as follows:



If you are using FTP to send your historical files to AAC you must use binary mode.

- FTP <sysname>
- User: <username>
- Password: <usrpassword>
- FTP> bin
- FTP> put <filenm>
- FTP> quit

Where:

- FTP <sysname> is the command entered at the system command line prompt. <sysname> is the name of the system at the AAC. For FTP transfer, the AAC system name will be vaaachep0.aac.va.gov.

Example: FTP> vaaachep0.aac.va.gov

- Once the FTP command is entered you will be prompted by: User:
You enter your AAC assigned login ID here.

Example: User: T324JB1

- You are prompted for your AAC assigned password: Password:
Type in your password.

Example: Password: 123456 (you will not see the password being entered)

- If you have logged in properly you will receive a prompt as follows: FTP>
Type the command bin
This will instruct FTP to perform the data transfer in binary mode.

Example: FTP> bin

- Enter the put <filenm> command for the file you wish to transfer to the AAC. <filenm> is the full path to the file you wish to transfer or if you initiated FTP from the directory that contains the file you may just use just the filename.

Example:

VMS: FTP> put IRMS\$:[RORHDT]S612T03.HDT

Windows NT: FTP> put D:\RORHDT\S640T01.HDT

- There will be a delay and an indication that the transfer was complete. Transfer all remaining files (if any) similarly. Next enter the quit command - you are done.

Example: FTP> quit

Step 9: Set up the Graphic User Interface (GUI) for the Hepatitis C Registry

After the VistA Hepatitis C Registry KIDS build has been installed and the initial registry population is complete, the following instructions **must** be applied for the Hepatitis C GUI software to function as designed.

The local coordinator installing Hepatitis C Registry GUI on a Window NT or Windows 2000 environment **must** have Administrator privileges on their PC Workstation.



The Hepatitis C GUI software application **must** be installed on a mouse-driven PC Workstation.

Steps for setting up Hepatitis C Registry GUI

1. Assign [ROR GUI MENU] as a secondary menu item to everyone who will be using the GUI.
2. Make sure the VistA servers are listed in the HOSTS file. If necessary, modify the HOSTS file of each client (PC) to set the appropriate mappings between names and IP addresses. The HOSTS file is located as follows:

Version of Windows OS	File (Location and Name)
Windows 95	C:\WINDOWS\HOSTS
Windows NT 3.51	C:\WINDOWS\SYSTEM32\DRIVERS\ETC\HOSTS
Windows NT 4.0, Windows 2000	C:\WINNT\SYSTEM32\DRIVERS\ETC\HOSTS

Example of a Windows 95 HOSTS file

```
# Copyright (c) 1994 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Chicago
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#      102.54.94.97      rhino.acme.com      # source server
#      38.25.63.10      x.acme.com         # x client host
#
#
```

- a. Move the cursor to the end of the last line displayed in the file.
- b. Press the <Enter> key to create a new line.
- c. On the new line, enter the desired IP address beginning in the first column, as described in the example above. As recommended, add an appropriate IP address for the DHCPSEVER host name as the next entry below 127.0.0.1.

After typing the IP address, type at least one space, and enter the host name that corresponds to that IP address. As recommended, type in DHCPSEVER as the next entry below "loopback."

For example, the entry for a server at your site with an IP address of 192.1.1.1 would look like this:

127.0.0.1	localhost	# loopback	<---existing entry
192.1.1.1	DHCPSEVER	# HepC	<---added entry

- d. Repeat steps a - c until you have entered all of the IP addresses and corresponding host names you wish to enter.
- e. When your entries are complete, use Notepad's **File | Save** command to save the HOSTS file.



Do not save the HOSTS file with an extension; delete the .sam!

- f. Close the HOSTS file.



The HOSTS file location on NT 4.0 Client is different from on WIN95. The Hepatitis C executable attempts — using RPC Broker — to log in to the default VistA server when Hepatitis C executes. RPC Broker cannot find the HOSTS file, so it uses the default.

For more information, see the *RPC Broker V.1.1 Systems Manual*.

3. Open the ROR1_0GUI.ZIP file that contains the SETUP.EXE, and ROR1_0IG.PDF, ROR1_0UM.PDF, and ROR1_0TM.PDF files.
4. Copy the file setup.exe, Hepc.cnt, and Hepc.hlp to the workstations or put the files in a shared directory on the network. (See Auto-Update instructions on the next page.)
5. Run SETUP.EXE by clicking **Start | Run | SETUP.EXE**. Accept the default directory you are offered. SETUP.EXE will install the Hepatitis C Registry GUI by simply clicking the NEXT button on each screen presented during the installation process

6. Ensure that all Hepatitis C users have the [ROR GUI MENU] option added to the secondary menu multiple of their New Person file (#200) entry.

7. Ensure Hepatitis C users are allocated the correct user security keys.

ROR VA HEPC ADMIN – This key will allow access to the complete GUI system

ROR VA HEPC USER – This key will allow access to just the reports and the activity log.

8. Start the Hepatitis C software application by double-clicking on the Hepatitis C Registry Desktop shortcut icon you just created.



You will be prompted to logon to **“YOUR SITE.”**

Appendix A - Historical Data Extraction

Historical data extraction gathers historical data for each patient. This process runs independently of daily updates and extracts. Where as the daily jobs run automatically, this job requires the intervention of an IRM; a basic user interface assists with the historical data extraction.

Data extraction tasks create text files that you should FTP to a pre-defined area at the AAC. The tasks extract data patient by patient from the Hepatitis C Registry and writes it to a file in HL7 format.

The following is the operational sequence the Historical Data Extract.

<u>Option</u>	<u>Operation</u>
Edit Registry Descriptor	Enter output directory.
Create Extraction Tasks	Split up Historic Data Extraction over a number of tasks
Start a Task	Put tasks on TaskMan Queue or start running 'Now'.
Stop a Task	Stop a task from running in the background.
Display Extraction Status	Displays the status of a selected task.
Display Log	Displays a log of extraction task events and error information.

Opening Screen

Upon selection of the option, the following screen is displayed. This is the top-level menu of the historical data extraction subsystem.

```
Select OPTION NAME:      RORHDT MAIN      Historical Data Extraction

DS      Display Extraction Status
ED      Edit ...
ST      Start a Task
TT      Stop a Task
DL      Display Task Log

Select Historical Data Extraction Option:
```

The following are brief descriptions of the menu options.

DS – Display Extraction Status

The historical data extraction can be split up into subtasks or be set up as one (large) task; the DS option displays the status of these tasks.

ED – Edit...

This option offers three more edit options when selected.

CT – Create Extraction Tasks

This option displays how many patients are on the local registry and then prompts the user to select how many historical data extraction tasks they want to split these patients among.

It is suggested that a large amount of patients be split over several tasks to allow for a task to be run to completion each night while system resources are available.

ER – Edit Registry Descriptor

This option allows you to edit parameters of historical data extraction (the values within the ROR REGISTRY PARAMETERS file (#798.1)).

ET – Edit Task Descriptor

This option allows you to edit parameters of data extraction tasks created by the Create Extraction Tasks option (the values within the ROR HDT TASK file (#798.5)).

ST – Start a Task

This option can be used to start/restart a task immediately or schedule/reschedule it.

TT – Stop a Task

This option allows you to stop (running) and de-queue (scheduled) task. The task can be restarted later. In that case, it will try to re-extract data that was not extracted during the previous runs due to errors. Then it will continue the extraction from the first unprocessed record from the group of patients defined for the task.

DL – Display Task Log

This option lets users see a log of a task. Any errors would be logged here. Fix the errors and restart the task.

Registry and Task Selection

All options use the same mechanism of registry and task selection. If more than one registry is defined, users will be prompted with a registry selection prompt. Otherwise, the only registry is selected automatically.



The Hepatitis C registry is called 'VA HEPC'.

The same is true for data extraction tasks. If there is more than one data extraction task defined for the registry, a prompt is displayed. Otherwise, the application selects the only task automatically.

Edit – Edit Registry Descriptor

Below is a screen capture of the Edit Registry Descriptor option that exists within the Edit option from the initial menu screen.



This option allows users to edit details entered within the ROR REGISTRY PARAMETERS file (#798.1). IRM should predominately use this option to enter the output directory, it is not encouraged to edit any of the other fields as they will either be automatically populated during the install of the KIDS build or via the other options.

```
CT      Create Extraction Tasks
ER      Edit Registry Descriptor
ET      Edit Task Descriptor

Select Edit Option: ER  Edit Registry Descriptor

Select ROR REGISTRY PARAMETERS REGISTRY NAME:      VA HEPC
Output Directory: SY$USER:[OUTPUT]
Start Date: JAN 1,1998// <RET>
End Date: AUG 8,2001// <RET>
```

After selecting this option, users will be prompted for which registry they want to process. The processing then allows editing the output directory. This is the directory where the data extraction tasks will write files of extracted data. IRM must define this field prior to running any historical data extraction tasks.

The next prompt is the start date, this is the date from which the extraction will start looking for patient data (included). The start date is populated in the ROR REGISTRY PARAMETERS file on installation.

Next, the system prompts for the end date (generated by the install process), this represents the date the historical extract will stop looking for patient data. The end date will also be automatically populated during the installation of this system.

Edit – Edit Task Descriptor

Below is a screen capture of the Edit Task Descriptor option that exists within the Edit option from the initial menu screen.



This option allows you to edit details entered within the ROR HDT TASK file (#798.5). IRM should use this option only in the troubleshooting process. It is not encouraged to edit any fields as they are automatically populated by either the other options or the data extraction tasks.

```
CT      Create Extraction Tasks
ER      Edit Registry Descriptor
ET      Edit Task Descriptor

Select Edit Option: ET  Edit Task Descriptor

Select ROR HDT TASK START RECORD IEN: 1
Output File Name: S499T01.HDT// <RET>
Next Record to Process: <RET>

Select ROR HDT TASK START RECORD IEN: ^
```

The Output File Name prompt allows editing of the file name that the historical extract task will write data to. This file name is uniquely generated by the Create Extraction Tasks option using station number and a sequential task number.

The Next Record to Process prompt represents the IEN within the Hepatitis C registry where the extraction task will begin processing. This value is automatically updated by the corresponding data extraction task.

Edit - Create Extraction Tasks

Below is a screen capture of the Create Extraction Tasks option that exists within the Edit option from the initial menu screen.

```
Select ROR REGISTRY PARAMETERS REGISTRY NAME:

    CT      Create Extraction Tasks
    ER      Edit Registry Descriptor
    ET      Edit Task Descriptor

Select Edit Option: CT Create Extraction Tasks
Select a Registry: VA HEPC// <RET> Local HepC Registry

Registry: VA HEPC
=====
Start Date: JAN 01, 1998                      End Date: AUG 08, 2001
Output Directory: SYS$USER:[OUTPUT]

                No tasks have been defined

Number of patients in the registry: 2080

Number of data extraction tasks: (1-12): 1// 4

Create the new task table? NO// Y YES
New task table has been created.

    CT      Create Extraction Tasks
    ER      Edit Registry Descriptor
    ET      Edit Task Descriptor

Select Edit Option:
```

After selecting this option, users will be prompted for which registry they want to process. After that, the current extraction status information is displayed.

In the above example, the message 'No tasks have been defined' prompt is displayed, as this option has not been run before for the registry and no tasks are defined. The processing then continues to display the number of patients in the local registry, in this example 2080. The user is then prompted to select the number of extraction tasks required; in the example, four were chosen. This means that each extraction task will process approximately 520 patients from the local registry (520 patient x 4 extraction tasks = All patients in the Hepatitis C local registry). Responding 'Yes' to the 'Create Task Table' prompt will file these details into the ROR HDT TASK file (#798.5).

After extraction tasks have been set up for a registry, (above) it is possible to recreate them again by selecting the same Create Extraction Tasks option (see example below). After the registry is selected, the tasks are displayed. In this example, there are four tasks displayed.

The user will then be prompted with the following prompt - 'Overwrite the existing task table?'. If 'No' is entered this option will be exited with no changes made to the extraction tasks. If the user enters 'Yes' (as in the below example) the number of patients in the registry will be displayed. The user will then be prompted to enter the number of data extraction tasks between one and twelve.

After the number of tasks the following prompt will be displayed - 'Create the new task table?'. If the user enters 'No' at this prompt no changes will be saved to file, if the user enters 'Yes' the changes will be saved to file and the message 'New task table has been created.' will be displayed.

```

CT      Create Extraction Tasks
ER      Edit Registry Descriptor
ET      Edit Task Descriptor

Select Edit Option: CT Create Extraction Tasks
Select a Registry: VA HEPC// <RET> Local HepC Registry

Registry: VA HEPC
=====
Start Date: JAN 01, 1998                End Date: AUG 08, 2001
Output Directory: SYS$USER:[OUTPUT]

      StartIEN  File Name                Task      Status
      -----
          1  S499T01.HDT
        520  S499T02.HDT
       1040  S499T03.HDT
       1560  S499T04.HDT

Overwrite the existing task table? NO// Y YES

Number of patients in the registry: 2080

Number of data extraction tasks: (1-12): 1// 4
Create the new task table? NO// Y YES
New task table has been created.

CT      Create Extraction Tasks
ER      Edit registry descriptor
ET      Edit Task Descriptor

Select Edit Option: ^

```

Start a Task

After selecting the Start a Task option, you will be requested to select a registry if more than one exists at the site. The start and end dates of the historical data extract will then be displayed along with the output directory. The tasks that were created with the Create Extraction Tasks option will be displayed. The user can then select a task using a value from the "Start IEN" column and enter a date and time that he wants the extraction task to run.



It is possible to start one or more tasks at the same time.

This option can be re-entered (as in the example) – the extraction task that was previously scheduled is now marked as "Active: Pending". It is possible to re-schedule a task and enter a new date and time (see example).

```
DS      Display Extraction Status
ED      Edit ...
ST      Start a Task
TT      Stop a Task
DL      Display Task Log

Select Historical Data Extraction Option: ST Start a Task
Select a Registry: VA HEPC           Local HepC Registry

Registry: VA HEPC
=====
Start Date: JAN 01, 1998                End Date: AUG 08, 2001
Output Directory: SYS$USER:[OUTPUT]

  StartIEN  File Name                Task      Status
  -----
        1   S499T01.HDT
       520   S499T02.HDT
      1040   S499T03.HDT
      1560   S499T04.HDT

Select a Task: 1           S499T01.HDT      S499T01.HDT
Requested Start Time: NOW//T@2330  (SEP 26, 2001@23:30:00)

DS      Display Extraction Status
ED      Edit ...
ST      Start a Task
TT      Stop a Task
DL      Display Task Log
```



```

Select Historical Data Extraction Option: ST Start a Task
Select a Registry: VA HEPC// <RET> Local HepC Registry

Registry: VA HEPC
=====

Start Date: JAN 01, 1998 End Date: AUG 08, 2001
Output Directory: SYS$USER:[OUTPUT]

      StartIEN File Name                Task      Status
      1 S499T01.HDT                    304496    Active: Pending
      520 S499T02.HDT
      1040 S499T03.HDT
      1560 S499T04.HDT

Select a Task: 1// 1 S499T01.HDT S499T01.HDT

The task is pending. Do you want to rescheduled it? NO// Y YES

Requested Start Time: NOW//T@2030 (SEP 26, 2001@20:30:00)

DS      Display Extraction Status
ED      Edit ...
ST      Start a Task
TT      Stop a Task
DL      Display task log

```

Stop a Task

When you select the Stop Task option, the Select a Registry prompt appears if more than one registry exists. In the example below the task that was set to start in the previous example is selected.

The system displays the "De-queue the task?" prompt (if the task is already running, the 'Stop the task?' prompt is displayed instead). If 'No' is entered, no changes are made to the selected extraction task. If 'Yes' is selected the task is de-queued (or stopped). In the example, the option is re-selected and the task displays a status of "Inactive: Interrupted".

```
Select Historical Data Extraction Option:  Stop a Task
Select a Registry: VA HEPC//  <RET>      Local HepC Registry

Registry: VA HEPC
=====
Start Date: JAN 01, 1998                End Date: AUG 08, 2001
Output Directory: SYS$USER:[OUTPUT]

      StartIEN  File Name                Task      Status
          1  S499T01.HDT                304496    Active: Pending
         520  S499T02.HDT
        1040  S499T03.HDT
        1560  S499T04.HDT

Select a Task: 1//  1  S499T01.HDT      S499T01.HDT

Dequeue the task #1? NO//  Y  YES

      DS      Display Extraction Status
      ED      Edit ...
      ST      Start a Task
      TT      Stop a Task
      DL      Display Task Log

Select Historical Data Extraction Option:  Stop a Task
Select a Registry: VA HEPC//  <RET>      Local HepC Registry

Registry: VA HEPC
=====
Start Date: JAN 01, 1998                End Date: AUG 08, 2001
Output Directory: SYS$USER:[OUTPUT]

      StartIEN  File Name                Task      Status
          1  S499T01.HDT                304499    Inactive: Interrupted
         520  S499T02.HDT
        1040  S499T03.HDT
        1560  S499T04.HDT

Select a Task: 1//  ^
```

Display Extraction Status

This option displays the extraction status of a selected registry. The historical data extraction start and end dates, the output directory name, and task table are displayed.

For each task in the table the following information is displayed:

Start IEN: IEN within the local registry from which the extract will start. The historical extract processes from this IEN up until the IEN of the next extraction task.

File name : a unique name based on site name and sequential number of the task. This file will contain the extracted results when the task has run; it will reside in the designated output directory.

Task: task number assigned by the VA Kernel system for the extraction task.

Status: indicates the status of the extraction task.

The eight status options are:

Status	Meaning
Active: Pending	The task has been scheduled but is not currently running
Active: Running	Task is currently running
Inactive: Finished	Task has finished with errors – See log, fix error and re-start
Inactive: Available	Task was created without being scheduled or was edited without being rescheduled
Inactive: Interrupted	Task was interrupted, needs to be re-started
Inactive: Crashed	Task has stopped running due to a crash.
Completed	Task has completed without any error s
Completed with errors	Task has completed but some patient data was not processed completely due to the errors

In the example below, the task is displayed as "Active: Pending," the number in the task column (304496) has been assigned by the TaskMan.

```
DS      Display Extraction Status
ED      Edit ...
ST      Start a Task
TT      Stop a Task
DL      Display task log

Select Historical Data Extraction Option: DS Display Extraction Status
Select a Registry: VA HEPC// <RET> Local HepC Registry

Registry: VA HEPC
=====
Start Date: JAN 01, 1998                      End Date: AUG 08, 2001
Output Directory: SYS$USER:[OUTPUT]

  StartIEN  File Name                                Task      Status
        1  S499T01.HDT                                304496    Active: Pending
       520  S499T02.HDT
      1040  S499T03.HDT
      1560  S499T04.HDT
```

Display Task Log

If more than one registry is defined, users will be prompted to select which registry they wish to display. If more than one task is defined for the registry, they will be displayed and the user will be required to select from the list. If only one task exists, it will be selected automatically. In the example below the Hepatitis C registry (called VA HEPC) is the only registry with four extraction tasks.

The four tasks are displayed with a status of complete. The task numbers are now no longer present as the tasks are complete. The date that the historical extraction started looking for data and ended looking for data and the output directory are also displayed.

In the example below, task #1 is selected. The display shows the date and time that the historical extraction was started and when it finished. The display also shows how many patients were processed, the amount of errors that were encountered, the time (in seconds) that the task took to complete and the average processing rate (patients per second). In the below example the option is re-selected and the second task is selected.

If one or more patients had data that was either erroneous or that caused a database error a warning of "Completed with errors" will be displayed. In this instance select the task, view the log, and make a note of the patients and the error. These errors then need to be fixed in VistA. After the errors are fixed, the task needs to be re-started. This will create a new file containing only the patients with errors.

```
DS      Display Extraction Status
ED      Edit ...
ST      Start a Task
TT      Stop a Task
DL      Display Task Log

Select Historical Data Extraction Option: DL  Display Task Log

Registry: VA HEPC
=====
Start Date: JAN 01, 1998                End Date: SEP 27, 2001
Output Directory: SYS$USER:[OUTPUT]

      StartIEN  File Name                Task      Status
      -----
           1  S499T01.HDT                Completed
          520  S499T02.HDT                Completed
         1040  S499T03.HDT                Completed
         1560  S499T04.HDT                Completed

Select a Task: 2// 1      S499T01.HDT      S499T01.HDT
```

DEVICE: TELNET Right Margin: 80// <RET>

TASK LOG FILE SEP 27,2001 13:25 PAGE 1
DATE/TIME TYPE PATIENT
MESSAGE
ADDITIONAL INFO

SEP 27,2001 13:24 Information
HISTORICAL DATA EXTRACTION STARTED
VA HEPC

SEP 27,2001 13:49 Information
HISTORICAL DATA EXTRACTION FINISHED
Patients: 1019
Errors: 0
Time (sec): 1471
Patients/sec: 0.692

DS Display Extraction Status
ED Edit ...
ST Start a Task
TT Stop a Task
DL Display Task Log

Select Historical Data Extraction Option: **DL** Display Task Log

Registry: VA HEPC

=====

Start Date: JAN 01, 1998

End Date: SEP 27, 2001

Output Directory: SYS\$USER:[HICK]

StartIEN	File Name	Task	Status
1	S499T01.HDT	Completed	
520	S499T02.HDT	Completed	
1040	S499T03.HDT	Completed	
1560	S499T04.HDT	Completed	

Select a Task: 1// **520** S499T02.HDT S499T02.HDT

DEVICE: TELNET Right Margin: 80// <RET>

TASK LOG FILE SEP 27,2001 13:25 PAGE 1
DATE/TIME TYPE PATIENT
MESSAGE
ADDITIONAL INFO

```
SEP 27,2001 13:20      Information
  HISTORICAL DATA EXTRACTION STARTED
  VA HEP C
SEP 27,2001 13:44      Information
  HISTORICAL DATA EXTRACTION FINISHED
  Patients:      1020
  Errors:        0
  Time (sec):    9
  Patients/sec:  0.66
```

```
DS      Display Extraction Status
ED      Edit ...
ST      Start a Task
TT      Stop a Task
DL      Display Task Log
```

```
Select Historical Data Extraction Option: ^
```

Appendix B – LOINC Codes

This table has test descriptions with sample LOINC codes.

Test Description	Sample	LOINC	Codes			
Anti-Hepatitis C Virus Ab--EIA	13955-0					
Anti-Hepatitis C Virus Ab--EIA	5198-7					
Anti-Hepatitis C Virus Ab--RIBA	5199-5	22327-1				
HCV RNA Qualitative--RT-PCR	5010-4	11259-9				
HCV RNA Quantitative--RT-PCR	5010-4	11011-4	29615-2			
HCV RNA Quantitative--bDNA	10676-5	6422-0				
HCV Serotype--EIA	13955-0					
Alkaline Phosphatase	6768-6	12805-8				
AST	1920-8					
ALT	1742-6					
Albumin	1751-7					
Direct Bilirubin	1968-7	1970-3				
Conjugated Bilirubin	15152-2					
Total Bilirubin	1975-2					
Prothrombin Time	5902-2	5902-2				
INR	6301-6					
Creatinine	2160-0	12190-5				
Hemoglobin	718-7					
Total white blood cell count	26464-8	6690-2				
Percent Neutrophils	26511-6	770-8	26505-8	28942-9	26505-8	
Percent Bands	26508-2	764-1				
Absolute Neutrophil count (ANC)*	26499-4	751-8				
Platelets	26515-7	777-3	778-1	26515-7	9317-9	
Thyroid Stimulating Hormone (serum)	3016-3	11580-8	11579-0			
Serum Glucose	6777-7	2345-7	10832	2349-9	12651-6	2339-0
Hepatitis Bs Ag	5195-3	5196-1	7905-3			
Hepatitis Bs Ab	22322-2	10900-9	16935-9	5193-8		
Hepatitis B core total Ab (core Ab and IgM)	5186-2	13952-7	16933-4			
Hepatitis B core Ab (IgM)	22318-0	24113-3	13950-1			
Hepatitis B core Ab (IgM)	17009-2					
Hepatitis Be Ag	5192-0	13954-3	13952-0		5191-2	
Hepatitis A Ab (Total)	22314-9	13951-9	13954-3	13951-1		
Hep A IgM	13950-1	22314-9				
Alpha Fetoprotein	1834-1					
Anti-Nuclear Antibody (ANA)	8061-4	5048-4	22297-6	13068-2		
Ferritin	2276-4					
HIV Ab	7917-8	7918-6	5220-9	14092-1	21009-6	
GGT	2324-2	2324-2				

Test Descriptions	Sample LOINC Codes
NEUTROPHILS SEGMENTED/100 LEUKOCYTES:NFR:PT:BLD:QN:MANUAL COUNT	769
LEUKOCYTES:NCNC:PT:BLD:QN:MANUAL COUNT	804
ALANINE AMINOTRANSFERASE:CCNC:PT:SER/PLAS:QN:P-5-P	1743
THYROTROPIN:ACNC:PT:BLD:QN	3015
HEPATITIS C VIRUS AB:ACNC:PT:SER:ORD	16128
HEPATITIS C VIRUS AB.IGG:ACNC:PT:SER:QN	16936
HEPATITIS C VIRUS RNA:NCNC:PT:SER:QN:PROBE-AMP-TAR	20416
HEPATITIS C VIRUS RNA:NCNC:PT:SER:QN:PROBE-AMP-SI	20571
NEUTROPHILS/100 LEUKOCYTES:NFR:PT:BLD:QN:MANUAL COUNT	23761
HEPATITIS C VIRUS AB BAND PATTERN:IMP:PT:SER:NOM:IB	24011
ALKALINE PHOSPHATASE.OTHER FRACTIONS/ALKALINE PHOSPHATASE. TOTAL:CFR:PT:SER/PLAS:QN	26010
HEPATITIS C VIRUS RNA:ACNC:PT:SER/PLAS:QN:PROBE-AMP-SIG	29609

Glossary

Term or Acronym	Description
API	Application Programmer Interface
ADPAC	Automated Data Processing Application Coordinator
CPRS	Computerized Patient Record System
DFN	File Number—the local/facility patient record number (patient file internal entry number)
Extract Data Definition	This is a set of file and field numbers that identify the data that should be extracted during the extraction process.
Extract Process	This process is run after the update process. This function goes through patients on the local registry and, depending on their status, extracts all available data for the patient, since the last extract was run. The extract transmits any collected data for the patient to the national database via HL7.
FDA	Food and Drug Administration
HL7	Health Level 7
Hepatitis C Rx	A defined list of Hepatitis C medications, see Appendix A of the Clinical Case Registries V. 1.0, Hepatitis C User Manual.
Icons	
ICD-9	International Classification of Diseases, version 9 A numeric code used for identifying patient diagnoses associated with inpatient and outpatient care.
ICN	Integration Control Number, or national VA patient record number
IRM	Information Resource Management
Iteration	A single pass through a group of instructions . Most programs contain loops of instructions that are executed repeatedly. The computer <i>iterates</i> through the loop, which means that it repeatedly executes the loop.
KIDS	Kernel Installation and Distribution System
LIM	Laboratory Information Manager
Local Registry	This is the local file of patients that have either passed the selection rules and therefore been added automatically or been added manually by a designated Hepatitis C supervisor.
Local Registry Update	This process adds new patients (that have had data entered since the last update was run and pass the selection rules) to the local registry.
Loop	In programming , a loop is a series of instructions that is repeated until a certain condition is met. Each pass through the loop is called an iteration . Loops constitute one of the most basic and powerful programming concepts.

Term or Acronym	Description
National Case Registry	All sites running the Hepatitis C Case registry transmit their data to this central data registry.
Selection Rules	A pre-defined set of rules that define a Hepatitis C patient. See Appendix A of the Clinical Case Registries V. 1.0, Hepatitis C User Manual for selection rules.
PTF	Patient Treatment File—refers to the VistA Inpatient File in the Local Registry Report, under “Reason Added”
VERA	Veterans Equitable Resource Allocation
VHA	Veterans Health Administration
VISN	Veterans Integrated Service Networks
VistA	Veterans Health Information System and Technology Architecture