



RESOURCE AND PATIENT MANAGEMENT SYSTEM

Laboratory Reference (LR)

User Manual

Version 5.2 Patch 21
August 2006

Information Technology Support Center
Division of Information Resources
Albuquerque, New Mexico

PREFACE

This manual is intended for use by laboratory or other staff who will be setting up and maintaining a reference laboratory interface using the Generic Interface System (GIS).

This manual describes unidirectional and bidirectional interfaces in two separate sections. This document addresses the following topics:

- Interface Basic Operation
- Setup Steps for the Interface (Laboratory files only*)
- Using the Interface
- Maintenance of the Interface
- Problem Solving

Note: Directions for interface configuration and activation are included in the Reference Laboratory Activation Manual (lr_0520.o.pdf).

TABLE OF CONTENTS

1.0	INTRODUCTION.....	4
2.0	SETUP REQUIREMENTS	5
2.1	Software.....	5
2.2	Security Keys.....	5
2.2.1	Unidirectional	5
2.2.2	Bidirectional	5
2.3	Materials	5
3.0	INTERFACE MANAGEMENT.....	11
3.1	HL7 Message Structure	11
3.1.1	An Order Message.....	11
3.1.2	A Result Message.....	12
4.0	OVERVIEW OF INTERFACE SOFTWARE.....	14
4.1	Generic Interface System	14
4.1.1	Bidirectional TCPIP	14
4.1.2	Unidirectional TCPIP.....	16
4.1.3	Unidirectional FTP.....	16
4.1.4	Tasks	16
4.2	IHS Lab Transaction Processor.....	16
5.0	BIDIRECTIONAL INTERFACE BASIC OPERATION	19
5.1	Sending Orders.....	19
5.2	Receiving Results	19
5.3	Verifying Results.....	19
5.4	Diagram of Laboratory Workflow	20
6.0	SETUP STEPS FOR BIDIRECTIONAL INTERFACE.....	21
6.1	Summary of Set up Steps.....	21
6.2	Accession	22
6.3	Data Names.....	22
6.4	Laboratory Test.....	23
6.5	Load Worklist.....	25
6.6	Auto Instrument	26
6.7	IHS Lab CPT Code	28
6.8	Map Reference Lab Codes to Laboratory Test File	29
6.9	Shipping Manifest	30
6.10	Reprint a Shipping Manifest.....	32
6.11	Ask at Order Questions.....	32
6.12	Verifying Tests	38
6.13	Reflex Tests.....	38
6.14	Build an Accession Test Group.....	40
6.15	“Immediate Print” Interim Reports.....	40
6.16	Cumulative Reports	40
6.17	Problem-Solving	41
6.18	Multidivisional Testing.....	43

7.0	USING THE BIDIRECTIONAL INTERFACE	45
7.1	Sending Orders.....	45
7.2	Receiving Files	45
7.3	Menus.....	45
7.3.1	REFL Reference Lab Main Menu.....	46
7.4	Problem Solving.....	51
8.0	UNIDIRECTIONAL INTERFACE BASIC OPERATION.....	52
8.1	Submitting the Request.....	52
8.2	Receiving the Result Files	53
8.3	Reviewing the Data.....	53
8.4	Diagram of Laboratory Data Flow	54
9.0	SETUP STEPS FOR UNIDIRECTIONAL INTERFACE	55
9.1	Add Atomic Test to Laboratory Test File.....	55
9.2	Add Cosmic Tests to the Laboratory Test file	56
9.3	Map Atomic Test to Result Codes	57
9.4	Map Test to Order Codes	60
9.5	Add CPT Codes for Orderable/Billable Test	61
10.0	USING THE UNIDIRECTIONAL INTERFACE.....	62
10.1	Sending Orders.....	62
10.2	Receiving Results	62
10.3	Verifying Results.....	62
10.4	Menus.....	62
10.4.1	REFL Reference Lab Main Menu.....	63
11.0	OVERVIEW OF INTERFACE SOFTWARE	73
11.1	Generic Interface System	73
11.1.1	TCPIP Sites:	73
11.1.2	FTP Sites	74
11.2	IHS Lab Transaction Processor.....	75
12.0	MAINTENANCE OF THE INTERFACE	77
12.1	Data Errors	78
12.1.1	Failed Patient Look up	79
12.1.2	No Matching Laboratory Test.....	79
13.0	PROBLEM SOLVING	85
14.0	GLOSSARY	86
15.0	APPENDIX A	88
15.1	Health Care System Impact.....	88
15.1.1	Clinical	88
15.1.2	Provider Precautions.....	88
15.1.3	Data Entry	90
15.1.4	Third Party Billing.....	91
15.1.5	Setting up BLR Reference Lab File to Pass CPT Codes	92

1.0 Introduction

The Laboratory Reference software is a component of the IHS Laboratory module of the RPMS system. It is designed to use the Generic Interface System (GIS) to automate the electronic placement of orders into the external reference laboratory database and/or the receipt of test results from an external reference laboratory using HL7 messaging.

The use of this interface facilitates:

- Electronic placement of orders for an external reference laboratory
- Review and verification of results returned electronically from an external reference laboratory
- Reporting of results for clinical health care treatment
- Providing clinical data for local and national management needs such as the Government Performance Results Act (GPRA)

2.0 Setup Requirements

2.1 Software

- Generic Interface System (GIS) 3.01 through patch 14
- Laboratory Package 5.2 through patch 21

2.2 Security Keys

Users responsible for setting up and maintaining the laboratory software will require the following security keys and a FileMan Access code of *L*.

2.2.1 Unidirectional

- BLRZMENU
- BLRRLZ

2.2.2 Bidirectional

- LRLAB
- LRSUPER
- LRLIAISON
- BLRZMENU
- BLRRLZ
- VA FileMan (DIUSER)

2.3 Materials

Before beginning interface setup, assemble the following materials:

- Reference laboratory client account numbers.
- The RPMS Reference Laboratory Interface User Guide.
- A test utilization report for each of your client account numbers. You will need a printed copy. (See the example in Table 2-1, which follows.)
- A compendium of order and result codes used by your reference laboratory. You may wish to keep this in electronic form and use the Edit Function, *FIND*, in Microsoft EXCEL for looking up test orders and results. (See the example in Table 2.)

- A list of tests requiring “ask at order” results when orders are submitted.
- A list of “ask at order” test codes.

Unit Code	Description	Jan-04	Feb-04	Mar-04	Apr-04
5154	GC/CHLAM DIRECT PRB (EC/URE)	180	157	196	179
3682	HIV-1 Ab SCREEN W/RFLX WB	63	23	27	90
900398	GC/CHLAM AMP PRB(EC/URE/URINE)	53	57	15	52
2341	RUBELLA IgG	24	23	26	39
8020	HEP B SURF Ag W/RFX CONFIRM	26	21	22	38
104750	HEP PANEL ACUTE	18	24	16	31
2040	IRON & TIBC	16	16	26	15
9210	FERRITIN	16	16	24	20
104997	ANA,DNA DS,ENA,RF,SJOGRENS	0	0	0	4
8065	VITAMIN B12 AND FOLATE	12	8	15	16
9276	MATERNAL SERUM SCREEN 3	11	18	13	13
9124	ROCKY MTN SPOTTED FEVER W/RFX TITER	1	0	2	0
900489	HPV DNA, INT/HIGH RISK	8	12	7	6
8045	T4 (THYROXINE)	7	9	7	14
17	HPV DNA,Int/High Risk	0	0	0	0
8035	PROLACTIN	9	0	4	7
8060	VITAMIN B12	8	4	9	12
5562	H.PYLORI ANTIBODY IgG	3	1	3	5
1114	FSH & LH	7	3	6	6
7461	VANCOMYCIN, TROUGH	0	0	0	0
4792	OVA & PARASITES,STOOL	11	5	7	5
2075	PROTEIN ELECTROPHORESIS	4	3	3	5
2120	LITHIUM	8	6	5	5
9171	C.DIFFICILE TOXIN A AND B,EIA	6	1	5	3
8587	HEP C ANTIBODY	7	2	0	4
1062	COCCIDIOIDES SCREEN	2	4	2	4
3110	RETICULOCYTE COUNT	7	2	2	3
9180	C4 COMPLEMENT COMPONENT	2	9	3	8
9235	HEP B SURFACE ANTIBODY	3	1	3	3
9247	HLA-B27	2	2	1	3
9175	C3 COMPLEMENT COMPONENT	1	9	3	7
9628	PREALBUMIN	5	4	3	4
9346	T3 FREE NON-DIALYSIS	5	2	3	8
4008	CULTURE,ANAEROBIC	1	2	0	2
3105	SEDIMENTATION RATE	0	0	0	2
8181	HSV CULTURE W/RFX TYPING	2	2	4	4
702723	TESTOSTERONE, TOTAL & FREE	1	0	4	1

Table 2-1: Sample Utilization Report

Some reference laboratories will provide a report broken down by month as in the above example. Others will provide a report that shows the order code (unit code), test name, and the year-to-date test counts. The goal is to use this report to identify those tests that are frequently sent out to the reference laboratory and map those with higher frequency first and end with those that are sent out less frequently (three or fewer times per year).

Component Unit Code	Component Title	Test Code	Test Code Name
100256	DRUG SCREEN(ABUSE),PLASMA	25403600	AMPHETAMINE SCREEN
100256	DRUG SCREEN(ABUSE),PLASMA	25403610	BENZODIAZEPINE SCREEN
100256	DRUG SCREEN(ABUSE),PLASMA	25403620	OPIATE SCREEN
100256	DRUG SCREEN(ABUSE),PLASMA	25403630	COCAINE SCREEN
100256	DRUG SCREEN(ABUSE),PLASMA	25403640	CANNABINOID SCREEN
100308	BETA-2-GLYCOPROTEIN I Ab IgG	11113081	B2-GLYCOPROTEIN I Ab IgG
100309	BETA-2-GLYCOPROTEIN I Ab IgM	11113091	B2-GLYCOPROTEIN I Ab IgM
100410	SYNOVIAL FLUID ANALYSIS	10003253	COLOR
100410	SYNOVIAL FLUID ANALYSIS	10003254	APPEARANCE
100410	SYNOVIAL FLUID ANALYSIS	10003255	RBC
100410	SYNOVIAL FLUID ANALYSIS	10003256	WBC
100410	SYNOVIAL FLUID ANALYSIS	10003257	SEGMENTED NEUTROPHILS
100410	SYNOVIAL FLUID ANALYSIS	10003258	LYMPHOCYTES
100410	SYNOVIAL FLUID ANALYSIS	10003259	MONOCYTES
100410	SYNOVIAL FLUID ANALYSIS	10003260	EOSINOPHILS
100410	SYNOVIAL FLUID ANALYSIS	10003262	MACROPHAGES
100410	SYNOVIAL FLUID ANALYSIS	10003263	LINING CELLS
100410	SYNOVIAL FLUID ANALYSIS	10003264	OTHER CELLS
100410	SYNOVIAL FLUID ANALYSIS	10003265	MUCIN CLOT
100410	SYNOVIAL FLUID ANALYSIS	10003267	FIBRIN CLOT
100410	SYNOVIAL FLUID ANALYSIS	10003268	VISCOSITY
100410	SYNOVIAL FLUID ANALYSIS	10003269	CRYSTALS
100410	SYNOVIAL FLUID ANALYSIS	12008469	COMMENT
100410	SYNOVIAL FLUID ANALYSIS	14003615	TOTAL CELLS COUNTED
10092	ACHR MODULATING ANTIBODY	10008635	ACHR MODULATING ANTIBODY
10093	ACHR BLOCKING ANTIBODY	10008634	ACHR BLOCKING ANTIBODY
10097	PYRIDINIUM CROSS-LINKS,UR,24HR	10001005	TOTAL VOLUME, URINE
10097	PYRIDINIUM CROSS-LINKS,UR,24HR	10008080	PYRIDINOLINE, URINE 24HR
10097	PYRIDINIUM CROSS-LINKS,UR,24HR	10008082	DEOXYPYRIDINOLINE, 24HR
10097	PYRIDINIUM CROSS-	10008092	CREATININE URINE

Component Unit Code	Component Title	Test Code	Test Code Name
	LINKS,UR,24HR		
10097	PYRIDINIUM CROSS-LINKS,UR,24HR	20007615	

Table 2-2: Test Compendium

This table shows a section from a test compendium.

Column 1 – Reference laboratory order number (component unit code). Note that multiple entries of the same number indicate that this is a panel or cosmic test.

Column 2 – Name of the laboratory test that will be ordered (component title).

Column 3 – Unique result code for each test that will be returned as a result (test code).

Column 4 – Name for each resulted test that will be returned over the interface (test code name).

An entry will need to be made in the laboratory test file for each test (order or result) that will be received or ordered electronically from the reference laboratory. Additional entries will need to be made in the BLR Reference Laboratory file linking the RPMS Laboratory test to the correct order or result code for the Reference Laboratory.

Sites using the interface in bidirectional mode will need to make additional entries in the Load/Worklist file, Auto Instrument file, and IHS Lab CPT Code file.

To track your progress, it is highly recommended that you make a tracking worksheet to identify when each test has been added to the appropriate file and when validation testing has been performed for that test. A sample tracking log for a bidirectional site is provided in Table 2-3. For regulatory purposes, bidirectional sites, may wish to document the accession number of the validated test and/or maintain a file of interim reports showing the test report.

Unit Code	Description	Total	File 60	Auto Inst	Load Work	Ref Lab	CPT	Accn
5154	GC/CHLAM DIRECT PRB (EC/URE)	3471	X	X	X	X	X	3900
3682	HIV-1 Ab SCREEN W/RFLX WB	1227	X	X	X	X	X	3981
900398	GC/CHLAM AMP PRB(EC/URE/URINE)	937	X	X	X	X	X	3980
2341	RUBELLA IgG	645	X	X	X	X	X	3950
8020	HEP B SURF Ag W/RFX CONFIRM	634	X	X	X	X	X	3951
104750	HEP PANEL ACUTE	493						
2040	IRON & TIBC	420						

Unit Code	Description	Total	File 60	Auto Inst	Load Work	Ref Lab	CPT	Accn
9210	FERRITIN	366	X	X	X	X	X	4500
104997	ANA,DNA DS,ENA,RF,SJOGRENS	314						
8065	VITAMIN B12 AND FOLATE	281	X	X	X	X	X	4545
9276	MATERNAL SERUM SCREEN 3	275						
9124	ROCKY MTN SPOTTED FEVER W/RFX TITER	173						
900489	HPV DNA, INT/HIGH RISK	146	X	X	X	X	X	4560
8045	T4 (THYROXINE)	142	X	X	X	X	X	4501
17	HPV DNA,Int/High Risk	138						

Table 2-3: Test Mapping Log for a Bidirectional Interface Site

3.0 Interface Management

3.1 HL7 Message Structure

Incoming results and outgoing orders for the reference laboratory are stored in the Universal Interface file (^INTHU). A single HL7 message is created for each outgoing order and each incoming result. A result message may actually contain multiple test results.

HL7 Messages

HL7 messages are described in terms of segments and fields. *Segments* are three letter designations for strings of standard data items. *Fields* are the individual pieces of data included in a segment. Fields are designated by number, and are separated from each other by /.

MSH

MSH is the message header. It identifies the sending and receiving facilities, the client account number, and date and time of message. The MSH segment is essentially the “address” on a message.

PID

The PID is the patient identifier segment.

ORC

ORC is additional order information. It includes the accession number, date and time of accession, and ordering provider.

OBR

OBR is the order segment.

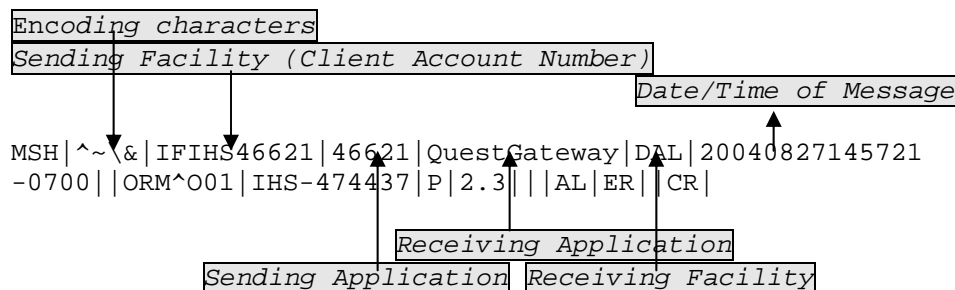
OBX

OBX is the result segment.

NTE

NTE is the comment segment.

3.1.1 An Order Message



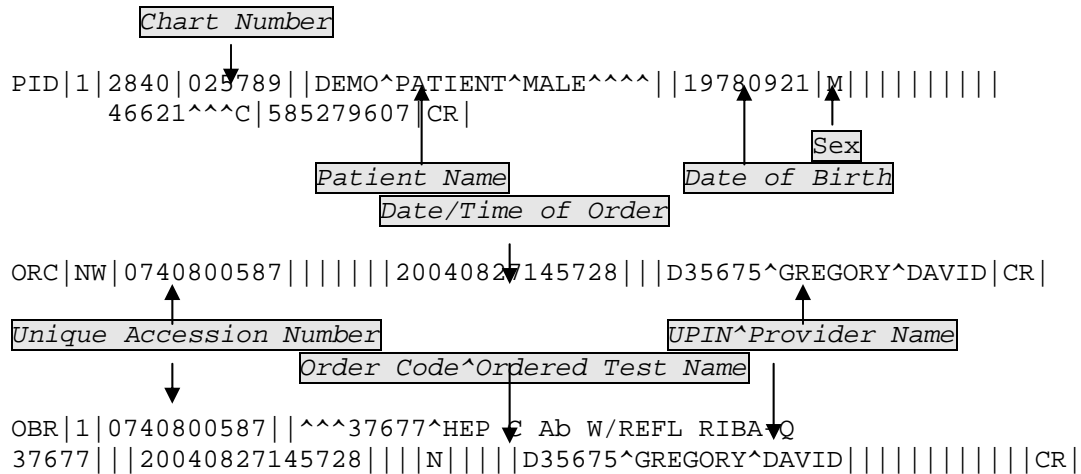
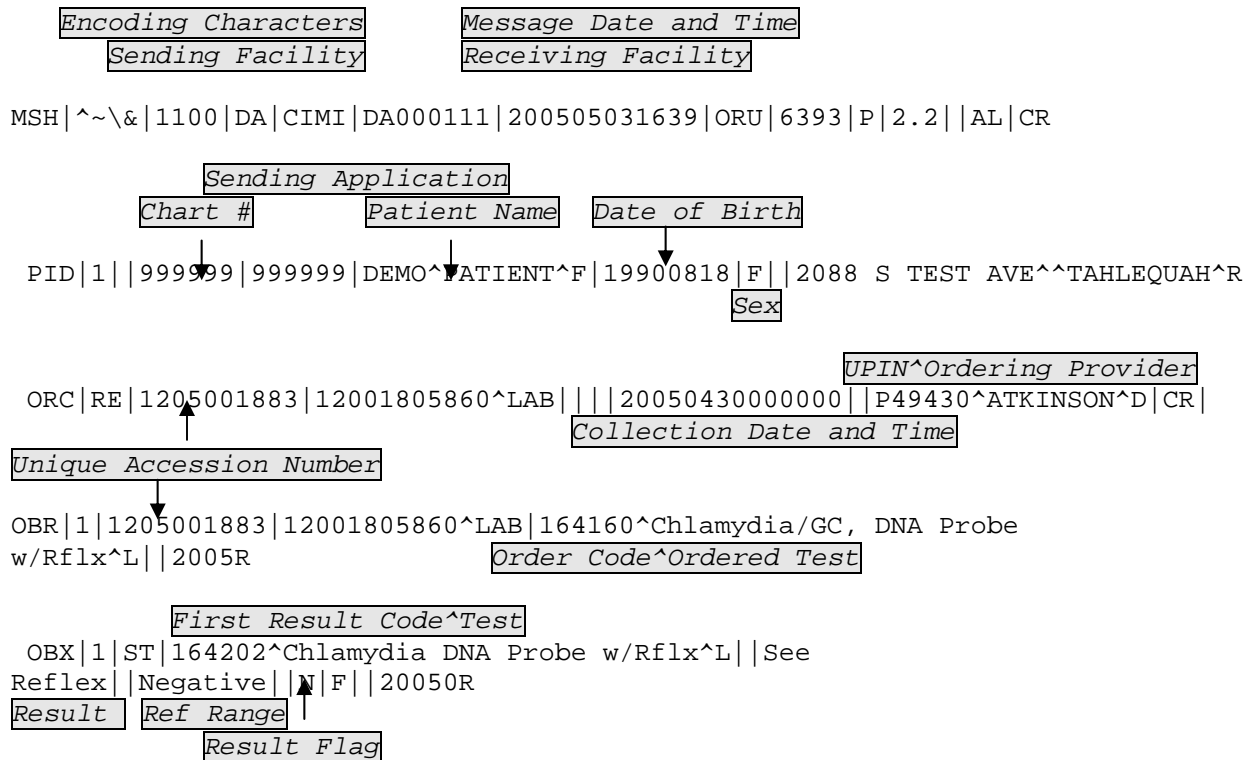


Figure 3-1: Example of an order message

Each outgoing message contains one order per entry in the Universal Interface file.

3.1.2 A Result Message

A result message may have one or more order (OBR) segments, one or more result (OBX) segments and one or more comment (NTE) segments as illustrated below.



```

OBX|2|ST|164212^N gonorrhoeae DNA Probe w/Rflx^L||See
Reflex|Negative||N|F||2R
Result|Ref Range|
Result Flag
Second Result Code^Test
NTE|1|L|Performed At: DA|CR
Comment 1
NTE|2|L|LabCorp Dallas|CR
Comment 2
NTE|3|L|7777 Forest Lane Suite 350C|CR
Comment 3
NTE|4|L|Dallas, TX 752300000|CR
Comment 4
Reflex Test Order
ORC|RE|1205001883|12001805860^LAB|||20050430000000||P49430^ATKINSON^D|CR|
OBR|2|1205001883|12001805860^LAB|164200^C. trachomatis -
PCA^L||20050429170100R
Reflex Result 1
OBX|1|ST|164200^C. trachomatis -
PCA^L||Positive||Negative|A|N|F||200505031532R
NTE|1|L|Performed At: DA|CR
NTE|2|L|LabCorp Dallas|CR
NTE|3|L|7777 Forest Lane Suite 350C|CR
NTE|4|L|Dallas, TX 752300000|CR
Reflex Test Order 2
ORC|RE|1205001883|12001805860^LAB|||20050430000000||P49430^ATKINSON^D|CR|
OBR|3|1205001883|12001805860^LAB|164205^N gonorrhoeae Competition
Rflx^L||2005R
Reflex Result 2
OBX|1|ST|164205^N gonorrhoeae Competition
Rflx^L||Negative||Negative||N|F||200R
NTE|1|L|Performed At: DA|CR
NTE|2|L|LabCorp Dallas|CR
NTE|3|L|7777 Forest Lane Suite 350C|CR
NTE|4|L|Dallas, TX 752300000|CR

```

Figure 3-2: Example of a result message

4.0 Overview of Interface Software

The interface is actually a two-part system. The Generic Interface System (GIS) accepts the data from the Reference Laboratory and stores it in the UNIVERSAL INTERFACE FILE (^INTHU). In a bidirectional system, the data is passed to ^LAHM(62.49), the LA7 Message parameter file, where it is held prior to verification. From that point on, the data is handled just as any other data transmitted by an auto instrument.

For a unidirectional interface, whether real time using TCPIP or in batch mode using FTP, the incoming data is stored in the IHS Lab Transaction log until verified, and the data is passed to PCC. The IHS Lab Transaction Processor must be running in order for data to pass from the IHS Lab Transaction Log to PCC.

Laboratory staff or those assigned responsibility for monitoring the interface need to check both the GIS processors and the IHS Lab Transaction Processor at the following times:

- At the beginning of each day
- Any time the RPMS system goes down
- Whenever the Referring Facility is notified that the Reference Laboratory interface system has been shut down and restarted

Instructions are provided in the following section for checking the processors.

4.1 Generic Interface System

Note: The GIS menu may be on various menus depending upon the decision about who will be monitoring the interface.

4.1.1 Bidirectional TCPIP

In a bidirectional TCPIP interface; there are four Generic Interface System (GIS) processes to monitor:

- OUTPUT CONTROLLER controls data moving from the UNIVERSAL INTERFACE FILE to the IHS Lab Transaction Log or the LA7 Message Parameter file.
- FORMAT CONTROLLER formats outbound data from the RPMS and queues it for output to the Reference Laboratory.
- HL IHS LAB RECEIVER accepts data coming in from the reference laboratory.
- HL IHS LAB TRANSMITTER sends orders to the reference laboratory.

The site manager or other trained staff should check GIS processes as follows:

```

GIS GIS Interface Menu
BPM Background Process Control Menu
VS Verify Status of Background Processes

      **Verify Status of Background Processes**
      **Input Parameters**

Detailed report: YES          Repaint frequency: 5

Maximum number of iterations (printer only): 100

-----

COMMAND:  SAVE <ENTER> EXIT (ENTER)          Press <PF1>H for help          Insert

```

Figure 4-1: Verify Status of Background Processes

When the status input screen is displayed, you may switch to the Status Display by typing **SAVE <Enter>** followed by **EXIT <Enter>** or **F1 E**.

Confirm the activity of the processes to be sure they are either running or idle.

```

Verify Background Process                               16 Nov 2004@1200
  Start Time: 16 Nov 2004@1200           Number of Iterations: 1
    Run Time: 0 sec                       Avg Time per Iteration: 0 sec

Run  Background Process/                               (defaults in seconds)
     Message                                           Last Run/
                                           Last Msg  Elapsed
-----
     OUTPUT CONTROLLER                               12:00:08      0
     Idle
     FORMAT CONTROLLER                               12:00:08      0
     Idle
N    HL IHS LAB RECEIVER
N    HL IHS LAB TRANSMITTER

```

Figure 4-2: Verify Status of Background Processes

An *N* in the Run column indicates that a processor is not running. Neither the HL IHS Lab receiver nor the HL IHS Lab Transmitter is running in the example given in Figure 4-2.

If any of the processes has stopped, it may be restarted by selecting the menu option, **S1 Startup a Background Process**.

```

GIS  GIS Interface Menu
      BPM  Background Process Control Menu
        S1   Startup a Background Process

Select BACKGROUND PROCESS CONTROL NAME: HL IHS LAB RECEIVER
. Started
Select BACKGROUND PROCESS CONTROL NAME: HL IHS LAB TRANSMITTER

```

Figure 4-3: Startup a Background Process

4.1.2 Unidirectional TCPIP

In a unidirectional TCPIP interface, only three Generic Interface System (GIS) processes need to be running:

- OUTPUT CONTROLLER controls data moving from the UNIVERSAL INTERFACE FILE to the IHS Lab Transaction Log or the LA7 Message Parameter file.
- FORMAT CONTROLLER formats outbound data from the RPMS and queues it for output to the Reference Laboratory.
- HL IHS LAB RECEIVER accepts data coming in from the reference laboratory.

The processes may be checked by using the menu option **VS** to Verify the Status of the Processors as described in section 4.1.1. In addition, one or more processors may be restarted using the menu option, **S1** to Startup a Background Process.

4.1.3 Unidirectional FTP

In a unidirectional FTP interface, only the OUTPUT CONTROLLER needs to be running. If data fails to import, use the **VS Verify Status of Processors** option as described in Section 4.1.1 above. The OUPUT CONTROLLER may be restarted using the menu option, **S1** to Startup a Background Process.

4.1.4 Tasks

In addition, two tasks should be scheduled to run every hour to restart the processors for real-time TCPIP interfaces:

- BLR REFLAB RESTART RECEIVER
- BLR REFLAB RESTART TRANSMITTER (bidirectional site only)

4.2 IHS Lab Transaction Processor

If the link to PCC is active, the status of the IHS Lab Transaction Processor may be checked by using the menu option, **LS Link Transaction Processor Status**. The

following screen will display with a “flicker” every second or so as the system polls for new data.

```

BLR  IHS Lab Main Support Menu
      LS  Link Transaction Processor Status

              Processor Status
              DEC 04, 2003@16:44:21

              Currently processing day DEC 04, 2003

              Event                Entry Position      IHS Lab Transaction
              -----                in Queue          Sequence Number
Last Entry Assigned      1100                4900                256,798
Last Entry Processed     1100                4900                256,798

Press Enter to continue:

```

Figure 4-4: Link Transaction Processor Status

The “Currently processing day” should match the date at the top of the screen. If data is current, the “Last Entry Assigned” should match the “Last Entry Processed” in the Event column, the Entry Position in Queue column, and the Sequence Number column.

At the beginning of each day, the processor is set back to zero. Each new piece of laboratory data is assigned a new sequence number so if the processor is working correctly, the transaction numbers will be incrementing. Note that to prevent the IHS Transaction Log from becoming exceptionally large, a task, BLRTASK LAB LOG CLEANUP, has been scheduled to run every night to remove transactions older than 180 days. Therefore, at some point after six months of running the interface, the sequence numbers may once again fall into a lower number range.

Occasionally a message may display at the bottom of the screen, “Link is not running.” This message is displayed if no new data has been received for some time. If data has come in but the Lab Transaction Processor is not running, the GIS Format Controller and Output Controller may need to be stopped and restarted. When new data flows through the interface, the Lab-PCC link is triggered to begin processing data again.

The message, “Stopped by User” is displayed when multiple errors are generated by the processor and the link is automatically shut down. If this message is displayed when using the LS menu option to check the processor status, check the following:

```
BLR  IHS Lab Main Support Menu
  STP  Stop/restart Lab to PCC Transaction Processor

Select BLR MASTER CONTROL SITE: SELLS HOSP   TUCSON   SELLS   01 AZ
PHS

    ...OK? Yes//   (Yes)

STOP PROCESSOR: YES  If this field is set to "YES", it may be either an
indicator of a link failure due to a serious error or the fact that the link
was turned off and not turned back on. The processor may be restarted by
entering "NO." If however, the processor once again stops and this field
resets to "YES," notify the site manager to check the error trap for a BLR
type of error.
```

Figure 4-5: Stop/restart Lab to PCC Transaction Processor

5.0 Bidirectional Interface Basic Operation

At those facilities using the RPMS Laboratory System in a bidirectional mode, test orders are placed via the *Electronic Health Record* (EHR), Ward Order Entry, or paper requisitions. When those test orders are accessioned, they are sent as an electronic file to the designated Reference Laboratory.

Test results released by the Reference Laboratory are received over the interface, reviewed, and verified using the *EA* option (Enter/Verify Data (auto instrument)). This option is accessed from the Process Data in Lab menu available from the *Laboratory DHCP menu*. The test results are then available in all normal laboratory report options, as well as from PCC and the Electronic Health Record (EHR).

5.1 Sending Orders

The Urban, Tribal, IHS (U/T/I) facility uses the RPMS Laboratory Package to accession referral tests using the appropriate accessioning option. A Shipping Manifest will be printed to accompany the specimen(s) to the Reference Laboratory as each test is accessioned. In a real-time interface, orders are sent as they are generated.

5.2 Receiving Results

The contracted Reference Laboratory performs testing and enters results into the Reference Laboratory Information System. Released results are sent to an Interface Engine that converts the laboratory result data into HL7 messages. These HL7 messages are sent in real time back to the Referring Facility.

5.3 Verifying Results

The incoming results file is formatted and parsed into the LA7 MESSAGE QUEUE file (#62.49). The laboratory technologist reviews and verifies the incoming data by using the *EA* option (Enter/Verify data (auto instrument)). This option is accessed from the Process Data in Lab menu in the Laboratory DHCP menu. The data is passed to PCC through the IHS Lab Transaction file just as other on-site tests are transferred.

5.4 Diagram of Laboratory Workflow

RPMS Reference Laboratory

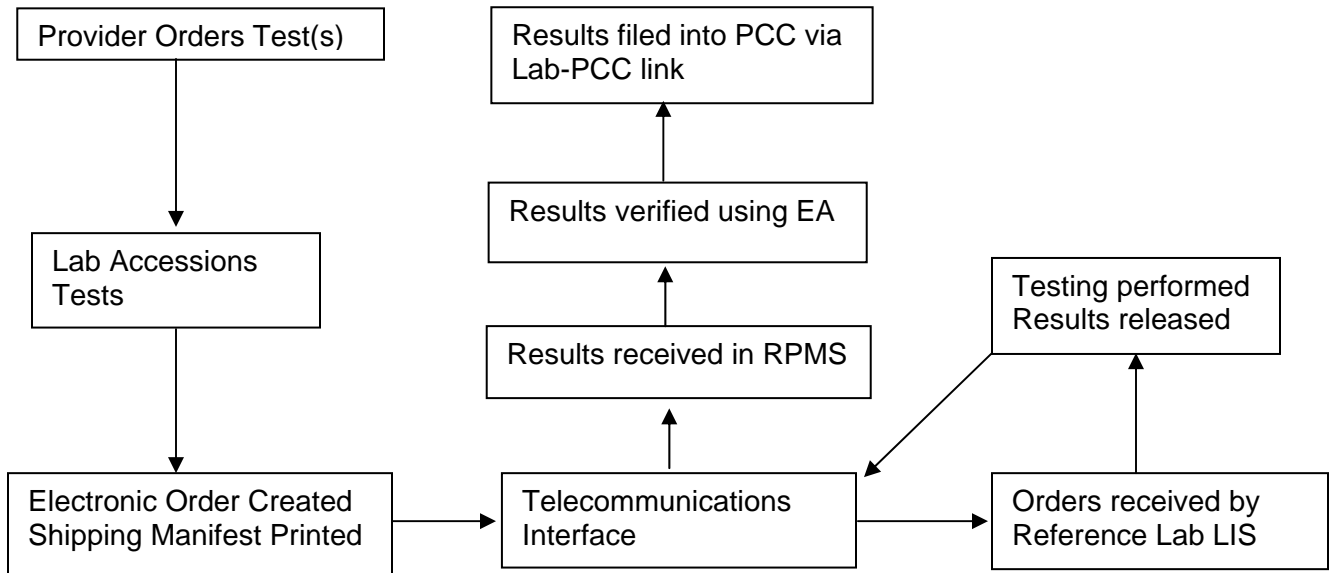


Figure 5-1: RPMS Reference Laboratory flow

6.0 Setup Steps for Bidirectional Interface

In the directions supplied in this section, it is assumed that the setup will be performed by an individual who has a basic understanding of the file maintenance for the Laboratory Package.

Before an interface is moved into production with actual patient results, a process called Systems Acceptance Testing must be performed with the reference laboratory. The interface is configured to be connected to a test database at the reference laboratory to ensure that connectivity can be established and maintained. All high volume laboratory tests are ordered and results are verified to ensure that data returned from the reference laboratory is filed into RPMS with correct tests, ordering provider, results, interpretation, units, reference ranges, and result flags.

6.1 Summary of Set up Steps

Setting up the reference laboratory interface requires familiarity with the files necessary for normal laboratory database maintenance. The reference laboratory interface duplicates the setup and operation of an auto instrument. In addition, one new file will be used for matching on-site laboratory tests to reference laboratory tests – the BLR Reference Laboratory file. Listed below are the files and the order in which they should be addressed.

1. Assigning Data Names: Each atomic test must have a data name.
2. Accession (#68): Each test that will be referred to the reference laboratory must have an accession area of SENDOUTS with a long form accession number. If the facility is multidivisional each site using the interface will require its own unique accession area.
3. Laboratory Test (#60): Each atomic and cosmic test must have an entry in the laboratory test file. Atomic tests require entry of units, but not reference ranges, interpretation, or critical values.
4. Load/Worklist (#68.2): A Load Worklist must be created for SENDOUTS. Each reference laboratory test that will be ordered must have an entry in this load worklist file.
5. Auto Instrument (#62.4): Each test with a result code must have an entry in the Auto Instrument file. The auto instrument will be given the name of the interfaced laboratory, e.g. QUEST, LABCORP, RML. Each of the test results to be received from the reference laboratory will have a UI test code equal to its reference laboratory Result Code.

6. IHS Lab CPT Code (#9009021): If reference laboratory tests are to be billed for by the IHS Third Party Billing package, an entry must be made for each orderable reference laboratory test in the IHS Lab CPT Code file.
7. BLR Reference Laboratory (#9009026): Each laboratory test, atomic or cosmic, order or result must be mapped to an entry in the BLR Reference Laboratory file. This file controls the input to and output from the Generic Interface System.

6.2 Accession

Be sure that the accession area set up for SENDOUTS uses long form accession numbers. Review the setup as follows:

```

FM    VA FileMan ...
          Enter or Edit File Entries

INPUT TO WHAT FILE: ACCESSION
Select ACCESSION AREA: SENDOUTS
AREA: SENDOUTS//
LR SUBSCRIPT: CHEM, HEM, TOX, RIA, SER, etc.//
COMMON ACCESSION #'S WITH AREA:
ACCESSION TRANSFORM: MONTHLY// Either an annual or monthly transform may be used.
ACC CODE: S %DT=" ",X="T" D ^%DT S LRAD=$E(Y,1,5)_"00" S
LRAN=1+$S($D(^LRO(68,LRW
LC,1,LRAD,1,0)): $P(^0),"^",4),1:0) Q Replace
VERIFICATION CODE:
VER CODE:
*IDENTITY CONTROL:
PRINT ORDER: 6//
BYPASS ROLLOVER: NO//
ABBREVIATION: SO//
NUMERIC IDENTIFIER: 60//
TYPE OF ACCESSION NUMBER: SHORT// LONG Be sure to use LONG.
*LAB SECTION: SENDOUTS
NON LAB ACCESSION AREA:
RESPONSIBLE OFFICIAL: MED TECHNOLOGIST//
INHIBIT AREA LABEL PRINTING: NO//
LAB DIVISION: CLINICAL PATHOLOGY//

```

Figure 6-1: Screen example of setup

6.3 Data Names

Each test that will have results associated with it must have a data name created. This is where results are stored in the laboratory package for report retrieval. In general, if it is known that the results are numeric, the test may be defined with a numeric data name. If in doubt, define reference laboratory data names as Free Text with a minimum field length of **1** and a maximum field length of **25**. See the following example.

```

LR      Laboratory DHCP Menu ...
        Supervisor menu ...
        Lab liaison menu ...
        DATA   Add a new data name

This option will add a new data name to the lab package.

DATA NAME: HPV DNA, HIGH RISK
ARE YOU ADDING HPV DNA, HIGH RISK (SUBFIELD # 2522078) AS A NEW DATA NAME?
No//Y (Yes)
Enter data type for test: (N)umeric, (S)et of Codes, or (F)ree text? F
Minimum length: 1
Maximum length: 25

```

Figure 6-2: Screen example of data names

6.4 Laboratory Test

Either VA FileMan, or the menu option E60 Edit Laboratory Test File (#60) CH ONLY in the Reference Lab Main Menu may be used to edit existing entries in the Laboratory Test File or add new entries. Make an entry for each atomic test in the laboratory test file being sure to specify data name and accession area of SENDOUTS.

- Each orderable test, whether atomic or cosmic must have a Unique Accession number.
- Type BOTH tests must be marked as REQUIRED TEST – YES.
- Type OUTPUT tests must be marked as REQUIRED TEST – NO.
- Consider using the reference laboratory order number as part of the test name to facilitate ordering.
- Each test must have a subscript of CH (even Microbiology and Blood Bank Type tests).
- Use TYPE:
 - INPUT for cosmic tests
 - OUTPUT for results only atomic test
 - BOTH for tests that can be ordered and result
- Enter the order and result code as synonyms for atomic tests, the result codes for result only tests, and order codes for cosmic tests.
- Reference ranges, result flags and interpretive comments are received over the interface and need not be entered in the laboratory test file. Units do have to be entered.

For the examples shown in this section, the test, HPV DNA, HIGH RISK with an order code of 900489 and result code of 10900489 are used as an example.


```

Select LABORATORY TEST NAME: HPV DNA, HIGH RISK S900489
Are you adding 'HPV DNA, HIGH RISK' as
  a new LABORATORY TEST (the 1156TH)? No// Y (Yes)
LABORATORY TEST LABTEST IEN: 9999090//
LABORATORY TEST SUBSCRIPT: CH CHEM, HEM, TOX, SER, RIA, ETC.
LABORATORY TEST HIGHEST URGENCY ALLOWED: ROUTINE
LABORATORY TEST PRINT NAME: HPV HR
LABORATORY TEST DATA NAME: HPV DNA, HIGH RISK
TEST COST:
Select SYNONYM: 900489
Select SYNONYM: 10900489
Select SYNONYM:
TYPE: B BOTH
SUBSCRIPT: CHEM, HEM, TOX, SER, RIA, ETC.//
LOCATION (DATA NAME): CH;2522078;1// (No Editing)
Select INSTITUTION:      CIMARRON HOSPITAL      OKLAHOMA      CLAREMORE
01
                                OK                        505201
  ACCESSION AREA: SO SENDOUTS
UNIQUE ACCESSION #: Y YES
UNIQUE COLLECTION SAMPLE: Y YES
LAB COLLECTION SAMPLE:
REQUIRED TEST: Y YES
PROCEDURE (SNOMED):
*QUICK INDEX:
EXTRA LABELS:1
  HIGHEST URGENCY ALLOWED: ROUTINE//
FORCED URGENCY:
PRINT NAME: HPV HR//
Reserved:
PRINT CODE:
PRETTY PRINT ENTRY:
PRETTY PRINT ROUTINE:
PRINT ORDER:
NATIONAL VA LAB CODE:
RESULT NLT CODE:
CATALOG ITEM:
EDIT CODE:
*BATCH DATA CODE:
EXECUTE ON DATA REVIEW:
Select SITE/SPECIMEN: CERVIX UTERI (EXOCERVIX AND ENDOCERVIX)      83000
Are you adding 'CERVIX UTERI (EXOCERVIX AND ENDOCERVIX)' as
  a new SITE/SPECIMEN (the 1ST for this LABORATORY TEST)? No// Y (Yes)
REFERENCE LOW:
REFERENCE HIGH:
CRITICAL LOW:
CRITICAL HIGH:
INTERPRETATION:
  No existing text
  Edit? NO//
UNITS:
TYPE OF DELTA CHECK:
DELTA VALUE:
DEFAULT VALUE:
THERAPEUTIC LOW:
THERAPEUTIC HIGH:

```

```

Select *AMIS/RCS 14-4:
CPT CODE:
PANEL (CPT):
Select FOREIGN COMPUTER SYSTEM:
LOINC CODE:
Select SITE/SPECIMEN:
GENERAL PROCESSING INST.:
  No existing text
  Edit? NO//
Select LAB TEST:
Select COLLECTION SAMPLE: SP PAP  SUREPATH PAP      CERVIX UTERI (EXOCERVIX
AND ENDOCERVIX)      SP PAP
FORM NAME/NUMBER:
MIN VOL (in mls.):
MAX. ORDER FREQ.:
SINGLE DAY MAX ORDER FREQ:
WARD REMARKS:
  No existing text
  Edit? NO//
LAB PROCESSING INSTRUCTIONS :
  No existing text
  Edit? NO//
REQUIRED COMMENT:
  Select SAMPLE WKLD CODE:
Select COLLECTION SAMPLE:
GENERAL WARD INSTRUCTIONS:
  No existing text
  Edit? NO//
REQUIRED COMMENT:
DATA NAME: HPV DNA, HIGH RISK//
CULTURE ID PREFIX:
Select VERIFY WKLD CODE:
Select ACCESSION WKLD CODE:
*ASK AMIS/CAP CODES:
DISPLAY GROUP:
COMBINE TEST DURING ORDER:
CIS TEST CODE:
Select SITE NOTES DATE: T  DEC 09, 2005
==[ WRAP ]==[ INSERT ]=====< TEXT >===== [ <PF1>H=Help ]====
ADDED AS A NEW TEST TO DATABASE. DKR

```

Figure 6-3: Screen example of test, HPV DNA, HIGH RISK with an order code of 900489 and result code of 10900489

6.5 Load Worklist

If you do not already have one, create a new Load Worklist for Sendouts. Each test that will be sent to the interfaced reference laboratory must have an entry under the profile, SENDOUTS. The message type will be UNIVERSAL. See example in the next figure.

Note:

- Do not enter Specimen type.
- If the test is a stand-alone test, be sure to use Build Name Only, NO.

```

Select VA FileMan Option: Enter or Edit File Entries

INPUT TO WHAT FILE: LA7 MESSAGE PARAMETER// LOAD/WORK LIST
                                         (14 entries)

EDIT WHICH FIELD: ALL//

Select LOAD/WORK LIST NAME: SENDOUTS
NAME: SENDOUTS//
LOAD TRANSFORM: UNIVERSAL           L
TYPE: SEQUENCE/BATCH//
CUPS PER TRAY: 0//
FULL TRAY'S ONLY: NO//
EXPAND PANELS ON PRINT: YES// NO
INITIAL SETUP:
VERIFY BY: ACCESSION
SUPPRESS SEQUENCE #:
INCLUDE UNCOLLECTED ACCESSIONS: NO
SHORT TEST LIST:
AUTO MICRO EDIT TEMPLATE:
WKLD METHOD:
MAJOR ACCESSION AREA: SENDOUTS
LAB SUBSECTION: SENDOUTS
WORK AREA:
DATE OF SETUP: OCT 10,1996//
FIRST TRAY:
STARTING CUP:
LAST TRAY:
LAST CUP:
BUILDING IN PROGRESS: NO//
Select PROFILE: SENDOUTS//
PROFILE: SENDOUTS//
  Select TEST: HPV DNA, HIGH RISK
    SPECIMEN:
      BUILD NAME ONLY: NO
  Select TEST:

```

Figure 6-4: Creating a new Load Worklist for Sendouts

6.6 Auto Instrument

An entry must be made for each result to be returned over the interface in the Auto Instrument file. See example in the next figure.

- The Auto Instrument will be the name of your reference laboratory, e.g. QUEST, LABCORP, RML, SONORA QUEST.
- The message type will be the name of your reference laboratory. This should

have been created as an entry in file 62.48, the LA7 MESSAGE PARAMETER file, when the interface was configured.

- The UI test code will be the result code returned by the reference laboratory.
- Mark the field, *Remove spaces from result* as “**NO.**” This will prevent the text of non-numeric results from running together, i.e. Not Detected versus NotDetected.
- Mark the fields: *Store Reference Range*, *Store Abnormal Flags*, and *Store Remarks* as “**YES.**”

```
Select VA FileMan Option: Enter or Edit File Entries

INPUT TO WHAT FILE: AUTO INSTRUMENT                (105 entries)
EDIT WHICH FIELD: ALL//

Select AUTO INSTRUMENT NAME: QUEST
Are you adding 'QUEST' as a new AUTO INSTRUMENT (the 106TH)? No// Y (Yes)
  AUTO INSTRUMENT NUMBER: 4//
VENDOR CARD ADDRESS:
SHORT ACCESSION # LENGTH:
WKLD METHOD:
ECHO DEVICE:
PROGRAM: QUEST (or LABCORP or RML or SONORA-QUEST)
LOAD/WORK LIST: SENDOUTS
ENTRY for LAGEN ROUTINE: ACC Accession cross-reference
CROSS LINKED BY: ID
MESSAGE CONFIGURATION: QUEST (or LABCORP or RML or SONORA-QUEST)
*ECHO ALL INPUT:
METHOD:
DEFAULT ACCESSION AREA: SENDOUTS
OVERLAY DATA: YES
STORE REMARKS: YES
NEW DATA:
RESTART:
HANDSHAKE RESPONSE:
ACK TRIGGER VALUE:
ACK RESPONSE VALUE:
DIRECT DEVICE:
Select TEST: HPV DNA, HIGH RISK
Are you adding 'HPV DNA, HIGH RISK' as a new CHEM TESTS (the 1ST for this
AUTO INSTRUMENT)? No// Y (Yes)
  CHEM TESTS NUMBER: 1//
  PARAM 1:
  PARAM 2:
  PARAM 3:
  UI TEST CODE: 10900489
  ACCESSION AREA:
  SPECIMEN:
  URGENCY:
  NUMBER OF DECIMAL PLACES:
  CONVERT RESULT TO REMARK:
  ACCEPT RESULTS FOR THIS TEST: YES
  DOWNLOAD TO INSTRUMENT:
  IGNORE RESULTS NOT ORDERED:
  REMOVE SPACES FROM RESULT: NO
```

```

STORE REMARKS: YES
REMARK PREFIX:
STORE PRODUCER'S ID:
STORE REFERENCE RANGE: YES
STORE ABNORMAL FLAGS: YES

```

Figure 6-5: The auto instrument

6.7 IHS Lab CPT Code

If you have a client bill contract with your reference laboratory and all billing is done by your facility using the IHS Third Party Billing Package, you will need to make an entry for each test that is ordered in the IHS Lab CPT Code file. If your reference laboratory bills patients directly, no entry needs to be made for tests ordered from the reference laboratory. Entries are made in exactly the same way for reference laboratory tests, as for tests performed in the facility except each sendout test should have a modifier of 90 defined for each CPT code. CPT Codes should be included in the Service Directory provided by your reference laboratory. See example below.

```

Select VA FileMan Option: Enter or Edit File Entries

INPUT TO WHAT FILE: AUTO INSTRUMENT// IHS LAB CPT CODE
EDIT WHICH FIELD: ALL//

Select IHS LAB CPT CODE NAME: HPV DNA, HIGH RISK
Are you adding 'HPV DNA, HIGH RISK' as
  a new IHS LAB CPT CODE (the 485TH)? No// Y (Yes)
LAB SECTION: SENDOUTS
CREATE DATE: N (DEC 10, 2005@14:33:04)
DATE/TIME ACTIVE: N (DEC 10, 2005@14:33:05)
DATE/TIME INACTIVE:
PANEL/TEST: HPV DNA, HIGH RISK
INACTIVE FLAG:
Select CPT CODE: 87621 HPV, DNA, AMP PROBE
  Infectious agent detection by nucleic acid (DNA or RNA);
  papillomavirus, human, amplified probe technique

Are you adding '87621' as a new CPT CODE (the 1ST for this IHS LAB CPT CODE)?
No// Y (Yes)
LAB LIST COST:
REVIEW CODE:
ACTION CODE:
Select MODIFIER: 90
Are you adding '90' as a new MODIFIER (the 1ST for this CPT CODE)? No// Y
(Yes)
Select MODIFIER:
Select QUALIFIER:
Select CPT CODE:
DESCRIPTION:
No existing text
Edit? NO//

```

Figure 6-6: IHS Lab CPT Code

6.8 Map Reference Lab Codes to Laboratory Test File

Once tests have been defined, they must be mapped to the appropriate order and result codes in the BLR Reference Laboratory file. You may either use VA FileMan to edit this file or the menu option, MAP, in the Reference Laboratory Main Menu. This file is used to identify tests that will be electronically handled by the Generic Interface System.

- Type **BOTH** tests will have two entries, one for the order code and one for the result code.
- Type **OUTPUT** tests will have a single entry for the result code.
- Type **INPUT** tests will have a single entry for the order code.
- Try entering the order or result code first to see if a test is already in the BLR Reference Laboratory file.
- In order to make the required two entries for the same test in the BLR Reference Laboratory file, the second entry may be entered in quotation marks as shown below.

```

BLR      IHS Lab Main Support Menu ...
REFL    Reference Lab Main Menu ...
MAP     Map Reference Lab Test

Select BLR REFERENCE LAB REFERENCE LAB NAME: QUEST
Select TEST NAMES: HPV DNA, HIGH RISK
Are you adding 'HPV DNA, HIGH RISK S900489' as a new TEST NAMES (the 2468TH
for this BLR REFERENCE LAB)? No// Y
Select TEST NAMES: HPV DNA, HIGH RISK S900489//
LAB TEST POINTER: HPV DNA, HIGH RISK S900489
ORDER CODE: 900489
RESULT CODE:
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:
Select TEST NAMES: "HPV DNA, HIGH RISK" (duplicate entry using "")
LAB TEST POINTER: HPV DNA, HIGH RISK S900489
ORDER CODE:
RESULT CODE: 10900489
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:

```

Figure 6-7: Mapping reference lab codes to laboratory test file

6.9 Shipping Manifest

The process of accessioning for a reference laboratory test does not differ from that normally used for accessioning any laboratory test. However, entry for a test in the BLR Reference Laboratory file does trigger the printing of a shipping manifest. The matching shipping manifest must be submitted with each specimen. The shipping manifest is used by reference laboratory data entry staff in the event an electronic order is not received. An example of accessioning and printing a shipping manifest is shown below.

```

LAB Laboratory DHCP Menu
  2 Accessioning menu
    Multipurpose accessioning

WANT TO ENTER COLLECTION TIMES? Y//<enter>

Select ACCESSION TEST GROUP: LABCORP

Select Patient Name: TEST,PATIENT CHILD
                                     M 08-08-2000 333333333      DC 88888

    Select one of the following:

        LC          LAB COLLECT(INPATIENTS-MORN. DRAW)
        SP          SEND PATIENT
        WC          WARD/CLINIC COLLECT

Specimen collected how ? : SP// <enter>  SEND PATIENT
PATIENT LOCATION:      OUTPATIENT-LAB
PROVIDER:      MILLS,CHRISTOPHER P
LAB Order number: 13334
Choose one (or more, separated by commas) ('*' AFTER NUMBER TO CHANGE
URGENCY)
1  LIVER FUNCTION          12  HEPATITIS DIAGNOSTIC PANEL
2  GLUCOSE                 13  AFP, MATERNAL SERUM
3  TSH & FREE T4          14  CHOLESTEROL
4  PROSTATE SPECIFIC ANTIGEN  15  SJOGREN'S AB, ANTI-SS-A/-SS-B
5  HEPATITIS B CORE AB, IGG/IGM  16  LEAD, BLOOD
6  CREATININE CLEARANCE      17  URINE CULTURE, ROUTINE
7  CHLAMYDIA/GC DNA PROBE    18  PATHOLOGY REPORT
8  PAP SMEAR                19  BASIC METABOLIC PANEL
9  TOTAL PSA                20  LEAD (ADULT)
10 LIPID PROFILE            21  TSH/RFL TSH 3G
11 COMPREHENSIVE METABOLIC PANEL  22  CBC W/DIFF AND PLTS
TEST number(s): 16
For LEAD, BLOOD
Is BLOOD CAPILLARY the correct sample to collect?Y// <enter>
Same specimen/source for the rest of the order? No// <enter> (No)
Other tests? N// <enter>

You have just selected the following tests for TEST,PATIENT CHILD 88888
  entry no. Test                               Sample
  1          LEAD, PEDIATRIC                     BLOOD

```

```

All satisfactory? Yes// <enter> (Yes)

LAB Order number: 13334

Collection Date@Time: NOW//T@10 (DEC 29, 2003@10:00:00)
~For Test: LEAD, PEDIATRIC BLOOD

Enter Sign or Symptom for LAB Order number 13334
(DO NOT USE 'RULE OUT', 'PROBABLE', 'QUESTIONABLE', etc.): SCREENING
Is this correct? YES//<enter>

ACCESSION: SO 03 233 <6003000233>
LEAD, PEDIATRIC BLOOD
Race?(1=White,2=Black,3=Indian,4=Asian,5=Other): 3
Hispanic (1=Yes,2=No,9=Unknown): 2
Type? (U=Urine,V=Venous,F=Fingerstick): F
Purpose? (I=Initial,R=Repeat,F=Follow-up): I
County Code? (2 Digit County Code): 02

Now printing shipping manifest for this accession
DEVICE: Printer that has been designated for printing shipping manifests.

```

Figure 6-8: Multipurpose Accessioning with ask at order questions

```

INDIAN HEALTH SERVICE EREQ PAGE: 1 of 1

REF LAB NAME: LABCORP CLIENT #: 02305092

FACILITY: LITTLE BUILDING HOSPITAL Dec 29, 2003@16:21:38
ADDRESS: P.O. BOX 187, DULCE, 87528
=====

ORDER (Control): 13334 ORDER DATE: Dec 29, 2003 MID:
PATIENT: TEST,PATIENT CHILD CHART (Patient ID): 088888
SEX: M DOB: AUG 8,2000
LOCATION: OP Bill Type: Client
PRACTITIONER: MILLS, CHRISTOPHER UPIN: 320057
LAB ARRIVAL (COLLECTION DATE/TIME): Dec 29, 2003@10:00

TEST NAME: LEAD, PEDIATRIC (724500) SAMPLE: BLOOD
SOURCE: BLOOD ACCESSION: 6003000233
URGENCY: ROUTINE

ORDER ENTRY QUESTIONS:
Race?(1=White,2=Black,3=Indian,4=Asian,5=Other)3
Hispanic (1=Yes,2=No,9=Unknown) 2
Type? (U=Urine,V=Venous,F=Fingerstick) F
Purpose? (I=Initial,R=Repeat,F=Follow-up) I
County Code? (2 Digit County Code) 02

```

Figure 6-9: Shipping manifest example

6.10 Reprint a Shipping Manifest

In the event a shipping manifest fails to print or a copy must be made, the menu option, *REP Reprint a Shipping Manifest*, may be used to generate a duplicate. Typing a “?” at the Reprint for which Accession Number (UID) prompt will display the list of accession numbers available for reprinting.

```

BLR   IHS Lab Main Support Menu ...
REFL  Reference Lab Main Menu ...
      REP   Reprint Shipping Manifest

Select Reference Lab Main Menu Option: REP   Reprint Shipping Manifest
Reprint for which Accession Number (UID) : ?
Answer with BLR REFERENCE LAB SHIP MANIFEST ACCESSION NUMBER
Do you want the entire 13-Entry BLR REFERENCE LAB SHIP MANIFEST List? Y
(Yes)

Choose from:
6060500006
6060500010
6060500011
6060500012
6060500013
6060500014
6060600002
6060600003
6060600005
6060600006
6060600007
6060600009
6060600011

Reprint for which Accession Number (UID) : 6060600011

```

Figure 6-10: Example of reprinting a shipping manifest

When displaying the list of accession numbers from which to reprint, only the last accession number for a single order will display. If that accession number is chosen to reprint, the shipping manifest displaying all the accessions for that patient order will be reprinted.

6.11 Ask at Order Questions

In the example in *Shipping Manifest* section, you will note that after the accession number was assigned during Multipurpose Accessioning, the user was prompted to answer several Order Entry questions. LabCorp, Quest, RML, and Sonora Quest use “Ask at Order Questions” to electronically submit information that usually gets included on a paper requisition. Examples include:

- Whether or not the patient was fasting
- If it is a 24 hr urine, what the total volume of urine was
- If it is a lead specimen, how the sample was collected

- If it is Maternal Serum AFP, all the questions related to the patient's history and pregnancy that would normally be supplied to the Reference Laboratory

Each reference laboratory should be prepared to supply you with a list of ask at order questions expected to be submitted with an order.

The "Ask at Order Questions" are set up as Reference Laboratory Result Codes. The majority of "Ask at Order Questions" should already be included in the distributed BLR Reference Lab file. For example, for the test, Lead Blood, LabCorp has five "Ask at Order Questions" that are set up as shown in the following figure.

```

Select TEST NAMES: ZBL2          ZBL2
TEST NAMES: ZBL2//
LAB TEST POINTER:
ORDER CODE:
RESULT CODE: ZBL2//
ORDER ENTRY QUESTION: Race?(1=White,2=Black,3=Indian,4=Asian,5=Other)
      Replace
      Select ORDER ENTRY RESULT CODE:
Select TEST NAMES: ZBL3          ZBL3
TEST NAMES: ZBL3//
LAB TEST POINTER:
ORDER CODE:
RESULT CODE: ZBL3//
ORDER ENTRY QUESTION: Hispanic (1=Yes,2=No,9=Unknown)
      Replace
      Select ORDER ENTRY RESULT CODE:
Select TEST NAMES: ZBL4          ZBL4
TEST NAMES: ZBL4//
LAB TEST POINTER:
ORDER CODE:
RESULT CODE: ZBL4//
ORDER ENTRY QUESTION: Type? (U=Urine,V=Venous,F=Fingerstick)
      Replace
      Select ORDER ENTRY RESULT CODE:
Select TEST NAMES: ZBL5          ZBL5
TEST NAMES: ZBL5//
LAB TEST POINTER:
ORDER CODE:
RESULT CODE: ZBL5//
ORDER ENTRY QUESTION: Purpose? (I=Initial,R=Repeat,F=Follow-up)
      Replace
      Select ORDER ENTRY RESULT CODE:
Select TEST NAMES: ZBL6          ZBL6
TEST NAMES: ZBL6//
LAB TEST POINTER:
ORDER CODE:
RESULT CODE: ZBL6//
ORDER ENTRY QUESTION: County Code? (2 Digit County Code)
      Replace
      Select ORDER ENTRY RESULT CODE:

```

Figure 6-11: Setting up ask at order result codes and questions

Neither LabCorp nor RML require Lab Test Pointers for ask at order questions. That means that a test matching these result codes does not need to be set up in the Laboratory Test File.

The test codes associated with these questions must be entered in the field, ORDER ENTRY RESULT CODE for the test that is ordered. An example of how these result codes are associated with the test to be ordered is shown below for the Lead Blood test.

```
TEST NAMES: Lead  Blood//
LAB TEST POINTER: LEAD, PEDIATRIC//
ORDER CODE: 724500//
RESULT CODE:
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE: ZBL6// ??
  Answer with ORDER ENTRY RESULT CODE
  Choose from:
  ZBL2
  ZBL3
  ZBL4
  ZBL5
  ZBL6
```

Figure 6-12: Attaching Order Entry Result Codes to Ordered Test

Quest and Sonora Quest treat ask at order questions just as they do other tests in a panel of tests. They have result codes and the information supplied during the ordering process is returned with the rest of the test results. Therefore, tests associated with Ask at Order Questions must be set up as atomic tests in the laboratory test file and those laboratory tests must be identified in the LAB TEST POINTER field of the Result Code.

Many ask at order Result Codes and Questions are in the distributed reference laboratory software for Quest and LabCorp. None of the Ask at Order Result Codes and Questions have been distributed for Sonora Quest or RML

Below is an example of how the test, Creatinine Clearance, has been set up for Quest in the BLR Reference Laboratory file.

The test results are first set up with their associated LAB TEST POINTER, RESULT CODE, and ORDER ENTRY QUESTION. Review of the Order Entry *Result* Codes shows the Ask at Order Questions associated with these tests.

```

Select TEST NAMES: 25025800  HEIGHT FEET          25025800
TEST NAMES: HEIGHT FEET//
LAB TEST POINTER: HEIGHT FEET//
ORDER CODE:
RESULT CODE: 25025800//
ORDER ENTRY QUESTION: WHAT IS THE PATIENT'S HEIGHT IN FT?
    Replace
    Select ORDER ENTRY RESULT CODE:
Select TEST NAMES: 25026300  HEIGHT INCHES        25026300
TEST NAMES: HEIGHT INCHES//
LAB TEST POINTER: HEIGHT INCHES//
ORDER CODE:
RESULT CODE: 25026300//
ORDER ENTRY QUESTION: WHAT IS THE PATIENT'S HEIGHT IN INCHES?
    Replace
    Select ORDER ENTRY RESULT CODE:
Select TEST NAMES: 25026400  WEIGHT POUNDS        25026400
TEST NAMES: WEIGHT POUNDS//
LAB TEST POINTER: WEIGHT POUNDS//
ORDER CODE:
RESULT CODE: 25026400//
ORDER ENTRY QUESTION: WHAT IS THE WEIGHT IN POUNDS?
    Replace
    Select ORDER ENTRY RESULT CODE:
Select TEST NAMES: 25026700  URINE VOLUME         25026700
TEST NAMES: URINE VOLUME//
LAB TEST POINTER: URINE VOLUME//
ORDER CODE:
RESULT CODE: 25026700//
ORDER ENTRY QUESTION: WHAT IS THE URINE VOLUME IN MLS?
    Replace
    Select ORDER ENTRY RESULT CODE:
Select TEST NAMES: 25026800  COLLECTION TIME      25026800
TEST NAMES: COLLECTION TIME//
LAB TEST POINTER: COLLECTION TIME//
ORDER CODE:
RESULT CODE: 25026800//
ORDER ENTRY QUESTION: WHAT IS THE TOTAL COLLECTION TIME IN HRS?
    Replace
    Select ORDER ENTRY RESULT CODE:

```

Figure 6-13: Setting up questions associated with result codes.

Then the ORDER ENTRY RESULT CODES are added to the entry for the test that will be ordered. In the Creatinine Clearance example, the user will be prompted for the five questions previously set up.

```

TEST NAMES: CREATININE CLEARANCE
LAB TEST POINTER: CREATININE CLEARANCE//
ORDER CODE: 7943//
RESULT CODE:
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE: 25026300// ??
  Answer with ORDER ENTRY RESULT CODE
  Choose from:
  25025800
  25026300
  25026400
  25026700
  25026800

```

Figure 6-14: Orderable test showing ask as order result codes.

The prompts for these questions appear when the test is accessioned. The answers to the questions may be edited. Both the Ask at Order Questions and the answers to these questions results print on the Shipping Manifest.

If Ward Order Entry or the EHR is used for ordering at your facility, ask at order questions may be asked at the time of order. Those facilities using the EHR may request assistance from their clinical application coordinator in setting these question and response choices up in the Quick Orders screen. Those facilities using Ward Order Entry may prompt for the answers to these questions during the ordering process by inserting a template with the desired ask at order information in the Ward Remarks field under the collection sample. See the following figure.

```

COLLECTION SAMPLE: SUREPATH/VIAL
WARD REMARKS: Submit: GYNECOLOGICAL SAMPLE COLLECTED WITH CYTOBROOM IN
ROUTINE MANNER AND BROOM TIP DEPOSITED IN SUREPATH VIAL.

RELEVANT CLINICAL INFORMATION?_____
_____

DATE OF LMP: _____

DATE/RESULT OF PREVIOUS PAP?: _____

DATE/RESULT OF PREVIOUS BIOPSY?: _____

SOURCE?      VAG      ENDO/EXO  CVX      OTHER_____

DATE/TIME of COLLECTION _____ By _____
LAB PROCESSING INSTRUCTIONS: Transport Temperature: ROOM TEMPERATURE
Specimen Stability: ROOM TEMPERATURE: 4 WEEKS REFRIGERATED: 6 MONTHS Reject
Thaw/Other: UNLABELED VIAL, LEAKAGE OF FLUID DURING TRANSPORT, MISMATCH
BETWEEN NAME OF PATIENT ON VIAL AND NAME ON TEST REQUISITION, SUREPATH (BLUE)
VIALS WITHOUT THE HEAD OF THE COLLECTION DEVICE(S) IN THE FLUID.
RELEVANT CLINICAL INFORMATION?_____
_____

```

Figure 6-15: Ward Remarks screen example

Note, however, that the answers do not transfer automatically to the shipping manifest. Each facility will need to determine how best to transfer this information from those placing the orders to those accessioning the tests.

6.12 Verifying Tests

In a bidirectional interface, tests are verified using the EA option just as you would any test result transmitted to RPMS via an instrument interface.

```
Select Process data in lab menu Option: EA  Enter/verify data (auto
instrument)

Select LOAD/WORK LIST NAME: SENDOUTS
Do you wish to modify the test list? No//  (No)
You have selected 13 tests to work with.
Do you want to review the data before and after you edit? Yes//  (Yes)

    Select one of the following:

        1      Accession Number
        2      Unique Identifier (UID)

Verify by: 1//  Accession Number
Accession Date: TODAY//  (DEC 10, 2005) (If you have set up your SENDOUT
accession area as a monthly transform, you will need to enter the month and
year at the Accession Date, e.g. 12 2005.
Accession NUMBER: 3456//

If results have come over the interface they will display, including any comments transmitted and
may be verified.
```

Figure 6-16: Verifying tests

6.13 Reflex Tests

Currently the RPMS Laboratory Package lacks the capability of performing reflex testing. However, reflex testing performed by a reference laboratory may be accommodated in several different manners.

1. The original test panel that is set up may contain both the components of the originally ordered test as well as any reflex tests. The reflex tests must be set up as “Not Required.” If no results come over the interface for these tests, they do not get result, and do not display on the RPMS report.
2. Build the original test as a stand-alone test and the reflex test as a stand-alone test.
 - a. Review the results returned on the hard copy report from the reference laboratory. Note if reflex testing has been performed and what tests have been added.
 - b. Add the reflex tests to the originally accessioned test.

- c. Use EA to verify the original test results. The reflex test will have to be resulted manually.
3. Build the original test as a stand-alone test.
 - a. Review the results returned on the hard copy report from the reference laboratory.
 - b. Note if reflex testing has been performed and what test has been added.
 - c. In the process of using the EA option, add on additional reflex atomic test(s) as shown below.
 - d. The reflex test results will have to be added manually while using EA for the rest of the test results. An example of the process is shown below.

```
Select Process data in lab menu Option: EA Enter/verify data (auto
instrument)

Select LOAD/WORK LIST NAME: QUEST
Would you like to see the list ? No// NO

                Do you wish to modify the test list
                i.e., would you like to add or subtract ATOMIC tests?

Enter Yes or No: No// YES

Do you want to add ATOMIC test(s) to this panel

Select ATOMIC test(s) you wish to add: HPV DNA (HIGH RISK) Q-31532

        The List now has the following tests:
        CRYSTALS,SYN FLD-Q4563

        Note – entire list of tests on the load/worklist will be displayed.

Do you wish to exclude ATOMIC tests in this panel

Enter Yes or No: No// NO
Would you like to see the list ? No// NO

                Do you wish to modify the test list
                i.e., would you like to add or subtract ATOMIC tests?

Enter Yes or No: No// NO
You have selected 344 tests to work with.
Do you want to review the data before and after you edit? Yes// (Yes)

        Select one of the following:

                1          Accession Number
                2          Unique Identifier (UID)

Verify by: 1//

Continue on and verify the tests as if they have come over an auto instrument interface.
```

Figure 6-17: Manually adding reflex test results

6.14 Build an Accession Test Group

You can build an accession test group including the most commonly ordered Reference Laboratory tests. Original users of the Reference Laboratory interface software have found it convenient to include the Order Code in the test name (e.g., B-Type Natriuretic Peptide (140889)) and the Order Code and or Result Code in the synonym field.

6.15 “Immediate Print” Interim Reports

Decide whether verified Reference Laboratory tests will be printed on “Immediate Print” Interim Reports or if the original hard copy report from the Reference Laboratory will be returned to the ordering provider.

If the Reference Laboratory tests will be printed on “Immediate Print” Interim Reports, create the tests in Laboratory Test file (#60) as type BOTH or OUTPUT.

If you do not want the Reference Laboratory tests to immediately print:

- Edit the Urgency file and create an urgency called LAB ONLY with a number 11 or 12.
- As you create the Reference Laboratory test entries in the Laboratory Test file, be sure to assign them a Forced and Highest Urgency Allowed called LAB ONLY.
- Make sure that the “Immediate Print” Interim Reports file is set to print reports for Urgency, Routine or Higher.

6.16 Cumulative Reports

Decide how verified Reference Laboratory tests will be printed on Cumulative Reports.

At this point, there is no way to prevent the tests from printing on the Cumulative Reports. One approach is to allow all Reference Laboratory tests to fall onto miscellaneous pages that can be discarded. However, frequently ordered tests can be mapped to the appropriately designated Major or Minor Headers. Exercise caution when mapping to Major and Minor Headers because extensive comments may cause excessive line wrap. Each incoming orderable laboratory test has a comment indicating the Reference Laboratory performing that test as well as clinically relevant information for that test.

Note that in the sample Interim Report that extensive comments come over the interface from the Reference Laboratory (in uppercase letters). If those comments have been entered in the Laboratory Test file, in the Interpretation (Eval:) field, they will need to be removed when the interface is moved into production to prevent duplication.

```

DEMO,PATIENT FEMALE                                07/09/2004 8:03
  HRCN: 999996   SEX: F   AGE: 32   LOC: OPDL

  Provider: PROVIDER, TEST
  Specimen: SERUM
Accession [UID]: QUEST 0700 88 [0740700088]

                                07/08/2004 09:00
Test name          Result      units      Ref.   range
CEA-Q 978          <0.4      ng/mL
Eval: NON-SMOKER:  <2.5
Eval:   SMOKER:    <5.0
Eval: Because the concentration of CEA in any given specimen can vary due
Eval: to differences in assay methods and reagent specificity, values
Eval: from different assay methods cannot be used interchangeably.
Eval: Serum CEA levels, regardless of value, should not be interpreted
Eval: as absolute evidence of the presence or absence of disease.
Eval: CEA is not intended for use as a cancer screening test.
Comment: NON-SMOKER: <2.5
         SMOKER:    <5.0
         BECAUSE THE CONCENTRATION OF CEA IN ANY GIVEN SPECIMEN CAN VARY DUE
         TO DIFFERENCES IN ASSAY METHODS AND REAGENT SPECIFICITY, VALUES FROM
         DIFFERENT ASSAY METHODS CANNOT BE USED INTERCHANGEABLY.  SERUM CEA
         LEVELS, REGARDLESS OF VALUE, SHOULD NOT BE INTERPRETED AS ABSOLUTE
         EVIDENCE OF THE PRESENCE OR ABSENCE OF DISEASE.  CEA IS NOT INTENDED
         FOR USE AS A CANCER SCREENING TEST.

Test Performed at:
QUEST DIAGNOSTICS-IRVING

```

Figure 6-18: “Immediate Print” Interim Report sample with duplicate interpretation and comments

6.17 Problem-Solving

Two types of problems may be encountered by sites using the bidirectional interface:

1. If a shipping manifest fails to print (You do not see the message on the screen, “Shipping Manifest now printing”), it usually indicates that the test ordered has not been mapped correctly. The load/worklist must be checked to ensure that the ordered test is a valid entry. Also, check to confirm that the ordered test has been identified as the LAB TEST POINTER for that order code in the BLR Reference Laboratory file. No option currently exists to fix this problem and retransmit the order. The order may either be sent via the pre-interface mechanism or the test may be cancelled, mapping corrected, and then reordered.
2. If a result does not appear when the EA option is used to verify incoming results, and either a prompt for “What tray?” or the user is asked if they wish to enter results manually, a mapping problem also exists. The raw data may be displayed either by using FileMan or the Display a Message prompt under the Universal Interface Menu.

When prompted for the message number, enter the name of the auto instrument (Reference Laboratory)-I-Unique Accession Number.

```

LAB      Laboratory DHCP Menu ...
Supervisor menu ...
Lab interface menu ...
Lab Universal Interface Menu ...
Display Lab Universal Interface Message

Select Message: QUEST-I-070800416

```

Figure 6-19: Displaying a Lab Universal Interface Message

```

          LA7 UI Message Display Msg #312946 - QUEST-I-0740800446
[***** Message Statistics *****]

CONFIGURATION: QUEST                      DATE/TIME ENTERED: SEP 01,
2004@13:51:
DATE/TIME OF MESSAGE: SEP 01, 2004@14:37
ENCODING CHARACTERS: ~\&                INSTRUMENT NAME: QUEST-I-
0740800446
MESSAGE CONTROL ID: 20040901154455000    MESSAGE NUMBER: 312946
MESSAGE TYPE: ORU R01                    MSH: MSH
PRIORITY: 3                              PROCESSING ID: PRODUCTION
RECEIVING FACILITY: 46621                SECURITY: TOPNET2NEON
SENDING FACILITY: DAL                    STATUS: ERROR
TYPE: INCOMING                          VERSION ID: 2.3

[***** Error Message *****]

Date: Sep 01, 2004@13:51:59
Text: Msg # 312946, Test code '85988430' was returned with a result but is
not entered as a UI Test Code on this instrument.

[***** Text of Message *****]

MSH|^~\&||DAL||46621|200409011437|TOPNET2NEON|ORU^R01|20040901154455000|P|2

```

Figure 6-20: Lab Universal Interface Message

The ↑ or ↓ keys may be used to scroll down through the message to see the raw data for that accession number.

Any new order code(s) that have not been mapped will be seen in the OBR segment.

```

OBR|1|0740800446|IF299351E|^4439^VARICELLA ZOSTER VIRUS ANTIBODY
(IGG)^|||200

```

Any new result codes that have not been mapped will be seen in the OBX segments.

```

OBX|1|TX|^85988430^VZV AB IGG, EIA^||2.15|ISR|N||F|||200408211600|EZ||CR|

```

Figure 6-21: Example of an OBR segment

This data may then be used to map the tests and codes that failed.

Currently there is not an option available to lab users to re-file this data. An individual with programmer level access may identify the entry in the Universal Interface file for the original result message. When test(s) have been mapped, the

original GIS message may be viewed and re-filed. Re-filed results may then be verified using EA.

6.18 Multidivisional Testing

The GIS reference laboratory interface supports multidivisional testing as well as testing submitted to a reference laboratory from only one facility. Multidivisional is a term used to describe a service unit where more than one health care facility uses a single RPMS server and those health care facilities share a common RPMS database.

Before set up of the interface:

1. Be sure that the reference laboratory with which you are doing business can accept multiple account numbers electronically and can appropriately filter out those account numbers for billing.
2. Identify the electronic account number to be used for each facility using your laboratory test database.
3. Be sure that your Laboratory test file (#60) has been set up in multidivisional mode. This means only one test is defined but in the accession multiple, each separate facility has its own accession area defined. See the example below.

```

LABTEST IEN: 288                                NAME: CEA (8599)
TYPE: BOTH
SUBSCRIPT: CHEM, HEM, TOX, SER, RIA, ETC.
LOCATION(DATA NAME): CH;754;1                    UNIQUE ACCESSION #: YES
LAB COLLECTION SAMPLE: BLOOD RED                FIELD: DD(63.04,754,
EXTRA LABELS: 2                                HIGHEST URGENCY ALLOWED: ROUTINE
REQUIRED TEST: YES                             FORCED URGENCY: ROUTINE
PRINT NAME: CEA                                PRINT ORDER: 24.4
DATA NAME: CEA
SITE/SPECIMEN: BLOOD                           REFERENCE HIGH: 5.1
UNITS: ng/mL                                  LOINC CODE: 2039-6
COLLECTION SAMPLE: BLOOD RED                   MIN VOL (in mls.): 3
SYNONYM: CARCINOEMBRYONIC ANTIGEN
SYNONYM: 8599
GENERAL WARD INSTRUCTIONS: SEND EXTRA LABEL TO LAB WITH SPECIMEN.
GENERAL PROCESSING INST.: SEND EXTRA LABEL TO LAB WITH SPECIMEN.
INSTITUTION: CIMARRON HOSPITAL                 ACCESSION AREA: SENDOUTS WHITERIVER
INSTITUTION: CIMARRON HEALTH CENTER           ACCESSION AREA: CHC SENDOUTS
SITE NOTES DATE: OCT 15, 1996
SITE NOTES DATE: DEC 22, 2005

```

Figure 6-22: Example of a test file set up in multidivisional mode

Set up the reference laboratory interface for one division (start with the major division if there is one) as described in the User Manual.

Additional set up required to support multidivisional functionality for the reference laboratory interface includes the following steps.

3. BLR Master Control File

Be sure that there is an entry in the BLR Master Control file for each facility using the Reference Laboratory Interface. Enter the Reference Laboratory, Account #(s), and Device for Shipping Manifest for each facility.

4. BLR Reference Laboratory File

In the BLR Reference Laboratory file, enter each additional sendout accession area as an additional accession area (Select Accession Area)

5. Auto Instrument File

For the Reference Laboratory Auto Instrument (LabCorp, RML, Quest, Sonora Quest, etc.) enter each additional accession area when prompted to `Select Accession Area`. Do not list an accession area under each individual test.

6. Load/Worklist File

For the Sendout Load/Worklist, create a profile for each accession area. Enter all tests that will be ordered and sent out for each accession area in each profile. Don't worry if the tests are duplicated between profiles. Be sure that all tests that can be ordered are marked as `Build Name Only// NO`.

7. LA7 Message Parameter File (62.48)

Enter a Remote System ID for each of the referring facilities for your reference laboratory. These will be duplicates of the original entry with the exception of the client account number. See below:

```
CONFIGURATION: SONORA QUEST          PROTOCOL: HEALTH LEVEL SEVEN
STATUS: ACTIVE                       LOG ERRORS: ON
PROCESS IN: D QUE^BLRQIIN
REMOTE SYSTEM ID: LABPHXA76965
REMOTE SYSTEM ID: LABPHXA76963
```

Figure 6-23: Example of a remote system ID entry

When configuration is complete, accession a sendout test and confirm that only one shipping manifest prints for each health care facility using the interface and that it prints at that facility. Confirm that only one electronic order goes out for a test accessioned at any one health care facility.

Full systems acceptance testing need not be performed for each site using this interface. Usually a simple test of a dozen or so orders and results will suffice as no changes have been made to the test database.

7.0 Using the Bidirectional Interface

7.1 Sending Orders

1. Shipping Manifests are printed as tests are accessioned.
2. Orders are automatically formatted and sent to the contracted reference laboratory at the time of accessioning.

7.2 Receiving Files

1. Results are automatically received and routed to the LA7 Message Parameter file.
2. Verify incoming data using EA option (Enter/Verify data (auto instrument)). Access this option from the Process Data in Lab menu available from the Laboratory DCHP menu.

7.3 Menus

The *Reference Lab Main Menu* will be installed and appended to the IHS Lab Main Support Menu (BLR or LINK) during installation of Laboratory Reference (LR) Patch 21.

```

LS      Link Transaction Processor Status
7421   Will restart the PC41 label routine if turned off.
INQ    Inquire into the IHS LAB Transaction Log
FLD    Search Transactions for PCC LINK DISABLE Error
RSN    Requeue by Sequence Number
RST    Requeue Transaction by Sort Template
CPT    Enter/edit IHS Lab CPT File
FAL    Find ALL PCC Link Errors from Lab
STP    Stop/restart Lab to PCC Transaction Processor
MSTR   Enter/edit BLR MASTER CONTROL FILE
POV    Purpose of Visit Compliance Report
CLR    Clear BLR errors from error log
CUM    IHS CUMULATIVE MENU ...
ESIG   Provider Electronic Signature Menu ...
REFL Reference Lab Main Menu ...
SHDR   State Health Dept Report

Select IHS Lab Main Support Menu Option

```

Figure 7-1: IHS Lab Main Support Menu

7.3.1 REFL Reference Lab Main Menu

In a bidirectional interface, only three options will be used:

- E60, which can be used to add or edit tests in the Laboratory Test file.
- MAP, which is used to “map” or establish relationships between tests in the RPMS Laboratory Test file and the tests and associated codes used by a contracted reference laboratory.
- SIT, which can be used to alter settings for the reference laboratory interface either with an existing interface, e.g. switching from test mode to production mode, or when contracting with a different reference laboratory.

```
Select IHS Lab Main Support Menu Option: REFL Reference Lab Main Menu

E60   Edit Laboratory Test File (#60) CH ONLY
EXP    Export Reference Lab Orders
IMP    Import Reference Lab Results from HFS
MAP   Map Reference Lab Codes to Laboratory Test File
PUR    Purge Old Reference Lab Log Entries/File(s)
RAW    View/Refile Failed Raw Message(s)
REP    Reprint Shipping Manifest
RRR    Restart the TCP/IP Receiver
RRT    Restart the TCP/IP Transmitter
SIT   Reference Lab Site Parameter Add/Edit
VER    Verify Reference Lab Results
```

Figure 7-2: Reference Lab Main Menu

7.3.1.1 E60 Edit Laboratory Test File (#60) CH ONLY

Each test that will be ordered or that will have a result associated with it must have an entry in the laboratory test file. You may either use VA FileMan or the menu option, E60, which bypasses fields not normally used by the RPMS Laboratory Package to edit an existing test (atomic or cosmic) or to add new ones. An example is shown in the following dialogue of how the test, ALDOSTERONE, was reactivated in the Laboratory test file.

```

Select Reference Lab Main Menu Option: E60  Edit Laboratory Test File (#60)
CH ONLY

Select LABORATORY TEST NAME: ALDOSTERONE
  Are you adding 'ALDOSTERONE' as a new LABORATORY TEST (the 1148TH)? No//
<ENTER>
  (No) ?? Because this test had been inactivated and nobody was manually
entering results for this test, the user is also checking for the presence of
a "ZZ'd test that may be activated.

Select LABORATORY TEST NAME: ZZALDO
  1  ZZALDOLASE
  2  ZZALDOSTERONE
CHOOSE 1-2: 2  ZZALDOSTERONE
NAME: ZZALDOSTERONE// ALDOSTERONE Change the name.
Select SYNONYM: aldost// 004374 Add result code as a synonym.
Select SYNONYM:
TYPE: NEITHER// O OUTPUT (CAN BE DISPLAYED)Change type.
SUBSCRIPT: CHEM, HEM, TOX, SER, RIA, ETC.//
LOCATION (DATA NAME): CH;64;1// (No Editing)
Select INSTITUTION: CIMARRON HOSPITAL//
  ACCESSION AREA: SENDOUTS//
UNIQUE ACCESSION #: NO//
UNIQUE COLLECTION SAMPLE: YES//
LAB COLLECTION SAMPLE: BLOOD//
REQUIRED TEST: YES//
EXTRA LABELS:
HIGHEST URGENCY ALLOWED: ROUTINE//
FORCED URGENCY: ROUTINE//
PRINT NAME: ALDOSTE//
Select SITE/SPECIMEN: SERUM//
  SITE/SPECIMEN: SERUM//
  REFERENCE LOW:
  REFERENCE HIGH:
  CRITICAL LOW:
  CRITICAL HIGH:
  UNITS: MG/DL
  LOINC CODE:1763-2
Select SITE/SPECIMEN:
Select LAB TEST:
Select COLLECTION SAMPLE: BLOOD// SST TUBE  BLOOD  BLOOD  MARBLE
  ...OK? Yes// (Yes)

  COLLECTION SAMPLE: BLOOD//
  MAX. ORDER FREQ.: 1//
  SINGLE DAY MAX ORDER FREQ: 1//
Select COLLECTION SAMPLE:
DATA NAME: ALDOSTERONE//
Select SITE NOTES DATE: NOV 4,1999// T  JUN 07, 2006
  Are you adding 'JUN 07, 2006' as a new SITE NOTES DATE (the 2ND for this
LABOR
ATORY TEST)? No// Y (Yes)
  TEXT:
  1>REACTIVATED TEST FOR REF LAB INTERFACE W/QUEST.  DKR

```

Figure 7-3: Edit laboratory test file CH

7.3.1.2 MAP Map Reference Lab Codes to Laboratory Test File

Each laboratory test ordered or received as a result from a Reference Laboratory, must be mapped to a test in the Laboratory Test file (#60) of the Referring Facility. The mapping process ensures that appropriate data is filed into the RPMS system.

Be sure that you have the test database supplied by the Reference Laboratory when using the MAP option. This option can also be used to add new tests and codes as the Reference Laboratory changes codes or offers new tests.

Order #	Order Name	Results #	Result Name
000703	RENIN ACTIVITY AND ALDOSTERONE	002006	Renin, Plasma
000703	RENIN ACTIVITY AND ALDOSTERONE	004374	Aldosterone, Serum

Figure 7-4: Example of test compendium

In the Test Compendium illustrated above, the order code of 000703 is shown for the panel, RENIN ACTIVITY AND ALDOSTERONE. The result code for Aldosterone, Serum is 004374 and the result code for Renin, Plasma is 002006.

Before beginning mapping, be sure that both atomic tests, Aldosterone and Renin, as well as the cosmic test, Renin Activity and Aldosterone have been defined in the Laboratory test file.

- When selecting the MAP option, be ready to identify the reference laboratory that you will be mapping.
- When first prompted, “Map which Reference Lab Test:” first try to look up the test by its code.
- Even if you have set up a test as a type “**OUTPUT**” test, if you see that it has both order and result codes, map both at the same time.
- There will be either an order or a result code for each entry, never both.
- If you cannot find a test by code, try entering it by name (Reference Lab tests are case-sensitive so duplicate the entry of the test in the compendium.) If you cannot find the test by code or name, then add the new test name and code to the file (BLR REFERENCE LABORATORY) as is shown for the panel. Renin Activity and Aldosterone.

```

BLR  IHS Lab Main Support Menu
      REFL Reference Lab Main Menu
      MAP Map Reference Lab Codes to Laboratory Test File

Select Which Reference Lab to Map Codes for: LABCORP
Map which Reference Lab Test: 002006
   1  002006 Renin Plasma      002006
   2  002006 Renin Plasma      002006
CHOOSE 1-2: 1 Renin Plasma    002006
TEST NAMES: Renin Plasma//
LAB TEST POINTER: RENIN
ORDER CODE: 002006//

```

```

RESULT CODE:
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:
Map which Reference Lab Test: 002006
    1  002006  Renin  Plasma      002006
    2  002006  Renin  Plasma      002006
CHOOSE 1-2: 2  Renin  Plasma      002006
TEST NAMES: Renin  Plasma//
LAB TEST POINTER: RENIN
ORDER CODE:
RESULT CODE: 002006//
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:
Map which Reference Lab Test: 004374
    1  004374  Aldosterone Serum    004374
    2  004374  Aldosterone Serum    004374
CHOOSE 1-2: 1  Aldosterone Serum    004374
TEST NAMES: Aldosterone Serum//
LAB TEST POINTER: ALDOSTERONE
ORDER CODE: 004374//
RESULT CODE:
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:
Map which Reference Lab Test: 004374
    1  004374  Aldosterone Serum    004374
    2  004374  Aldosterone Serum    004374
CHOOSE 1-2: 2  Aldosterone Serum    004374
TEST NAMES: Aldosterone Serum//
LAB TEST POINTER: ALDOSTERONE
ORDER CODE:
RESULT CODE: 004374//
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:
Map which Reference Lab Test: 000703
  Are you adding '000703' as a new TEST NAMES (the 1558TH for this BLR
REFERENCE
LAB)? No// <ENTER> (No) ??

Map which Reference Lab Test: Renin
    1  Renin  Plasma      002006
    2  Renin  Plasma      002006
CHOOSE 1-2:
<ENTER>
Map which Reference Lab Test: Renin Activity and Aldosterone
  Are you adding 'Renin Activity and Aldosterone' as
  a new TEST NAMES (the 1558TH for this BLR REFERENCE LAB)? No// y (Yes)
  TEST NAMES ORDER CODE: 000703
  TEST NAMES RESULT CODE:
TEST NAMES: Renin Activity and Aldosterone Replace
LAB TEST POINTER: RENIN ACTIVITY & ALDOSTERONE
ORDER CODE: 000703//
RESULT CODE:
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:

```

Figure 7-5: Map Reference Lab Codes to Laboratory Test File

7.3.1.3 SIT Reference Lab Site Parameter Add/Edit

The option for adding or editing a Reference Lab Site Parameter can be used if a facility changes Reference Laboratories or if parameters need to be changed from those used during systems acceptance testing to production. The Interface Activation Guide for this patch lists all those data items that must be available when setting the site parameters.

```

BLR  IHS Lab Main Support Menu
      REF  Reference Lab Main Menu
      SIT  Reference Lab Site Parameter Add/Edit

Select Reference Lab Main Menu Option:  SIT  Reference Lab Site Parameter
Add/Edit
Now setting up reference lab parameters..
Setup Parameters for which Reference Lab:  LABCORP  (Name of Reference Lab)
EXPORT DIRECTORY:  No entry required for Bidirectional TCPIP site.
SENDING MACHINE IP ADDRESS:  No entry required for Bidirectional TCPIP site.
FTP USER ID:  No entry required for Bidirectional TCPIP site.
FTP PASSWORD:  No entry required for Bidirectional TCPIP site.
ORDER(S) FILE NAME PREFIX:  OR//  No entry required for Bidirectional TCPIP.

RESULT(S) FILE NAME PREFIX:  RS//  No entry required for Bidirectional TCPIP.
STORAGE DIRECTORY:  No entry required for Bidirectional TCPIP site.
BIDIRECTIONAL/UNIDIRECTIONAL:  BIDIRECTIONAL
HOLD LABS FOR VERIFICATION:  No entry required for Bidirectional TCPIP site.
DAYS TO KEEP ORD/RES FILE(S):  No entry required for Bidirectional TCPIP site.

Now setting up GIS HL7 Message Parameters..
SENDING APPLICATION:  CIMI//  As defined by Reference Laboratory.
SENDING FACILITY:  TEST0223//  As defined by Reference Laboratory.
RECEIVING APPLICATION:  LLS//  As defined by Reference Laboratory.
RECEIVING FACILITY:  PX//  As defined by Reference Laboratory.
DEVICE FOR SHIPPING MANIFEST:  PRT06 (Network printer used to print shipping
manifest.)
Add tIHS Reference Lab to which Site:  LITTLE BUILDING HOSPITAL  202810
ALBUQUERQUE          JICARILLA          10
Enter the name of your facility.
Now setting up Lab HL7 Message Parameter File..

Now activating Reference Lab Interface..

Generation for message:  HL IHS LAB 001
LABCORP.....

The following scripts were generated:
  Generated:  HL IHS LAB 001 LABCORP-O
Compiling Script:  Generated:  HL IHS LAB 001 LABCORP-O..
MUMPS section....
DATA section.....
END section.

Compile completed with 0 warnings and 0 errors.
Linking...  Filing generated routines...

Routine IS00003  ...Filed

```

Figure 7-6: Reference Lab Site Parameter Add/Edit

7.4 Problem Solving

The Reference Laboratory-RPMS Interface will require relatively little user intervention once all tests have been successfully mapped. Explanations have been provided in previous sections on how to monitor and restart the interface as well as review and resolve problems related to printing shipping manifests and inability to receive results. Because laboratory databases are dynamic, there will be ongoing maintenance of the RPMS database to add new tests, panels, and CPT codes.

Final recommendations to reference laboratory interface users include the following:

- Arrange to receive test updates in advance of their release by your reference laboratory.
- Notify the site manager as soon as possible if:
 - Any of the GIS processes are not running and fail to start
 - MailMan bulletins with a new type of message are received
 - An unusually large number of mailman bulletins are received

8.0 Unidirectional Interface Basic Operation

In the case of a unidirectional interface, laboratory data from the Reference Laboratory is passed directly into the Patient Care Component (PCC) database, if it meets all the criteria of patient and test identification. The laboratory data stored in the PCC is in no way to be construed as a replacement for the hard copy laboratory reports issued by the Reference Laboratory and filed in patient charts. The hard copy remains the legal laboratory report. The laboratory data transmitted to PCC using the interface is designed as a replacement for PCC data entry and provides an abstracted view of laboratory results suitable for Health Summary display, database searches, and clinical overview.

Small Urban, Tribal and IHS facilities using the RPMS Laboratory System should use the unidirectional interface, if laboratory staff do not have time to accession and track all Reference Laboratory data.

A unidirectional interface may be converted to a bidirectional interface if EHR is implemented at a site and the resources are available to implement the RPMS Laboratory Package.

The current interface has been tested for the Reference Laboratories shown in the following table:

Reference Laboratory	Mode
Dynacare	Unidirectional
Laboratory Corporation of America (LabCorp)	Unidirectional and Bidirectional
Quest Diagnostics	Unidirectional and Bidirectional
Unilab	Unidirectional
Soft Computer Corporation (SCC)	Unidirectional

Figure 8-1: Reference laboratory table

Other reference laboratories using standard HL7 architecture for laboratory report transmission can be interfaced using the same mechanism with minor adjustments made for file structure. If assistance is required in setting up an interface to a Reference Laboratory besides those listed above, contact the Office of Information Technology (OIT). A separate document, Reference Laboratory HL7 Interface Specifications, is available.

8.1 Submitting the Request

Test requests can be submitted to the Reference Laboratory either on paper or using a workstation provided by the Reference Laboratory.

Orders must contain the following mandatory information:

- Patient Name, Date of Birth, Sex, Chart Number, and SSN (if available)
- Facility Name and Reference Lab Client Number (may be pre-printed)
- Ordering Provider Name and UPIN (Unique Physician Identification Number)
- Relevant billing information including ICD-9 code if required by the contracted reference laboratory
- Collection Date and Time
- Test(s) and relevant specimen information – Whether patient was fasting, patient’s height and weight, specimen source, etc.

8.2 Receiving the Result Files

Testing is performed by the contracted Reference Laboratory and results are entered into the Reference Laboratory Information System where they are directed to an interface engine. The interface software converts the laboratory result data into HL7 messages, which are stored in a file on the Reference Laboratory system. There are two potential modes of transmitting data from the Reference Laboratory:

- Continuous streaming in which results are passed to the Referring Facility over a Virtual Private Network (VPN) as they are verified by the Reference Laboratory.
- FTP using a Virtual Private Network (VPN) in which a file or files of test results are deposited into a designated directory on the RPMS server of the Referring Facility and manually uploaded into the RPMS.

8.3 Reviewing the Data

Each incoming laboratory test creates a laboratory transaction entry. These entries may be verified as a batch or may be reviewed individually before filing in the PCC. In addition, they may be held for later review or removed.

Results may also be filed directly in PCC without review by setting the site parameter in the BLR Reference Laboratory file, *HOLD LABS FOR VERIFICATION*, to “**NO**”.

8.4 Diagram of Laboratory Data Flow

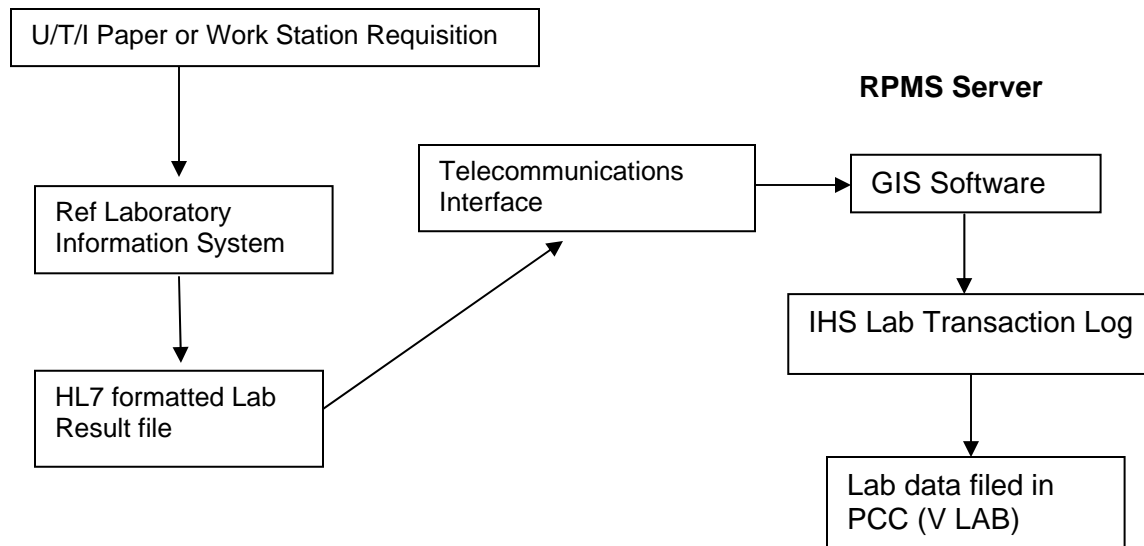


Figure 8-2: Diagram of laboratory data flow

9.0 Setup Steps for Unidirectional Interface

The following steps are required to set up a unidirectional interface:

1. Add atomic tests to laboratory test file.
2. Add cosmic tests to laboratory test file.
3. Map atomic tests to Result Codes in the BLR Reference Lab file.
4. Map stand-alone atomic tests to Order Codes in the BLR Reference Lab file.
5. Map cosmic tests to Order Codes in the BLR Reference Lab file.
6. Add CPT codes for all orderable/billable tests to the IHS Lab CPT file (optional).

Note: “Atomic” refers to single, resulted tests and “Cosmic” refers to a panel of tests.

In the following example, each step is demonstrated for the test panel, VITAMIN B12 and FOLATE, as supplied in the sample Reference Laboratory database displayed below.

Note: It is essential that you have a test and Result Code database from the Reference Laboratory to complete this mapping. The Reference Laboratory should provide a spreadsheet or other table similar to the table below.

Order #	Order Name	Results #	Result Name
000455	THYROID PANEL	001149	Thyroxine (T4)
000455	THYROID PANEL	001156	T3 Uptake
000455	THYROID PANEL	001164	Free Thyroxine Index
000703	RENIN ACTIVITY AND ALDOSTERONE	002006	Renin, Plasma
000703	RENIN ACTIVITY AND ALDOSTERONE	004374	Aldosterone, Serum
000810	VITAMIN B12 AND FOLATE	001503	Vitamin B12
000810	VITAMIN B12 AND FOLATE	002014	Folates (Folic Acid), Serum

Figure 9-1: Reference laboratory database sample

9.1 Add Atomic Test to Laboratory Test File

At the BLR IHS Lab Main Support Menu, use the E60 option (EDIT Atomic tests) to add entries for the two separate tests, Vitamin B12 and Folates (Folic Acid), Serum. If the tests are already present, new entries do not need to be added.


```

BLR  IHS Lab Main Support Menu
      REFL Reference Lab Main Menu
            E60 Edit Laboratory Test File (#60) CH ONLY

Select LABORATORY TEST NAME: Vitamin B12
Are you adding 'Vitamin B12' as a new LABORATORY TEST (the 1621ST)? No// Y
(Yes) <ENTER>
LABORATORY TEST LABTEST IEN: 9999004// automatically assigned by the
system, press <ENTER> to bypass
LABORATORY TEST SUBSCRIPT: CH CHEM, HEM, TOX, SER, RIA, ETC.
LABORATORY TEST HIGHEST URGENCY ALLOWED: ROUTINE
LABORATORY TEST PRINT NAME: Vit B12 (limited to 7 characters)
LABORATORY TEST DATA NAME: <ENTER> (not required for unidirectional
interface)
NAME: Vitamin B12//
Select SYNONYM: 001503 This is the Result Code supplied by the Reference
Laboratory
Select SYNONYM: Enter the Order Code as a Synonym if this is stand-alone
atomic test. In this example, the test is a result-only type of test. Review
of the Reference Laboratory database may show that the test also has an Order
Code if Vitamin B12 is ordered.
TYPE: B BOTH

```

Figure 9-2: Edit Atomic Tests

Add the second atomic test, Folates (Folic Acid), Serum using the same process.

```

Select LABORATORY TEST NAME: Folates(Folic Acid),Serum
Are you adding 'Folates(Folic Acid),Serum' as a new LABORATORY TEST (the
1621ST)? No// Y (Yes) <ENTER>
LABORATORY TEST LABTEST IEN: 9999004// automatically assigned by the
system, press <ENTER> to bypass
LABORATORY TEST SUBSCRIPT: CH CHEM, HEM, TOX, SER, RIA, ETC.
LABORATORY TEST HIGHEST URGENCY ALLOWED: ROUTINE
LABORATORY TEST PRINT NAME: Folates (limited to 7 characters)
LABORATORY TEST DATA NAME: <ENTER> (not required for unidirectional
interface)
NAME: Folates(Folic Acid),Serum//
Select SYNONYM: 002014 This is the Result Code supplied by the Reference
Laboratory
Select SYNONYM: Enter the Order Code as a Synonym if this is a stand-alone
atomic test. In this example, the test is a result-only type of test. Review
of the Reference Laboratory database may show that the test also has an Order
Code.
TYPE: B BOTH

```

Figure 9-3: Edit Atomic Tests

9.2 Add Cosmic Tests to the Laboratory Test file

Add cosmic test to the Laboratory Test file. In this step, you will build the panel test using the E60 option as well. The important difference is that you will enter the atomic tests included in the panel, when prompted, "Select Lab Test:"

```

BLR  IHS Lab Main Support Menu
      REFL Reference Lab Main Menu
      E60  Edit Laboratory Test File (#60) CH ONLY

Select LABORATORY TEST NAME: VITAMIN B12 AND FOLATES
Are you adding 'VITAMIN B12 AND FOLATES' as a new LABORATORY TEST (the
1621ST)? No// Y (Yes) <ENTER>
LABORATORY TEST LABTEST IEN: 9999004// automatically assigned by the
system, press <ENTER> to bypass
LABORATORY TEST SUBSCRIPT: CH  CHEM, HEM, TOX, SER, RIA, ETC.
LABORATORY TEST HIGHEST URGENCY ALLOWED: ROUTINE
LABORATORY TEST PRINT NAME: B12+FOL
LABORATORY TEST DATA NAME: <ENTER>
NAME: VITAMIN B12 AND FOLATES//
Select SYNONYM: 000810 This is the Order Code supplied by the Reference
Laboratory.
Select SYNONYM:
TYPE: I INPUT (CAN BE ORDERED BUT NOT RESULTED)
Select INSTITUTION: CIMARRON HOSP
INSTITUTION: CIMARRON HOSP//
ACCESSION AREA: SENDOUTS
UNIQUE ACCESSION #:
UNIQUE COLLECTION SAMPLE:
LAB COLLECTION SAMPLE:
Select LAB TEST: Vitamin B12
LAB TEST: Vitamin B12
AP MULTIPLY FACTOR:
Select LAB TEST: Folates(Folic Acid),Serum
LAB TEST: Folates(Folic Acid),Serum
AP MULTIPLY FACTOR:
Select LAB TEST: <ENTER>

```

Figure 9-4: Edit Cosmic tests

9.3 Map Atomic Test to Result Codes

Each laboratory test ordered or received as a result from a Reference Laboratory, must be mapped to a test in the Laboratory Test file (#60) of the Referring Facility. The mapping process ensures that appropriate data is filed into the RPMS system.

Be sure that you have the test database supplied by the Reference Laboratory when using the MAP option. This option can also be used to add new tests and codes as the Reference Laboratory changes codes or offers new tests.

Map the newly created atomic tests to the appropriate Result Codes in the BLR Reference Lab Test using the MAP option (Map Reference Lab Codes to Laboratory Test File) as demonstrated for the Vitamin B12 and Folate tests.

Order #	Order Name	Results #	Result Name
000810	VITAMIN B12 AND FOLATE	001503	Vitamin B12
000810	VITAMIN B12 AND FOLATE	002014	Folates (Folic Acid), Serum

Figure 9-5: Vitamin B12 and folate test sample

In the Test Compendium illustrated above, the order code of 000810 is shown for the panel, VITAMIN B12 AND FOLATE. The result code for Vitamin B12 is 001503 and the result code for Folates (Folic Acid), Serum is 002014.

Before beginning mapping, be sure that both atomic tests, Vitamin B12 and Folates, as well as the cosmic test, VITAMIN B12 AND FOLATE, have been defined in the Laboratory test file.

- When selecting the MAP option, be ready to identify the reference laboratory that you will be mapping.
- When first prompted, “Map which Reference Lab Test:” first try to look up the test by its code.
- Even if you have set up a test as a type “OUPUT” test, if you see that it has both order and result codes, map both at the same time.
- There will be either an order or a result code for each entry, never both.
- If you cannot find a test by code, try entering it by name (Reference Lab tests are case-sensitive so duplicate the entry of the test in the compendium.) If you cannot find the test by code or name, then add the new test name and code to the file (BLR REFERENCE LABORATORY) as is shown for the panel, VITAMIN B12 AND FOLATE.

```

BLR  IHS Lab Main Support Menu
      REF  Reference Lab Main Menu
      MAP  Map Reference Lab Codes to Laboratory Test File

Select Reference Lab Main Menu Option: MAP  Map Reference Lab Codes to
Laboratory Test File

Select Which Reference Lab to Map Codes for: LABCORP
Map which Reference Lab Test: 001503
  1  001503 Vitamin B12      001503
  2  001503 Vitamin B12      001503
CHOOSE 1-2: 1  Vitamin B12      001503
TEST NAMES: Vitamin B12//
LAB TEST POINTER: Vitamin B12
ORDER CODE: 001503//←==== Note Order code only, no result code
RESULT CODE:
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:
Map which Reference Lab Test: 001503
  1  001503 Vitamin B12      001503
  2  001503 Vitamin B12      001503
CHOOSE 1-2: 2  Vitamin B12      001503
TEST NAMES: Vitamin B12//
LAB TEST POINTER: Vitamin B12
ORDER CODE:
RESULT CODE: 001503//←==== Note result code only, no order code
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:
Map which Reference Lab Test: 002014
  1  002014 Folates (Folic Acid), Serum      002014
  2  002014 Folates (Folic Acid), Serum      002014
CHOOSE 1-2: 1  Folates (Folic Acid), Serum      002014
TEST NAMES: Folates (Folic Acid), Serum //
LAB TEST POINTER: Folates (Folic Acid), Serum
ORDER CODE: 002014//←==== Note order code only
RESULT CODE:
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:
Map which Reference Lab Test: 002014
  1  002014 Folates (Folic Acid), Serum      002014
  2  002014 Folates (Folic Acid), Serum      002014
CHOOSE 1-2: 2  Folates (Folic Acid), Serum      002014
TEST NAMES: Folates (Folic Acid), Serum //
LAB TEST POINTER: Folates (Folic Acid), Serum
ORDER CODE:
RESULT CODE: 002014//←==== Note result code only
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:

```

Figure 9-6: Map Reference Lab Codes to Laboratory Test File

Enter the Order Code, the Result Code, or the test name at the “Map which Order Result Code:” prompt.

If entering the test name, spell it exactly as it is in the test database provided by the Reference Laboratory including use of uppercase and lowercase letters and punctuation marks. If the test is defined in the Reference Laboratory database, one or more choices are displayed.

Select the number of the entry that matches the Order or Result Code that you will be mapping. When prompted, enter LAB TEST POINTER (the name of the test that matches in the Laboratory Test file (#60)).

If a test is not currently defined in the Reference Laboratory database, you are asked if you wish to add the code as a new TEST NAME. You DO NOT want to use an Order Code or Result Code as a TEST NAME. Therefore, type “**NO.**” You must enter the name of the new test sent by the Reference Laboratory.

To complete the mapping, you must supply the Result Code from the Reference Laboratory database as well as the Laboratory test at the Lab Test Pointer field.

9.4 Map Test to Order Codes

If the test is an atomic test (one Order Code and one Result Code), then two entries must be mapped: One for the test ordered, and one for the test returned – even if the Order Codes and Result Codes are the same.

If the test is a cosmic test, the test that will be ordered will need to be mapped to the correct Order Code.

Map the Order Code to the appropriate entry in the BLR Reference Lab Test file. In the example shown below, the panel test VITAMIN B12 AND FOLATES was not in the file and therefore had to be added.

```
Map which Order/Result Code: VITAMIN B12 AND FOLATES
  1  VITAMIN B12          001503
  2  VITAMIN B12 AND FOLATES      000810
CHOOSE 1-2: 2  VITAMIN B12 AND FOLATES      000810
Map which Reference Lab Test: VITAMIN B12 AND FOLATES
Are you adding VITAMIN B12 AND FOLATES ' as
a new TEST NAMES (the 1558TH for this BLR REFERENCE LAB)? No// y (Yes)
TEST NAMES ORDER CODE: 000810 ←==== Note order code only
TEST NAMES RESULT CODE:
TEST NAMES: VITAMIN B12 AND FOLATES Replace
LAB TEST POINTER: VITAMIN B12 AND FOLATES
ORDER CODE: 000703//
RESULT CODE:
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:
```

Figure 9-7: Map Order Code

9.5 Add CPT Codes for Orderable/Billable Test

Add CPT code for all orderable/billable tests to the IHS Lab CPT file. If a decision has been made to Pass CPT codes to billing, you must assign CPT codes to the orderable test in the IHS Lab CPT file using the CPT option, (Enter/edit IHS Lab CPT File).

```
BLR  IHS Lab Main Support Menu
      CPT  Enter/edit IHS Lab CPT File

Note:  An individual using this option must have L as a FileMan Access Code.

Select IHS LAB CPT CODE NAME: VITAMIN B12 AND FOLATES
  Are you adding 'VITAMIN B12 AND FOLATES' as
  a new IHS LAB CPT CODE (the 543RD)? No// Y  (Yes)
NAME: VITAMIN B12 AND FOLATES  Replace
LAB SECTION: SENDOUTS
CREATE DATE: N  (MAY 30, 2001@11:10:53)
DATE/TIME ACTIVE: N  (MAY 30, 2001@11:10:53)
DATE/TIME INACTIVE:
PANEL/TEST: VITAMIN B12 AND FOLATES This is the name of the orderable test.
Select CPT CODE: 82607      VITAMIN B-12
                  CYANOCOBALAMIN (VITAMIN B-12);
                  ...OK? Yes//  (Yes)

  Are you adding '82607' as a new CPT CODE (the 1ST for this IHS LAB CPT
CODE)? No// Y  (Yes)
LAB LIST COST:
REVIEW CODE:
ACTION CODE:
Select MODIFIER: 90
Are you adding '90' as a new MODIFIER (the 1ST for this CPT CODE)? No// Y
(Yes) Indicates that this test was performed by a Reference Laboratory.
Select MODIFIER:
Select QUALIFIER:
Select CPT CODE: 82746      BLOOD FOLIC ACID SERUM
                  FOLIC ACID; SERUM
                  ...OK? Yes// <Enter>  (Yes)

  Are you adding '82746' as a new CPT CODE (the 2ND for this IHS LAB CPT
CODE)? No// Y
LAB LIST COST:
REVIEW CODE:
ACTION CODE:
Select MODIFIER: 90
Are you adding '90' as a new MODIFIER (the 1ST for this CPT CODE)? No// y
(Yes)
Select MODIFIER:
Select QUALIFIER:
Select CPT CODE:
DESCRIPTION:
No existing text
Edit? NO//
```

Figure 9-8: Enter/edit IHS Lab CPT file

10.0 Using the Unidirectional Interface

10.1 Sending Orders

There will be no changes in the way that orders are submitted to the Reference Laboratory when using this interface. They will be submitted either on paper requisitions or via a reference lab supplied computer workstation.

10.2 Receiving Results

Test results will be received either in real time via a TCPIP interface or will need to be imported using a menu option if they are transferred in batch mode from the reference laboratory.

10.3 Verifying Results

Verification is performed using the VER option (Verify Reference Lab Results) found on the REFL Reference Laboratory Main Menu. Auto verification may be turned on by adjusting the site parameters in the BLR Reference Laboratory file.

10.4 Menus

The Reference Lab Main Menu will be installed and appended to the IHS Lab Main Support Menu (BLR or LINK) during installation of Laboratory Reference (LR) Patch 21.

```

LS      Link Transaction Processor Status
7421   Will restart the PC41 label routine if turned off.
INQ    Inquire into the IHS LAB Transaction Log
FLD    Search Transactions for PCC LINK DISABLE Error
RSN    Requeue by Sequence Number
RST    Requeue Transaction by Sort Template
CPT    Enter/edit IHS Lab CPT File
FAL    Find ALL PCC Link Errors from Lab
STP    Stop/restart Lab to PCC Transaction Processor
MSTR   Enter/edit BLR MASTER CONTROL FILE
POV    Purpose of Visit Compliance Report
CLR    Clear BLR errors from error log
CUM    IHS CUMULATIVE MENU ...
ESIG   Provider Electronic Signature Menu ...
REFL Reference Lab Main Menu ...
SHDR   State Health Dept Report

Select IHS Lab Main Support Menu Option

```

Figure 10-1: IHS Lab Main Support Menu

10.4.1 REFL Reference Lab Main Menu

In a unidirectional interface, the options bolded in figure 10-2 below will be used.

- **E60**, which can be used to add or edit tests in the Laboratory Test file.
- **IMP** is used only by sites receiving their result files in batch mode via FTP from the reference laboratory.
- **MAP**, which is used to “map” or establish relationships between tests in the RPMS Laboratory Test file and the tests and associated codes used by a contracted reference laboratory.
- **PUR** allows purging of old test files that are no longer needed. This option is only used by sites that receive their result files in batch mode from the reference laboratory.
- **RAW** allows the user to review data that failed to import correctly either because of unmatched test codes or mismatched patient identifiers.
- **SIT** may be used to alter settings for the reference laboratory interface either with an existing interface, e.g. switching from test mode to production mode, or when contracting with a different reference laboratory.
- **VER** is used to review and file incoming laboratory results into PCC.

```
Select IHS Lab Main Support Menu Option: REFL Reference Lab Main Menu

E60    Edit Laboratory Test File (#60) CH ONLY
EXP     Export Reference Lab Orders
IMP    Import Reference Lab Results from HFS
MAP    Map Reference Lab Codes to Laboratory Test File
PUR    Purge Old Reference Lab Log Entries/File(s)
RAW    View/Refile Failed Raw Message(s)
REP     Reprint Shipping Manifest
RRR     Restart the TCP/IP Receiver
RRT     Restart the TCP/IP Transmitter
SIT    Reference Lab Site Parameter Add/Edit
VER    Verify Reference Lab Results
```

Figure 10-2: Reference Lab Main Menu

10.4.1.1 **E60 Edit Laboratory Test File (#60) CH ONLY**

Use of this option is shown in the *Laboratory Test* section of this manual.

10.4.1.2 **MAP Map Reference Lab Codes to Laboratory Test File**

Use of this option is shown in the *Map Reference Lab Codes to Laboratory Test File* section of this manual.

10.4.1.3 BWH Browse Health Summary

The menu option to browse a Health Summary is not included in the distributed Reference Lab Main Menu. However, it is a very useful tool for staff at a unidirectional site to use in determining whether incoming laboratory data has filed in PCC. After verifying the incoming Reference Laboratory test results, browse the Health Summary and determine that all incoming results display in the Laboratory Data section.

BLR IHS Lab Main Support Menu						
REFL Reference Lab Main Menu						
BWH Browse Health Summary						
----- MOST RECENT LABORATORY DATA (max 2 years) -----						
				UNITS	REF RANGE	
LIPID PROFILE	09/03/03					R
CHOLESTEROL, TOTAL	09/03/03	100 (N)	mg/dL	100 - 199		R
TRIGLYCERIDE	09/03/03	50 (N)	mg/dL	0 - 149		R
VLDL CHOLESTEROL (CALC)	09/03/03	10 (N)	mg/dL	5 - 40		R
LDL CHOLESTEROL (CALC)	09/03/03	35 (N)	mg/dL	0 - 129		R
HDL CHOLESTEROL	09/03/03	55 (N)	mg/dL	> 39-		R
CHOL/HDL RATIO	09/03/03	1.8 (N)				R
LDL/HDL RATIO	09/03/03	0.64 (N)				R
MAGNESIUM	09/03/03	5.1 (HH)	mEq/L	1.3 - 2.1		R
CULTURE, URINE (ROUTINE)	12/01/03					R
STATUS	12/01/03	FINAL (N)				R
SOURCE	12/01/03	(N)				R
CULTURE RESULT	12/01/03	(N)				R

Figure 10-4: Browse Health Summary

10.4.1.4 DSP Display Data for a Specific Patient Visit

Because Reference Laboratories sometimes transmit test results in comment segments instead of result segments, the Health Summary may not actually display the results. Use the DSP option (Display Data for a Specific Patient Visit), for the date of the test, to see the actual results.

```
BLR  IHS Lab Main Support Menu
      REFL Reference Lab Main Menu
      DSP  Display Data for a Specific Patient Visit
```

```
Patient Name:      DEMO,PATIENT OLD
Chart #:           500403
Date of Birth:     JAN 01, 1901
Sex:              M
Visit IEN:        194349
```

```
===== VISIT FILE =====
VISIT/ADMIT DATE&TIME: DEC 01, 2003@12:00
DATE VISIT CREATED:   DEC 02, 2003
TYPE:                 TRIBE-638 PROGRAM
PATIENT NAME:        DEMO,PATIENT OLD
LOC. OF ENCOUNTER:   HAPPY CAMP
SERVICE CATEGORY:   EVENT (IHSTORICAL)
DEPENDENT ENTRY COUNT: 12
DATE LAST MODIFIED:  DEC 02, 2003
CREATED BY USER:    TECHNICIAN,LAB
USER LAST UPDATE:   TECHNICIAN,LAB
UNIQUE VISIT ID:    6613550000194349
DATE/TIME LAST MODIFI: DEC 02, 2003@14:51:16
```

```
===== LABs =====
LAB TEST:           CULTURE, URINE (ROUTINE)
LR ACCESSION NO.:  TT0321231
SOURCE OF DATA INPUT: REFERENCE LAB
CURRENT STATUS FLAG: RESULTED
BILLABLE ITEM:     YES
COLLECTION DATE AND T: DEC 01, 2003@16:30
ORDERING PROVIDER: TECHNICIAN,LAB
ORDERING DATE:     DEC 01, 2003
```

```
LAB TEST:           STATUS
RESULTS:           FINAL
ABNORMAL:         N
LR ACCESSION NO.:  TT0321231
SOURCE OF DATA INPUT: REFERENCE LAB
CURRENT STATUS FLAG: RESULTED
BILLABLE ITEM:     YES
COLLECTION DATE AND T: DEC 01, 2003@16:30
ORDERING PROVIDER: TECHNICIAN,LAB
PARENT:           CULTURE, URINE (ROUTINE)
ORDERING DATE:     DEC 01, 2003
```

```

LAB TEST:          SOURCE
RESULTS:
ABNORMAL:         N
LR ACCESSION NO.: TT0321231
SOURCE OF DATA INPUT: REFERENCE LAB
CURRENT STATUS FLAG: RESULTED
BILLABLE ITEM:    YES
COLLECTION DATE AND T: DEC 01, 2003@16:30
ORDERING PROVIDER: TECHNICIAN,LAB
PARENT:          CULTURE, URINE (ROUTINE)

ORDERING DATE:    DEC 01, 2003
COMMENTS:
  URINE

LAB TEST:          CULTURE RESULT
RESULTS:
ABNORMAL:         N
LR ACCESSION NO.: TT0321231
SOURCE OF DATA INPUT: REFERENCE LAB
CURRENT STATUS FLAG: RESULTED
BILLABLE ITEM:    YES
COLLECTION DATE AND T: DEC 01, 2003@16:30
ORDERING PROVIDER: TECHNICIAN,LAB
PARENT:          CULTURE, URINE (ROUTINE)
ORDERING DATE:    DEC 01, 2003
COMMENTS:
  1) GREATER THAN 100,000 COLONIES/ML ESCHERICHIA COLI

```

Figure 10-5: Display data for a specific patient visit

10.4.1.5 IMP Import Reference Lab Results from HFS

This option must be used by facilities using a unidirectional interface in which batch files are received (FTP). The IMP option formats and imports the Reference Laboratory data into RPMS. The incoming data is filed into the IHS Lab Transaction file. Data may subsequently be reviewed and verified using the VER option (Verify Reference Laboratory Data). As the files are read in they are moved out of the incoming directory into the designated file storage directory.

```

BLR  IHS Lab Main Support Menu
      REF  Reference Lab Main Menu
      IMP  Import Reference Lab Results from HFS

Now reading in reference lab file from directory e:\reflab\reflabin\
Now backing up read in file

Now backing up read in file

```

Figure 10-6: Import Reference Lab Results from HFS

10.4.1.6 PUR Purge Old Reference Lab Log Entries/File(s)

Only sites that send orders and/or receive results in batch mode using FTP need to run the PUR option. It is recommended that the PUR option be run every 30 days.

```
BLR  IHS Lab Main Support Menu
      REF  Reference Lab Main Menu
      PUR  Purge Old Reference Lab Log Entries/File(s)
```

Figure 10-7: Purge Old Reference Lab Log Entries/File(s)

10.4.1.7 RAW View/Refile Failed Raw Message(s)

The RAW option is for unidirectional sites only and it is used for reviewing raw data for errors as well as refileing that data when errors have been corrected. This is considered “Raw” data because the fields are still in HL7 format. The GIS Message Number will be noted in the error bulletin generated when the data failed to file.

```
Subj: Error Matching Reference Lab Test  [#14163] 01 Nov 04 07:23  9 Lines
From: POSTMASTER (Sender: GIS,USER) in 'IN' basket.  Page 1  **NEW**
```

The following reference lab test failed to match a lab test on file:

```
Test:      70025
Test Name:WBC, STOOL
IHS Lab Tx Seq9
GIS HL7 Message #116433
Collection Date  Oct 29, 2004@16:37
Accession #      CX6027075
```

```
Select MESSAGE Action: IGNORE (in IN basket)//
```

Figure 10-8: View/Refile Failed Raw Message(s)

After mapping the test, WBC, STOOL, the data can be refiled by using the RAW option (View/Refile Failed Raw Message(s))

```

BLR  IHS Lab Main Support Menu
      REF Reference Lab Main Menu
      RAW Refile Failed Raw Message(s)

Select Reference Lab Main Menu Option: RAW Refile Failed Raw Message(s)

      Select one of the following:

          M      Message Number
          F      File

Select by Message Number or File Name : Message Number

Select Message Number: 116433 <Enter>

DATE/TIME: NOV 13, 2003@14:31:56      DESTINATION: HL IHS LAB R01 UNILAB IN
STATUS: COMPLETE                      LAST DATE/TIME: NOV 13, 2003@14:31:59
IN/OUT: IN
LAST ACTIVITY DATE: NOV 13, 2003@14:31:59
PRIORITY: 1
ACTIVITY LOG: NOV 13, 2003@14:31:59    LOG ACTION: COMPLETE
MESSAGE TEXT:
MSH|^~\&|UNILAB SC|3714 Northgate
Blvd^Sacramento^CA^95834|IHXX|4104005|2003102
PID|1|TT0319116|500400|DEMO^PATIENT MALE||19430101|M|||CR
OBR|1|500400|TT0319116|9651^LIPID
PROFILE||200310291000|||E38850^CHRISTIANSON
OBX|1|ST|30120^CHOLESTEROL, TOTAL||150|mg/dL|<200|N|F||SC|Unilab^3714
Northga
OBX|2|ST|30125^TRIGLYCERIDES||81|mg/dL|<150|N|F||SC|Unilab^3714 Northgate
Bou
OBX|3|ST|30126^VLDL CHOLESTEROL (CALCULATED)||16|mg/dL|5 -
40|N|F||SC|Unilab^
OBX|4|ST|30128^LDL CHOLESTEROL (CALCULATED)||53|mg/dL|0 -
129|N|F||SC|Unilab^
OBX|5|ST|39405^CHOLESTEROL, HDL||81|mg/dL|>40|N|F||SC|Unilab^3714
Northgate B
OBX|5|ST|39405^CHOLESTEROL, HDL||81|mg/dL|>40|N|F||SC|Unilab^3714
Northgate B
+      Enter ?? for more actions      >>>
R// <ENTER>      Refile Message

```

Figure 10-9: View/Refile Failed Raw Message(s)

10.4.1.8 SIT Reference Lab Site Parameter Add/Edit

The option for adding or editing a Reference Lab Site Parameter can be used if a facility changes Reference Laboratories or if parameters need to be changed from those entered during original setup. The Activation Guide for the Reference Laboratory Interface lists all those data items that must be available and defined at the time the patch is installed.

```

BLR  IHS Lab Main Support Menu
      REFL Reference Lab Main Menu
      SIT Reference Lab Site Parameter Add/Edit

Select Reference Lab Main Menu Option: SIT Reference Lab Site Parameter
Add/Edit
Now setting up reference lab parameters..
Setup Parameters for which Reference Lab: LABCORP (Name of Reference Lab)
EXPORT DIRECTORY: c:\REFLAB\REFLABOUT\ Replace (This field would only be
used for a site which is batching order files to go out to a reference
laboratory.)
SENDING MACHINE IP ADDRESS: This field is no longer required.
FTP USER ID: xxxxxxx.xxx This field is no longer required.
FTP PASSWORD: xxxxxxx.xxxx This field is no longer required.
ORDER(S) FILE NAME PREFIX: OR// (Per Reference Laboratory specification.)
RESULT(S) FILE NAME PREFIX: RS// (Per Reference Laboratory specification.)
STORAGE DIRECTORY: C:\REFLAB\REFLABSAVE\ Replace (This is the directory
where files are deposited after they have been imported for a unidirectional
FTP site.)
BIDIRECTIONAL/UNIDIRECTIONAL: UNIDIRECTIONAL
HOLD LABS FOR VERIFICATION: For unidirectional sites, answer "YES" if
incoming results are held in the IHS Lab Transaction Log to be reviewed
before release to PCC. If you wish to switch to auto verification of results
as they come in, answer "NO".
DAYS TO KEEP ORD/RES FILE(S): 30// The default number of days to keep Order
and Result files when the purge old Order and Result files option is run. 30
days is the default in the event results or orders will be reimported or re-
exported.

Now setting up GIS HL7 Message Parameters..
SENDING APPLICATION: CIMI// As defined in Reference Laboratory
specifications.
SENDING FACILITY: TEST0223// As defined in Reference Laboratory
specifications.
RECEIVING APPLICATION: LLS// As defined in Reference Laboratory
specifications.
RECEIVING FACILITY: PX// As defined in Reference Laboratory specifications.
Add tIHS Reference Lab to which Site: LITTLE BUILDING HOSPITAL 202810
ALBUQUERQUE JICARILLA 10
Enter the name of your facility.
Now setting up Lab HL7 Message Parameter File..

Now activating Reference Lab Interface..

Generation for message: HL IHS LAB 001
LABCORP.....

The following scripts were generated:
  Generated: HL IHS LAB 001 LABCORP-O
Compiling Script: Generated: HL IHS LAB 001 LABCORP-O..
MUMPS section....
DATA section.....
END section.

```

```

Compile completed with 0 warnings and 0 errors.
Linking...  Filing generated routines...

Routine IS00003      ...Filed

```

Figure 10-10: Reference Lab Site Parameter Add/Edit

10.4.1.9 VER Verify Reference Lab Results

The VER option is for a unidirectional interface only. A Referring Facility with a unidirectional interface has the ability to review and verify the laboratory results returned by the Reference Laboratory. The data displayed in this option is in the IHS Lab Transaction Log. The Sequence Number is the Transaction Log (TX) number.

Use the VER option (Verify Reference Lab Results) to review, verify, or remove the incoming data. Always review incoming results during the early stages of running the interface. Once interface functionality has been confirmed, all incoming results may be verified by answering “YES” when prompted to verify all results.

```

BLR  IHS Lab Main Support Menu
      REF  Reference Lab Main Menu
      VER  Verify Reference Lab Results

Select Reference Lab Main Menu Option: VER  Verify Reference Lab Results

VERIFY REF LAB RESULTS          Oct 21, 2003 21:07:06          Page:    1 of    2

SEQUENCE NUMBER: 1870                LRFIL: 2
PATIENT POINTER VALUE: 6955          PATIENT NAME: DEMO,PATIENT MALE
PANEL/TEST POINTER: LIPID PROFILE    PANEL/TEST NAME: LIPID PROFILE
LAB MODULE: GENERAL                  DUZ(2): 4621
I/O CATEGORY: E                      STATUS FLAG: RESULTED
PCC ERROR FLAG: Result being held for verification
BILLABLE ITEM: YES                   SOURCE OF DATA INPUT: R
ORDER DATE: OCT 19, 2003
ORDERING PROVIDER POINTER: TECHNICIAN,LAB
ORDERING PROVIDER NAME: TECHNICIAN,LAB
ORDERING LOCATION POINTER: HAPPY CAMP CLINIC
ORDERING LOCATION NAME: HAPPY CAMP CLINIC
COLLECTION DATE/TIME: OCT 19, 2003@23:00
ACCESSION NUMBER: TT0318333

          Enter ?? for more actions                                >>>

+   Next Screen          V   Verify Result          R   Remove Entry
-   Previous Screen     D   Don't Verify Result    Q   Quit

```

Figure 10-11: Verify Reference Lab Results

When reviewing the above test, note that this is a panel or cosmic test that has been ordered – a LIPID PROFILE. The patient is DEMO,PATIENT MALE and the Collection Date/Time is OCT 19, 2003@2300. The ordering provider is TECHNICIAN,LAB. If an ordering provider and a valid UPIN have been specified on the requisition submitted to the Reference Laboratory, that ordering provider will

be displayed on the incoming data. If however, a requisition is submitted without a valid provider UPIN, or a match cannot be found in the RPMS Provider file when the result is returned, a generic provider of TECHNICIAN,LAB will be added into the transaction as the ordering provider. *If you supply an incorrect UPIN number, the wrong provider will be listed as the ordering provider.*

If the returned data corresponds with the log of tests sent to the Reference Laboratory for the date specified, type “**V**” to verify the data and confirm that it should be passed to PCC.

If any of the data items is not correct or a decision will be deferred about accepting the incoming data, type “**D**” (Don’t Verify Result). If the result is a duplicate or should not be passed to PCC, type “**R**” to Remove the Entry. Continue this process for all tests until there are no more tests to verify. When reviewing atomic tests, note that all the incoming data may not be displayed on a single screen. Use the ↑ and ↓ keys to review the data on the second page.

See the following example of an incoming “child test” with a result. In a unidirectional interface, the reference ranges, abnormal flags, and units displayed on the second page of the transaction will be passed to PCC. Use the ↑ and ↓ keys to review the data on the second page. You will also note that for a “child” test there is an additional field, PARENT POINTER that references the sequence number in the IHS Lab Transaction Log of the “parent” or panel test.

Note: If there is a problem with the parent test, the children tests will not file into PCC.

```

VERIFY REF LAB RESULTS          Oct 21, 2003 21:07:28          Page:    1 of    2

SEQUENCE NUMBER: 1871          LRFIL: 2
PATIENT POINTER VALUE: 6955    PATIENT NAME: DEMO,PATIENT MALE
PANEL/TEST POINTER: CHOLESTEROL, TOTAL
PANEL/TEST NAME: CHOLESTEROL, TOTAL    LAB MODULE: GENERAL
DUZ(2): 4621                  I/O CATEGORY: E
PARENT POINTER: 1870          STATUS FLAG: RESULTED
PCC ERROR FLAG: Result being held for verification
BILLABLE ITEM: YES           SOURCE OF DATA INPUT: R
ORDER DATE: OCT 19, 2003
ORDERING PROVIDER POINTER: TECHNICIAN,LAB
ORDERING PROVIDER NAME: TECHNICIAN,LAB
ORDERING LOCATION POINTER: HAPPY CAMP CLINIC
ORDERING LOCATION NAME: HAPPY CAMP CLINIC
COLLECTION DATE/TIME: OCT 19, 2003@23:00
ACCESSION NUMBER: TT0318333    RESULT: 150
+      Enter ?? for more actions          >>>

+      Next Screen          V      Verify Result          R      Remove Entry
-      Previous Screen      D      Don't Verify Result    Q      Quit

```

Figure 10-12: Verify Reference Lab Results

The hard copy report returned from the Reference Laboratory is the legal laboratory record for the patient's chart and is used to confirm the data transmitted by the interface.

Note: Amended reports do not overwrite existing data. They must be referred to PCC Data Entry for correction of the laboratory data that was previously filed.

11.0 Overview of Interface Software

The interface is actually a two-part system. The Generic Interface System (GIS) accepts the data from the Reference Laboratory and stores it in the UNIVERSAL INTERFACE FILE (^INTHU). In a unidirectional system, the data is passed off to the IHS Lab Transaction Processor (^BLRTXLOG). When the data in the IHS Transaction Log is verified, it passes from the RPMS Laboratory Package to PCC.

Check both the GIS processors, as well as the IHS Lab Transaction Processor at the beginning of each day, any time the RPMS system goes down, and whenever the Referring Facility staff is notified that the Reference Laboratory interface system has been shut down and restarted. Instructions are provided in the following section.

11.1 Generic Interface System

11.1.1 TCPIP Sites:

In a unidirectional interface, there are three Generic Interface System (GIS) processes to monitor:

- OUTPUT CONTROLLER
- FORMAT CONTROLLER
- HL IHS LAB RECEIVER

The site manager or other trained staff should check GIS processes as follows:

```

GIS  GIS Interface Menu
      BPM  Background Process Control Menu
      VS  Verify Status of Background Processes

          **Verify Status of Background Processes**
          **Input Parameters**

Detailed report: YES           Repaint frequency: 5
Maximum number of iterations (printer only): 100

COMMAND:  SAVE <ENTER> EXIT (ENTER)           Press <PF1>H for help   Insert

```

Figure 11-1: Verify Status of Background Processes

When the status input screen is displayed, you may switch to the Status Display by typing **SAVE <Enter>** followed by **EXIT <Enter>** or **F1 E**

Confirm the activity of both processes to be sure they are idle.

```

Verify Background Process                               16 Nov 2004@1200
Start Time: 16 Nov 2004@1200           Number of Iterations: 1
Run Time: 0 sec                         Avg Time per Iteration: 0 sec

Run  Background Process/                               (defaults in seconds)
     Message                                           Last Run/
                                           Last Msg  Elapsed
-----
OUTPUT CONTROLLER                               12:00:08      0      0      0      0
  Idle
FORMAT CONTROLLER                               12:00:08      0      0      0      0
  Idle
  
```

Figure 11-2: Verify Status of Background Processes

If a process has stopped, you can restart it by selecting:

```

GIS  GIS Interface Menu
     BPM  Background Process Control Menu
     S1   Startup a Background Process

Select BACKGROUND PROCESS CONTROL NAME: HL IHS LAB RECEIVER
. Started
  
```

Figure 11-3: Startup a Background Process

11.1.2 FTP Sites

At a unidirectional FTP site, only one processor needs to be running, the OUTPUT CONTROLLER. It may be monitored and restarted as described in the section for *Overview of Interface Software, Unidirectional TCPIP*.

11.2 IHS Lab Transaction Processor

If the link is active, the following screen will display with a “flicker” every second or so as the system polls for new data. The link between the Laboratory Package and PCC can be monitored by selecting the following menu options:

```

BLR  IHS Lab Main Support Menu
      LS  Link Transaction Processor Status

              Processor Status
              DEC 04, 2003@16:44:21

              Currently processing day DEC 04, 2003

              Event                Entry Position    IHS Lab Transaction
              in Queue              Sequence Number
-----
Last Entry Assigned    1100          4900          256,798
Last Entry Processed   1100          4900          256,798
Press Enter to continue:

```

Figure 11-4: Link Transaction Processor Status

The “Currently processing day” should match the date at the top of the screen. If data is current, the “Last Entry Assigned” should match the “Last Entry Processed” in the Event column, the Entry Position in Queue column, and the Sequence Number column.

At the beginning of each day, the processor is set back to zero. Each new piece of laboratory data is assigned a new sequence number so if the processor is working correctly, the transaction numbers will be incrementing. Note that to prevent the IHS Transaction Log from becoming exceptionally large, a task, BLRTASK LAB LOG CLEANUP, has been scheduled to run every night to remove transactions older than 180 days. Therefore, at some point after six months of running the interface, the sequence numbers may once again fall into a lower number range.

Occasionally a message may display at the bottom of the screen, “Link is not running.” This message is displayed if no new data has been received for some time. If data has come in but the Lab Transaction Processor is not running, the GIS Format Controller and Output Controller may need to be stopped and restarted. When new data flows through the interface, the Lab-PCC link is triggered to begin processing data again.

The message, “Stopped by User” is displayed when multiple errors are generated by the processor and the link is automatically shut down. If this message is

displayed when using the LS menu option to check the processor status, check the following:

```
BLR  IHS Lab Main Support Menu
      STP      Stop/restart Lab to PCC Transaction Processor

Select BLR MASTER CONTROL SITE: SELLS HOSP      TUCSON      SELLS      01 AZ
PHS
      ...OK? Yes//      (Yes)

STOP PROCESSOR: YES  If this field is set to "YES", it may be either an
indicator of a link failure due to a serious error or the fact that the link
was turned off and not turned back on. The processor may be restarted by
entering "NO." If however, the processor once again stops and this field
resets to "YES," notify the site manager to check the error trap for a BLR
type of error.
```

Figure 11-5: Stop/restart Lab to PCC Transaction Processor

12.0 Maintenance of the Interface

The only maintenance anticipated with the RPMS interface software is to stop and restart background processes. This would occur if the Reference Laboratory notifies the Referring Facility that the interface has disconnected or if a routine monitoring of the background processes or link status indicates that the link is not running. The menu paths are as follows:

```
Select IHS Kernel Option: GIS GIS Interface Menu
Select GIS Interface Menu Option: BPM Background Process Control Menu
Select Background Process Control Menu Option: SH1 Shutdown a Process

Select PROCESS to Stop: OUTPUT CONTROLLER
. Stopped

Select IHS Kernel Option: GIS GIS Interface Menu
Select GIS Interface Menu Option: BPM Background Process Control Menu
Select Background Process Control Menu Option: SH1 Shutdown a Process

Select PROCESS to Stop: FORMAT CONTROLLER
. Stopped
```

Figure 12-1: Shutdown a process

Restart both background processes:

```
Select IHS Kernel Option: GIS GIS Interface Menu
Select GIS Interface Menu Option: BPM Background Process Control Menu
Select Background Process Control Menu Option: S1 Startup a Background
Process
Select BACKGROUND PROCESS CONTROL NAME: OUTPUT CONTROLLER
. Started

Select IHS Kernel Option: GIS GIS Interface Menu
Select GIS Interface Menu Option: BPM Background Process Control Menu
Select Background Process Control Menu Option: S1 Startup a Background
Process

Select BACKGROUND PROCESS CONTROL NAME: FORMAT CONTROLLER
. Started
```

Figure 12-2: Startup a Background Process

Verify that the IHS Lab Transaction Processor is operational. The screen will display with a “flicker” every second or so as the system polls for new data, the “Currently processing day” should match the date at the top of the window. You may notice the numbers incrementing as the system catches up and there should be no messages at the bottom of the window.

```
BLR  IHS Lab Main Support Menu
      LS  Link Transaction Processor Status

                Processor Status
                DEC 04, 2003@16:59:49

                Currently processing day DEC 04, 2003

                Event                Entry Position    IHS Lab Transaction
                -----                in Queue      Sequence Number
                -----
Last Entry Assigned      4                3654                633600
Last Entry Processed    4                2456                567567
Currently Processing
```

Figure 12-3: Link transaction processor status

12.1 Data Errors

If a test cannot be filed in PCC, a bulletin will be triggered in the local RPMS MailMan system to alert Mail Group recipients that the data was not filed. When signing onto RPMS, Mail Group recipients will notice the following message:

```
Good afternoon CIMARRON
  You last signed on today at 16:01
You have 1 new message [1 in the 'IN' basket]

      Select Laboratory DHCP Menu Option: MAILMan Menu

VA MailMan 7.1 service for CIMARRON.SUPPORT@CHOCTAW-HO.NSH.IHS.GOV
You last used MailMan: 24 May 01 15:03

AML  Assume another identity as a surrogate
HML  MailMan Help ...
NML  New messages and responses
OML  Other MailMan Functions ...
RML  Read a message
SML  Send a Message

Select MailMan Menu Option: N  New messages and responses
NEW MAIL OPTION: READ by Basket//
```

Figure 12.4: MailMan Mail Group

The following examples show bulletins of failed laboratory data.

12.1.1 Failed Patient Look up

```

Subj: Error Finding Patient in Reference Lab Message  [#14165] 01 Nov 04
07:23
 10 Lines
From: POSTMASTER (Sender: GIS,USER) in 'IN' basket.  Page 1  **NEW**
-----
The following GIS HL7 Message failed to file due to a failed patient
lookup:

GIS Message Number:  116436
Chart:              0  ←= No Chart Number
Name:              DEMO^PATIENT^FEMALE
DOB:              2871218
Sex:              F
Collection Date:   Oct 26, 2004@16:37
Accession Number:  CX6027128

Select MESSAGE Action: IGNORE (in IN basket)//Reference Lab Message  [#10081]

```

Figure 12-5: Failed Patient Look up

Look up the correct patient name, chart number, date of birth, and sex for the patient on the date of service. Call the Reference Laboratory with the corrected information, noting the accession number(s) and Collection Date. Request the Reference Laboratory to make the correction and retransmit the result(s).

12.1.2 No Matching Laboratory Test

```

Subj: Error Matching Reference Lab Test  [#14163] 01 Nov 04 07:23  9 Lines
From: POSTMASTER (Sender: GIS,USER) in 'IN' basket.  Page 1  **NEW**
-----
The following reference lab test failed to match a lab test on
file:

Test:      81990
Test Name:ALDOSTERONE
IHS Lab Tx Seq9
GIS HL7 Message #1379
Collection Date  Oct 29, 2004@16:37
Accession #      CX6027075

```

Figure 12-6: No Matching Laboratory Test

Multi-Step Correction Process

Correcting a “No Matching Laboratory Test” problem is a multi-step process:

1. Display the GIS HL7 Message to see test codes returned by the Reference Laboratory. The GIS HL7 Message is 1379 in the above bulletin. Use the RAW option in the REFL Reference Lab Main Menu.
2. Check to be sure that the test(s) are defined in the Laboratory test file using the E60 option in the REFL Reference Lab Main Menu. The Test Name is ALDOSTERONE in the above bulletin. (See the *REFL Reference Laboratory Main Menu* section and sub-sections.)
3. Map the Order Codes and Result Codes in the BLR Reference Laboratory file. The code is 81990 in the above bulletin. Use the MAP option in the REFL Reference Lab Main Menu. (See the *REFL Reference Laboratory Main Menu* section.)
4. Refile the raw message using the menu option RAW in the REFL Reference Lab Main Menu.

Systematic Reviewing Process

The systematic process of reviewing, correcting and refileing and HL7 message is shown below.

1. Display the GIS Message.

```
BLR   IHS Lab Main Support Menu Option
REF   Reference Lab Main Menu
RAW   Refile Failed Raw Message(s)
```

Figure 12-7: View Failed Raw Message(s)

By selecting the RAW option (View/Refile Raw Message(s)), you will see the original HL7 test result message returned by the Reference Laboratory:

```
Select Reference Lab Main Menu Option: RAW  Refile Failed Raw Message(s)

      Select one of the following:

          M      Message Number
          F      File

Select by Message Number or File Name : Message Number
Enter Message Number: 1379
View/Refile Ref Lab Records   Aug 06, 2004 11:22:53   Page:   1 of   1

DATE/TIME: JUL 21, 2004@17:57:15      DESTINATION: HL IHS LAB R01 UNILAB IN
STATUS: COMPLETE                      LAST DATE/TIME: JUL 21, 2004@17:57:17
IN/OUT: IN
LAST ACTIVITY DATE: JUL 21, 2004@17:57:17
PRIORITY: 1
```

```

ACTIVITY LOG: JUL 21, 2004@17:57:17      LOG ACTION: COMPLETE
MESSAGE TEXT:
MSH|^~\&|UNILAB SC|3714 Northgate
Blvd^Sacramento^CA^95834|IHXX|4107080|2004072
PID|1|GM3476720|103830|DUCK^DAISY||19230729|F|||(530) 842-2391|||CR
OBR|1|103830|GM3476720|81990^ALDOSTERONE||200407151200|||H54239^HESS^
MICHAEL
OBX|1|ST|81990^ALDOSTERONE||5|NG/DL|N|F||TZ|Quest Diagnostics^18408 Oxnard
St
NTE|1|FTX|SERUM ALDOSTERONE REFERENCE RANGE:
|CR
NTE|2|FTX|  SUPINE: 1-16 NG/DL      STANDING:  4-31 NG/DL      |CR
  COMPUTED DATE (c): JUL 21,2004

R      Refile Message          Q      Quit

```

Figure 12-8: Refile Failed Raw Message(s)

If the message is lengthy, use the down arrow key to scroll to the bottom of the message.

Each segment beginning with OBR (shaded above) is an ORDER message. The Order Code, 81990, and Test Code, ALDOSTERONE, are in piece 4 (shaded above). There may be more than one OBR segment in each HL7 message.

Each segment beginning with OBX (underlined and italicized) is a result segment. The Result Code, 81990, and Result Name, ALDOSTERONE, are underlined and italicized in the example above. If there is one OBX segment for each OBR segment, the test is a single or atomic test. If there are multiple OBX segments for a single OBR segment, the test is a panel test or cosmic test.

In the example above, ALDOSTERONE is an atomic test with one Order Code, 81990, and one Result Code, 81990.

After confirming the codes, type “**Q**” to exit the display of the HL7 message. Next, you will need to confirm that the test is in the RPMS Laboratory test file.

2. Determine whether the test is in the Laboratory Test file. Use the E60 option (Edit/Add to the Laboratory Test File) to verify that the test is in the Laboratory Test file or add a new test if it is not already in this file. Add new tests to the database as needed. Required entries are in bold text.

Note: All “children” or members of a panel must be added using the EAT option first. The panel can be subsequently defined using the ECT option.

In the following example, ALDOSTERONE is already defined in the Laboratory test file.

```

BLR   IHS Lab Main Support Menu Option:
      REFL Reference Lab Main Menu
      E60 Edit Laboratory Test File (#60) CH ONLY

Select LABORATORY TEST NAME: ALDOSTERONE
If the test is not already in the database, you will be asked if you are
adding it as a new LABORATORY TEST.  If this is a new test in the database,
you must answer this question with a YES.
  LABORATORY TEST LABTEST IEN: 9999004// automatically assigned by the
system, press <ENTER> to bypass
  LABORATORY TEST SUBSCRIPT: CH  CHEM, HEM, TOX, SER, RIA, ETC.
  LABORATORY TEST HIGHEST URGENCY ALLOWED: ROUTINE
  LABORATORY TEST PRINT NAME: ALDOS (1-7 CHARACTERS)
  LABORATORY TEST DATA NAME: <ENTER>
NAME: ALDOSTERONE//
Select SYNONYM: 81990 This is the Result Code supplied by the Reference
Laboratory.  If this is the Parent or Panel Test Name, the Order Code is
inserted as a Synonym.
Select SYNONYM:
TYPE: B BOTH (CAN BE DISPLAYED)

```

Figure 12-9: Edit Atomic Test

Note: Order and Result Codes are not always the same. Therefore, map each of them in the BLR Reference Laboratory file. Even if the Order and Result Codes are the same, you must map both of them.

3. Map the new test(s).

Once the new tests are added to the Laboratory Test file, they must be mapped to the appropriate Reference Laboratory Test Codes. The cosmic tests must be mapped as Order Codes and the atomic tests must be mapped at Result Codes. An atomic test that is a stand-alone test will be mapped to both Order and Result Codes.

```

BLR   IHS Lab Main Support Menu
      REFL Reference Lab Main Menu
      MAP Map Reference Lab Codes to Laboratory Test File

Select Reference Lab Main Menu Option: MAP Map Reference Lab Codes to
Laboratory Test File

Select Which Reference Lab to Map Codes for: UNILAB

Map which Order/Result Code: 81990
  1  ALDOSTERONE           81990 (This is the Order Code.)
  2  ALDOSTERONE           81990 (This is the Result Code.)
CHOOSE 1-2: 1 ALDOSTERONE           81990
TEST NAMES: ALDOSTERONE//
LAB TEST POINTER: ALDOSTERONE
ORDER CODE: 81990// ←==== Note Order code only, no result code
RESULT CODE:
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:
Map which Reference Lab Test: 81990

```

```

1  ALDOSTERONE      81990 (This is the Order Code.)
2  ALDOSTERONE      81990 (This is the Result Code.)
CHOOSE 1-2: 2  ALDOSTERONE      81990
TEST NAMES: ALDOSTERONE//
LAB TEST POINTER:  ALDOSTERONE
ORDER CODE:
RESULT CODE: 81990// ←==== Note result code only, no order code
ORDER ENTRY QUESTION:
Select ORDER ENTRY RESULT CODE:

```

Figure 12-10: Map Reference Lab Codes to Laboratory Test File

4. Refile the data. Once the new test(s) are added to the RPMS Laboratory Test file, the failed message can be refiled by selecting the RAW option (Refile Failed Raw Message(s)) and typing “R” to refile the data. The refiled tests can then be verified.

```

BLR  IHS Lab Main Support Menu Option:OBR - Order Code
REFL Reference Lab Main Menu
RAW  Refile Failed Raw Message(s)

Select Reference Lab Main Menu Option: RAW View/Refile Failed Raw Message(s)

Select one of the following:

      M      Message Number
      F      File

Select by Message Number or File Name : Message Number

Enter Message Number: 1379

View/Refile Ref Lab Records   Aug 06, 2004 11:22:53   Page:   1 of   1

DATE/TIME: JUL 21, 2004@17:57:15   DESTINATION: HL IHS LAB R01 UNILAB IN
STATUS: COMPLETE                   LAST DATE/TIME: JUL 21, 2004@17:57:17
IN/OUT: IN
LAST ACTIVITY DATE: JUL 21, 2004@17:57:17
PRIORITY: 1
ACTIVITY LOG: JUL 21, 2004@17:57:17   LOG ACTION: COMPLETE
MESSAGE TEXT:
MSH|^~\&|UNILAB SC|3714 Northgate
Blvd^Sacramento^CA^95834|IHKX|4107080|2004072
PID|1|GM3476720|103830|DUCK^DAISY||19230729|F|||(530) 842-2391|||CR
OBR|1|103830|GM3476720|81990^ALDOSTERONE||200407151200|||H54239^HESS^
MICHAEL
OBX|1|ST|81990^ALDOSTERONE||5|NG/DL|N||F|||TZ|Quest Diagnostics^18408 Oxnard
St
NTE|1|FTX|SERUM ALDOSTERONE REFERENCE RANGE:
|CR
NTE|2|FTX| SUPINE: 1-16 NG/DL   STANDING: 4-31 NG/DL   |CR
COMPUTED DATE (c): JUL 21,2004

R      Refile Message           Q      Quit

```



Figure 12-11: Refile Raw Message(s)

This time, type “**R**” to Refile the message. If the message has been successfully refiled, the test can be verified and passed to PCC.

13.0 Problem Solving

The Reference Laboratory-RPMS Interface will require relatively little user intervention once all tests have been successfully mapped. Explanations have been provided in previous sections regarding how to monitor and restart the interface as well as review and resolve problems related to printing shipping manifests and inability to receive results. Because laboratory databases are dynamic, there will be ongoing maintenance of the RPMS database to add new tests, panels, and CPT codes.

Note: *The greatest problems experienced by users of a unidirectional interface are interface failures that occur because of incorrect, missing or illegible patient data on requisitions submitted to the reference laboratory.*

Final recommendations to reference laboratory interface users include the following:

- Arrange to receive test updates in advance of their release by your reference laboratory.
- Notify the site manager as soon as possible if:
 - Any of the GIS processes are not running and fail to start.
 - MailMan bulletins with a new type of message are received.
 - An unusually large number of MailMan bulletins are received.

14.0 Glossary

Term	Definition
GIS (Generic Interface System)	A software tool used for interfacing a variety of applications to RPMS using HL7 standard messaging.
HL7	Health Level 7 – an interfacing standard that identifies a uniform message and field structure for data files exchanged between two different information systems.
Interface	A tool for exchanging data between two disparate information systems or applications.
ACK	The electronic acknowledgement of receipt of a piece of data.
Lab Transaction	A single laboratory record with pre-formatted fields for passing that data to PCC.
Message	A term used to describe an HL7 entry for an order being sent to a reference laboratory or a result being returned by a reference laboratory.
Unidirectional	An one-way interface in which laboratory data is transmitted to the Referring Facility only. Orders for laboratory testing must be submitted on paper requisitions or via a terminal supplied by the Reference Laboratory.
Bidirectional	A two-way interface in which test orders placed in RPMS are electronically transmitted to the Reference Laboratory and results are electronically transmitted back to the Referring Facility.
EHR	Electronic Health Record
Atomic Test	A laboratory test with a single result, e.g. glucose. Sometimes referred to as a “child” test when an atomic test is one component of a panel of tests.
Cosmic Test	A panel of laboratory tests that is commonly ordered together; e.g. Basic Metabolic Panel, CBC. Commonly referred to as a “Parent” test.
Order Code	A numeric, alpha, or alphanumeric code that uniquely identifies a test that can be ordered from a reference laboratory.
Result Code	A numeric, alpha, or alphanumeric code that uniquely identifies a result returned by a reference laboratory.
Ask at Order Question	One or more questions whose answers convey patient or specimen information to the reference laboratory via the interface, e.g patient weight, urine volume, etc.
Data Name	The entry in the Lab Data file for a specific laboratory test that identifies the format of that test.
Link	The process of moving data between the laboratory package and PCC.

Term	Definition
Global	The file that contains the data.
^BLRTXLOG	The Laboratory global that contains the data in the IHS Lab Transaction Log.
^INTHU	The GIS global that contains the data either being transferred as orders to the reference laboratory or results coming in from the reference laboratory.
^LAHM(62.49)	The Laboratory global that contains the data in HL7 format for verification by the EA Enter/Verify data option of the Laboratory Processing Menu.
Reference Laboratory	A laboratory that performs clinical testing for an IHS/Urban/ or Tribal facility under terms of a contract.
Referring Facility	An IHS/Urban/or Tribal facility that sends specimens to a contracted Reference Laboratory for testing.

15.0 Appendix A

15.1 Health Care System Impact

Implementation of the Reference Laboratory to RPMS Interface has far-reaching impact on both clinical and business functions.

15.1.1 Clinical

Health Summary: Laboratory test results including reference ranges and units flow automatically to the Laboratory Component of the Health Summary. This component should probably be limited to 10 or fewer visits (as determined by medical providers) to limit the length of display over time. There are several different lab components to select from when building a health summary based on provider preference.

Diabetes Flowsheet: Laboratory data will display automatically on the Diabetes Flowsheet if the desired tests for display have been entered in Flowsheet Setup in the Diabetes Management System.

Patient Care Summary: Laboratory data will display automatically on the Diabetes Patient Care Summary if the dates of the tests meet the criteria for display and the appropriate laboratory test names have been entered into the Diabetes Management System Lab Test Taxonomies.

Diabetes Audit: Laboratory tests performed during a diabetic audit will display automatically on the RPMS Diabetes Audit if they have been entered into the Diabetes Management System Lab Test Taxonomies.

QMan: Laboratory tests required for QMan searches can be added as QMan attributes under the QMan Site Manager's menu for Lab Startup.

GPRA: Laboratory tests used in the logic for GPRA indicators must be identified and added to the GPRA Lab Test taxonomies.

15.1.2 Provider Precautions

Bidirectional Interface Sites: Providers should notice no difference in laboratory data at facilities running a Reference Laboratory interface in bidirectional mode.

Unidirectional Interface Sites: Laboratory data coming into the RPMS system at sites with a unidirectional interface do not get stored in the Laboratory Package. Therefore, the normal tools available for reviewing patient results in the Laboratory Package may not be used. Only reports and tools that look at laboratory data stored in the Patient Care Component (PCC) can be used.

Unidirectional and Bidirectional Interface Sites: Laboratory data coming into the RPMS system from a Reference Laboratory are stored in PCC. The laboratory data is displayed on the Health Summary. However, only raw data is displayed on the Health Summary. Reference Laboratories often include results as comments or may include extensive interpretive text with the results in the comment section. To maintain the Health Summary at a useful size, these extensive result comments are not displayed on the Health Summary.

Unless a Reference Laboratory result can be clearly interpreted from the Health Summary, the date of the laboratory test on the Health Summary may be noted and the visit for that date should be reviewed for an extended report from the Reference Laboratory. An example is shown below.

----- MOST RECENT LABORATORY DATA (max 2 years) -----					
CBC	12/01/03				R
WBC	12/01/03	13.0 (h)	Thous/mcL	3.8-10.8	R
RBC	12/01/03	3.79 (l)	Mill/mcL	4.20-5.80	R
HEMOGLOBIN	12/01/03	13.1 (l)	g/dL	13.2-17.1	R
HEMATOCRIT	12/01/03	39.1 (N)	%	38.5-50.0	R
MCV	12/01/03	79 (l)	fL	80.0-100.0	R
MCH	12/01/03	30.4 (N)	pg	27.0-33.0	R
MCHC	12/01/03	33.4 (N)	g/dL	32.0-36.0	R
CULTURE, URINE (ROUTINE)	12/01/03				R
STATUS	12/01/03	FINAL (N)			R
SOURCE	12/01/03	(N)			R
CULTURE RESULT	12/01/03	(N)			R

Figure 15-1: Most Recent Laboratory Data

Note: In the above example, the patient had a urine culture on 12/1, but no results are actually displayed on the Health Summary.

Select the menu option to Display a Visit to review the actual results of the urine culture.

```

PCC VISIT DISPLAY          Dec 05, 2003 14:44:07          Page:    1 of    1
-----
Patient Name:             DEMO,PATIENT OLD
Chart #:                   500403
Date of Birth:            JAN 01, 1901
Sex:                       M
Visit IEN:                 194349

===== VISIT FILE =====
VISIT/ADMIT DATE&TIME:   DEC 01, 2003@12:00
DATE VISIT CREATED:     DEC 02, 2003
TYPE:                     TRIBE-638 PROGRAM
PATIENT NAME:           DEMO,PATIENT OLD
LOC. OF ENCOUNTER:      HAPPY CAMP
SERVICE CATEGORY:      EVENT (HISTORICAL)
DEPENDENT ENTRY COUNT:  12
DATE LAST MODIFIED:     DEC 02, 2003
CREATED BY USER:       ROBERTS,DAVID
USER LAST UPDATE:       ROBERTS,DAVID
UNIQUE VISIT ID:        6613550000194349
DATE/TIME LAST MODIFI:  DEC 02, 2003@14:51:16

===== LABs =====
LAB TEST:                 CULTURE, URINE (ROUTINE)
LR ACCESSION NO.:        TT0321231
SOURCE OF DATA INPUT:   REFERENCE LAB
CURRENT STATUS FLAG:     RESULTED
BILLABLE ITEM:           YES
COLLECTION DATE AND T:   DEC 01, 2003@16:30
ORDERING PROVIDER:       TECHNICIAN,LAB
ORDERING DATE:           DEC 01, 2003

CURRENT STATUS FLAG:     RESULTED
BILLABLE ITEM:           YES
COLLECTION DATE AND T:   DEC 01, 2003@16:30
ORDERING PROVIDER:       TECHNICIAN,LAB
PARENT:                  CULTURE, URINE (ROUTINE)
ORDERING DATE:           DEC 01, 2003
COMMENTS:
  1) GREATER THAN 100,000 COLONIES/ML ESCHERICHIA COLI

```

Figure 15-2: PCC Visit Display

15.1.3 Data Entry

Laboratory tests normally entered by PCC Data Entry staff no longer need to be entered using the LAB mnemonic. If laboratory tests are performed by nursing or other clinical staff outside the contracted laboratory, those test results still need to be entered by PCC Data Entry staff, (e.g., glucose measurement using a monitor approved for home use).

All visits created by the interface have a visit time of 12:00. When a unidirectional interface is set up, an option can be selected either to pass CPT codes to PCC for

billing, or not to pass CPT codes. If CPT codes will not be passed, the visit created in PCC will be a Historical or Event Type visit and will not appear on the VRR Reports. If CPT Codes will be passed, the visits created by the interface will be Ambulatory. These visits will normally be merged with the actual provider visit. This can be accomplished in four separate ways:

1. If the lab visit has already been created at the time the PCC or Superbill is entered, the existing lab visit is displayed and should be modified with additional data.
2. Via the APCD Visit Relinker if it has been scheduled to run every night.
3. Using the PCC Menu option to merge visits on the same date.
4. There is also an option called Orphan Lab Relinker in the PCC Supervisor's Menu. This option can be run prior to export each month to complete lab visits with no primary provider and no purpose of visit. When running this option, a generic Lab Technician is assigned to any unlinked visits as primary provider and a purpose of visit of V72.6 is assigned. Note that the generic provider, TECHNICIAN,LAB must exist as a provider to run this option. In addition, the relinker should only be run for the date ranges when all PCC Data Entry has been completed.

15.1.4 Third Party Billing

If the field, PASS CPT CODES?., has been set to YES in the BLR REFERENCE LAB file, CPT codes will be picked up for each billable Reference Laboratory test and passed to PCC using the transaction for that test in the IHS LAB TRANSACTION file. In addition, the visits created by the interface will be Ambulatory type visits. To accomplish this, an entry must be made for each billable test in the IHS LAB CPT CODE file, with an appropriate pointer to the Panel or Test name in the Laboratory Test file and the appropriate CPT code and modifier.

If the patient for whom the test has been performed has a third party payer, the test(s) and CPT code for those test(s) will be pulled onto page 8E of the claim when the claim generator is run.

15.1.5 Setting up BLR Reference Lab File to Pass CPT Codes

```
BLR  IHS Lab Main Support Menu
      REFL Reference Lab Main Menu
      SIT Reference Lab Site Parameter Add/Edit

REFERENCE LAB NAME: QUEST
REFERENCE LAB NAME: QUEST//
EXPORT DIRECTORY: /m/reflab/reflabout/  Replace
SENDING MACHINE IP ADDRESS:
FTP USER ID:
FTP PASSWORD:
ORDER(S) FILE NAME PREFIX: TDA//
RESULT(S) FILE NAME PREFIX: dal//
HL7 IMPORT FILE FORMAT: CARRIAGE RETURN/LINE FEED
//
STORAGE DIRECTORY: /m/reflab/reflabsave/  Replace
IMPORT DIRECTORY: /m/reflab/reflabin//
BIDIRECTIONAL/UNIDIRECTIONAL: UNIDIRECTIONAL//
HOLD LABS FOR VERIFICATION: YES//
DAYS TO KEEP ORD/RES FILE(S): 30//
CLIENT NUMBER: 46563//
DEVICE FOR SHIPPING MANIFEST:
DEFAULT ORDERING LOCATION: TEST HEALTH CLINIC//
PASS CPT CODES ? : YES// ←== Pass CPT Codes for third party billing
```

Figure 15-3: Pass CPT Codes