



RESOURCE AND PATIENT MANAGEMENT SYSTEM

# **Laboratory Reference**

(LR)

## **Laboratorian Guide**

Version 5.2 Patch 1028  
October 2011

Office of Information Technology (OIT)  
Division of Information Resource Management  
Albuquerque, New Mexico

# Table of Contents

<b>1.0</b>	<b>Introduction.....</b>	<b>1</b>
<b>2.0</b>	<b>Unified Code for Units of Measure.....</b>	<b>2</b>
2.1	New IHS UCUM File (#90475.3).....	2
2.2	UCUM Verification .....	2
2.3	UCUM Reports .....	4
2.4	Requirements .....	8
<b>3.0</b>	<b>Logical Observation Identifier Names and Codes .....</b>	<b>9</b>
3.1	LOINC Table Update .....	9
3.2	LOINC File 60 Reports .....	9
3.3	LOINC Auto-Mapper.....	11
3.4	LOINC Manual Mapper.....	11
3.5	Lab Test File 60 Extract.....	11
3.6	Requirements .....	12
<b>4.0</b>	<b>Modified Routines .....</b>	<b>13</b>
4.1	BLRCINDX .....	13
4.2	BLRLINK3.....	13
4.3	BLRPOC.....	13
4.4	BLRRLHL .....	13
4.5	BLRTN.....	13
4.6	BLRTNA .....	13
4.7	BLRTNM1 .....	13
4.8	BLRUTIL2.....	14
4.9	BLSMAP .....	14
4.10	BLSMIT.....	14
4.11	LR7OGMC.....	14
4.12	4.12 LR7OSUM4 .....	14
4.13	4.13 LRLISTE .....	14
4.14	4.14 LRLNCX .....	14
4.15	4.15 LROW2P .....	14
4.16	4.16 LRRP1 .....	15
<b>5.0</b>	<b>New Routines.....</b>	<b>16</b>
5.1	BLR7OGMP.....	16
5.2	BLRDATAR .....	16
5.3	BLRLRPT .....	16
5.4	BLRPR28P .....	16
5.5	BLRPRE28 .....	16
5.6	BLRUCUM.....	16
<b>6.0</b>	<b>VA Patch LR*5.2*232: Default LOINC Code .....</b>	<b>17</b>
<b>7.0</b>	<b>VA Patch LR*5.2*272: Orphaned Mods and Other Changes .....</b>	<b>18</b>

<b>8.0</b>	<b>VA Patch LR*5.2*280: Test Selection during Result NLT Linking .....</b>	<b>19</b>
<b>9.0</b>	<b>VA Patch LR*5.2*302: NLT/LOINC V2.13 UPDATE .....</b>	<b>20</b>
<b>10.0</b>	<b>VA Patch LR*5.2*334: NLT/LOINC V2.14 Update.....</b>	<b>21</b>
<b>11.0</b>	<b>IHS LR*5.2*1028: UCUM Verification/LOINC v2.34 Update and Mapping ....</b>	<b>22</b>
	<b>Glossary.....</b>	<b>24</b>
	<b>Contact Information .....</b>	<b>26</b>

## Document Revision History

Use the table below to provide the version number, the author implementing the version, the date of the version, and a brief description of the reason for creating the revised version.

Version Number	Revision By	Revision Date	Description of Change
1.0	Michael Walker	May 2011	Baseline Document
1.1	Clarence Smiley Michael King Peter Adams	October 17, 2011	Corrected Acronym for KIDS Build on Page 13

## Preface

The purpose of this guide is to provide the laboratory manager with documentation that will aid in the use of the enhancements and/or updates in Indian Health Service Lab Patch 1028.

## 1.0 Introduction

Indian Health Service (IHS) Lab Patch 1028 incorporates changes and enhancements to the IHS Lab Package to facilitate verification/linking of File 60 units to the Unified Code for Units of Measure (UCUM) and the mapping of File 60 tests to Logical Observation Identifiers Names and Codes (LOINC ®). The goal of LOINC and UCUM is to implement a network of an interoperable health information technology infrastructure that exchanges patient clinical laboratory data and improves the quality of healthcare offered by federal agencies under the direction of United States Department of Health and Human Services (HHS), which includes IHS.

The implementation of LOINC and UCUM codes will also better prepare the Resource and Patient Management System (RPMS) Laboratory to satisfy anticipated future criteria for achieving Electronic Health Record (EHR) Certification and Meaningful Use.

This guide provides IHS Laboratorians with descriptions of the changes and/or enhancements and other information.

## 2.0 Unified Code for Units of Measure

The UCUM was established to bring uniformity to how various units of measure are conveyed throughout and between clinical laboratories. UCUM values have been established for most commonly used terms in a variety of disciplines. IHS has created a new file containing the terms commonly used in clinical laboratories and a process by which to verify and link existing units in File 60 to UCUM values.

### 2.1 New IHS UCUM File (#90475.3)

During the installation phase of LR\*5.2\*1028, a new IHS UCUM file (#90475.3) will be installed.

### 2.2 UCUM Verification

Option UCON from the new IHS LOINC/UCUM MENU can be run repeatedly to verify which units in File 60 can be linked to a UCUM value. The units are used to find the appropriate UCUM value, and a print name for that value is inserted into the UNITS field. At the end of the verification, a summary appears, and you are prompted on whether or not to display detailed results by Tests, Units, or Both.

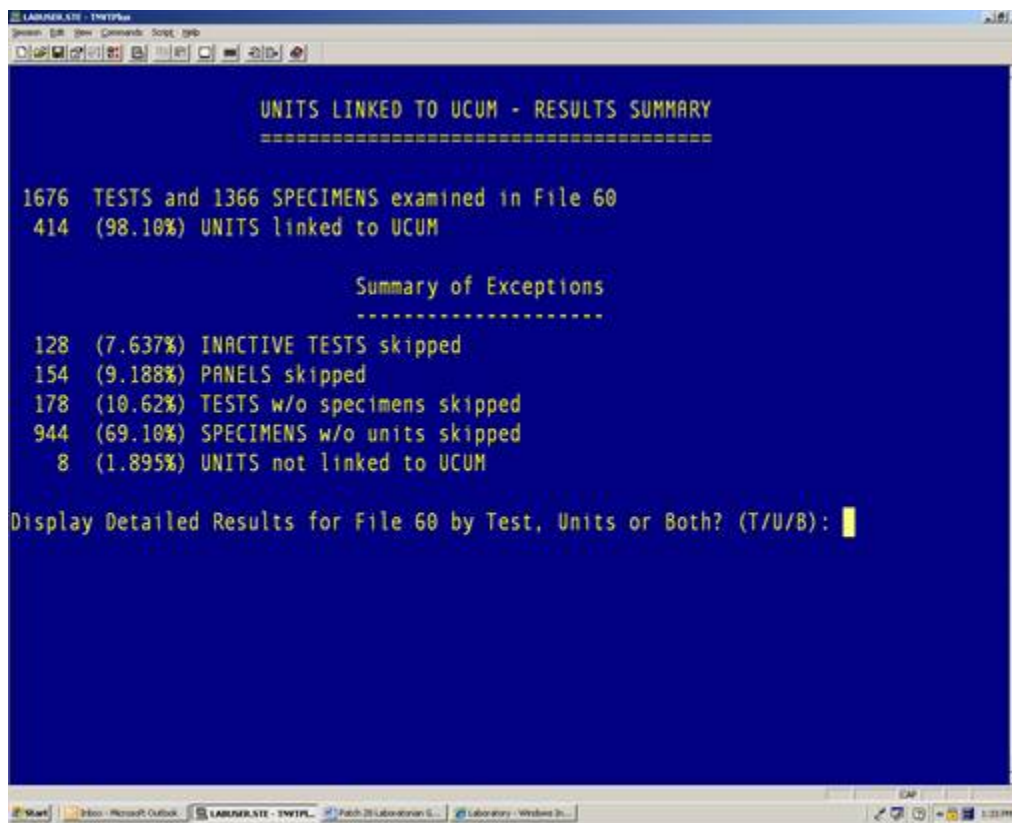


Figure 2-1: UCUM Verification Summary Screen

Example of Detailed Results for File 60 by Test (Option T):

IEN	TEST	SPECIMEN	UNITS	UCUM
1	WBC	BLOOD	K/cmm	10 <sup>3</sup> /mm <sup>3</sup>
2	RBC	BLOOD	M/cmm	10 <sup>6</sup> /mm <sup>3</sup>
3	HEMOGLOBIN	BLOOD	g/dL	g/dL
4	HEMATOCRIT	BLOOD	%	%
5	_MCV	BLOOD	fL	fL
6	_MCH	BLOOD	pg	pg
7	_MCHC	BLOOD	g/dL	g/dL
9	PLATELET COUNT	BLOOD	K/cmm	10 <sup>3</sup> /mm <sup>3</sup>
10	_MPV	BLOOD	fL	fL
11	SEGS	BLOOD	%	%
12	BANDS	BLOOD	%	%
13	LYMPHS	BLOOD	%	%
14	MONOS	BLOOD	%	%
15	EOSINOPHILS	BLOOD	%	%
16	BASO	BLOOD	%	%
17	META	BLOOD	%	%
18	MYELO	BLOOD	%	%
19	PROS	BLOOD	%	%

Enter RETURN to continue or ^ to exit:

Figure 2-2: UCUM Verification - Detailed Results FILE 60 UNITS LINKED TO UCUM – RESULTS BY TEST Report

This report provides a detailed summary of which tests had their units linked to a UCUM value. Each entry displays the test's internal identification (ID) in FileMan, the test's name, the specimen, former units and new UCUM units. At the end of the report is the total number of tests affected.

Example of Detailed Results for File 60 by Units (Option U):

```

LABORATORIAN - TWYN
FILE 60 UNITS LINKED TO UCUM -- RESULTS BY UNITS
=====
Instances of Units Linked to UCUM
-----
57      '%'          %
1      '% (calc)'   %
1      '% normal'   %{normal}
1      '/100 WBC'    /100{WBC}
1      '/100WBC'     /100{WBC}
16     '/HPF'        /[HPF]
7      '/LPF'        /[LPF]
2      'RI'          [arb'U]
7      'EIA value'   {Elisa_U}
1      'EU/dL'       {Ehrlich_U}/dL
1      'GPL U/mL'    [GPL'U]/mL
1      'HRS'         h
2      'IU/L'        [iU]/L
3      'IU/mL'       [iU]/mL
8      'IU/mL'       [iU]/mL
1      'JDF units'   [JDF'U]
2      'K/cmm'       10^3/mm3
1      'Log IU/mL'   {log}[iU]/mL
Enter RETURN to continue or '^A' to exit:
  
```

Figure 2-3: UCUM Verification – FILE 60 UNITS LINKED TO UCUM – RESULTS BY UNITS Report

This report provides a detailed summary of how many instances of each unit were linked to a UCUM value. Each entry displays the number of instances each unit was encountered, what those units were, and the new UCUM units. At the end of the report the total number of units affected is listed.

**Note:** Tests without specimens or specimens without units will be skipped, as there is nothing to verify or link to UCUM. Units for which no UCUM equivalent can be identified will remain unchanged and will be listed as part of the exceptions report.

Following these detailed results reports, the user is prompted on whether or not to view the exceptions report. This report can also be seen anytime via option URPT of the IHS LOINC/UCUM menu.

## 2.3 UCUM Reports

Option URPT from the new IHS LOINC/UCUM MENU can be run repeatedly to generate the exceptions report from the UCUM verification process. There are four different categories of exceptions:

- TESTS WITHOUT SPECIMENS–SKIPPED

- SPECIMENS WITHOUT UNITS–SKIPPED
- UNITS WITHOUT UCUM TRANSLATION–SKIPPED
- PANELS–SKIPPED

Example of Tests Without Specimens (URPT):

```

LABORER SITE - TNYTFL
FILE 60 UNITS LINKED TO UCUM -- EXCEPTIONS REPORT
TESTS WITHOUT SPECIMENS - SKIPPED
=====
 IEN      TEST (CATEGORY)
-----
 282      NON SMAC CHEMISTRIES (CH)
 283      RIA SET
 291      MICROBIOLOGY TEST LIST (MI)
 295      SEROLOGY
 296      CYTOLOGY (CY)
 301      ALL
 320      ABO TITER
 345      COOMBS, DIRECT/INDIRECT (BB)
 362      GRAM STAIN (MI)
 398      HEMATOLOGY
 546      AFB SMEAR (MI)
 547      ANTIBIOTIC LEVEL (MI)
 548      CULTURE & SUSCEPTIBILIT (CH)
 550      OVA & PARASITES (CH)
 554      MYCOLOGY CULTURE (MI)
 599      GENOTYPING
 652      RH GENOTYPING
Enter RETURN to continue or '^' to exit:

```

Figure 2-4: UCUM Exceptions: TESTS WITHOUT SPECIMENS - SKIPPED Report

Not all tests will have specimens and thus will lack units to verify. This list can include inactive tests, panels, and nonchemistry tests that typically don't have specimens. There may not be a need to resolve most of these skipped tests.

Example of Specimen Without Units (URPT):

```

LABORIAN SITE - TWYTFPL
File Edit View Commands Script Help
FILE 60 UNITS LINKED TO UCUM -- EXCEPTIONS REPORT
SPECIMENS WITHOUT UNITS - SKIPPED
=====
IEN      TEST (CATEGORY)      SPECIMEN
-----
22      PLT (ESTM) (CH)      BLOOD
23      NORMOCYTIC (CH)      BLOOD
24      NORMOCHROMIC (CH)    BLOOD
25      ANISOCYTOSIS (CH)    BLOOD
26      POIKILOCYTOSIS (CH)  BLOOD
27      MICROCYTOSIS (CH)    BLOOD
28      MACROCYTOSIS (CH)    BLOOD
29      POLYCHROMASIA (CH)   BLOOD
30      HYPOCHROMIA (CH)     BLOOD
31      TARGET CELLS (CH)    BLOOD
32      ANTICOGULANTS (CH)   BLOOD
40      VISCOSITY (CH)        BLOOD
         SERUM
43      SPERM COUNT (CH)    SEMINAL FLUI
45      MESOTHELIAL (CH)    BLOOD
46      CRYSTALS (CH)       URINE
49      COHB% (CH)         BLOOD
Enter RETURN to continue or '^' to exit:
  
```

Figure 2-5: UCUM Exceptions: TESTS WITHOUT UNITS – SKIPPED Report

This particular set of tests containing specimens without units may help identify where information is missing from test definitions. While some test results may indeed be dimensionless and have no units per se, there may be others for which units are strongly desired.

Example of Units for Which No Link to UCUM could be identified (URPT):

```

FILE 60 UNITS LINKED TO UCUM -- EXCEPTIONS REPORT
UNITS NOT LINKED TO UCUM
=====

```

IEN	TEST (CATEGORY)	SPECIMEN	UNITS
430	RUBELLA SCREEN (CH)	BLOOD	EIA Index
9999324	_EBV VCA-IGM AB (CH)	BLOOD	EIA Value
9999325	_EBV VCA-IGG AB (CH)	BLOOD	EIA Value
9999326	_EBNA-IGG AB (CH)	BLOOD	EIA Value
9999381	_M.PNEUMONIAE, IGG (CH)	BLOOD	ISR
9999443	_LYME AB SCREEN (CH)	BLOOD	EIA Value
9999491	VZV AB IGG,EIA Q4439 (CH)	BLOOD	ISR
9999492	VZV AB IGM,EIA Q8683 (CH)	BLOOD	ISR

```

8 UNITS NOT LINKED TO UCUM
Enter RETURN to continue or '^' to exit:

```

Figure 2-6: UCUM Exceptions: UNITS NOT LINKED TO UCUM–Report

This is the most critical part of the exceptions report concerning units. Once the units are verified and linked to a UCUM value, the contents of the units field in File 60 will change to the print name in the IHS UCUM file #90475.3. While units not linked to a UCUM code will still appear on all reports, until a link is established to a UCUM equivalent, units will not be recognized for interoperability in HL7 messages. Working with an IHS Lab User Support Specialist, the client will have three options for resolving these exceptions:

1. Remove the units and leave the field empty.
2. Change the units to a synonym already defined for a UCUM code in the IHS UCUM file.
3. Set up the units as a new synonym for a defined UCUM code in the IHS UCUM file.

Example of Panels That Would Not have Units Associated (URPT):

```

LABORIAN SITE - TWYFPL
FILE 60 UNITS LINKED TO UCUM -- EXCEPTIONS REPORT
PANELS - SKIPPED
=====
IEN      TEST (CATEGORY)
-----
33       PROTIME1 (PANEL) (CH)
71       CBC (PANEL) (CH)
220      OB GLUCOSE TOLERANCE TE (CH)
267      BASIC METABOLIC PANEL (CH)
271      URINALYSIS (PANEL) (CH)
274      DIFF COUNT (BLOOD) (PAN (CH)
275      RBC MORPHOLOGY (PANEL)
276      CBC & MORPHOLOGY (WITH (CH)
277      SEMEN ANALYSIS (PANEL)
284      TOTAL WHITE COUNT ON CY
286      CELL COUNT (FLUID) (PAN
321      THYROID GROUP (PANEL) (CH)
372      LYTES (PANEL) (CH)
386      CIE SCREEN (PANEL)
405      PORPHYRINS (PANEL)
407      CBC & MORPHOLOGY (NO DI (CH)
411      FACTOR VIII PROFILE (PA
Enter RETURN to continue or '^' to exit:

```

Figure 2-7: UCUM Exceptions: UNITS NOT LINKED TO UCUM–Report

Since panels do not contain specimens or units, there is nothing to verify. This part of the report provides a convenient way to identify panels within File 60.

## 2.4 Requirements

In order for the UCUM verification to work:

1. The new IHS UCUM file must be properly installed.
2. The new routine BLRUCUM must be properly installed and run from the new IHS LOINC/UCUM MENU option UCON.
3. All units in File 60 must be verified and linked to a valid UCUM value, converted to that UCUM value's print name, or left alone. Units for which no UCUM equivalent can be identified must be resolved by changing the units to an appropriate UCUM value, adding the units as a synonym to a defined UCUM value, or removing them entirely.

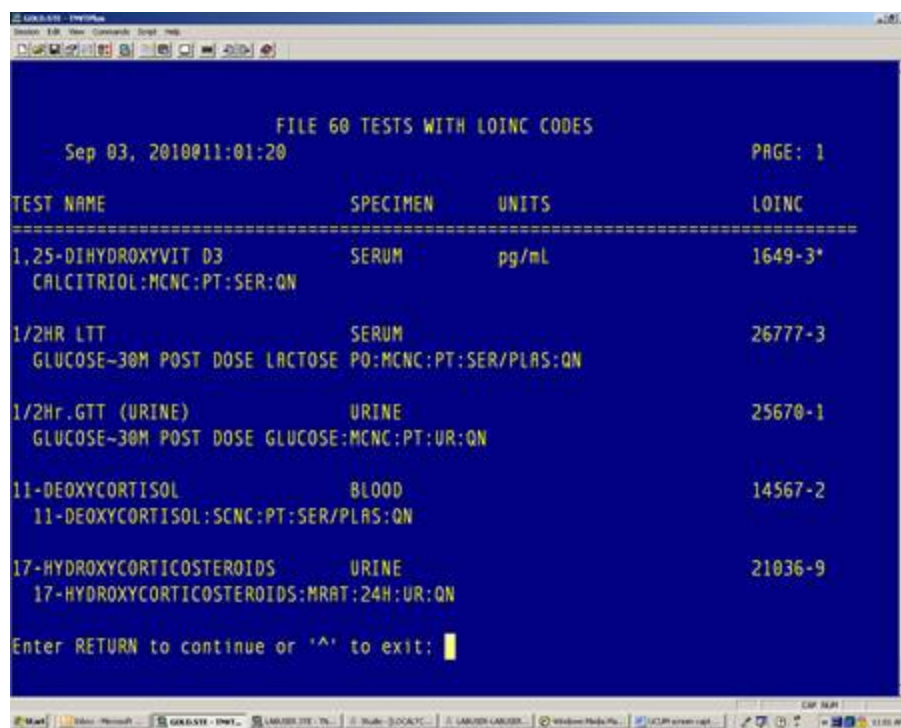
## **3.0 Logical Observation Identifier Names and Codes**

### **3.1 LOINC Table Update**

During the installation phase of LR\*5.2\*1028, the LOINC-related Files #95.3 (LAB LOINC), #95.31 (LAB LOINC COMPONENT), #64.061 (LAB ELECTRONIC CODES) and #64.2 (WKLD SUFFIX CODES) will be updated to LOINC v2.34 from the Regenstrief Institute, released December 29, 2010.

### **3.2 LOINC File 60 Reports**

Option LRPT from the new IHS LOINC/UCUM MENU can be run repeatedly to generate lists of File 60 tests that are mapped or not mapped to LOINC. The report of mapped tests includes the test name, specimen, units, LOINC code and the fully specified LOINC name. LOINC codes with an asterisk “\*” are part of the C80 list of top laboratory orders. This value set was developed by the Lister Hill Center at the National Library of Medicine, with the help of the Regenstrief Institute and LOINC Committee. This list is referenced by the Healthcare Information Technology Standards Panel (HITSP) C80 Clinical Document and Messaging Terminology Construct in Table 2-97 “Laboratory Order Value Set” which states that it “should be considered a minimum “starter” set,” and “does not attempt to include all possible LOINC codes” or all possible laboratory orders. Nonmapped tests appear on a report that contains the test name, specimen, and units.



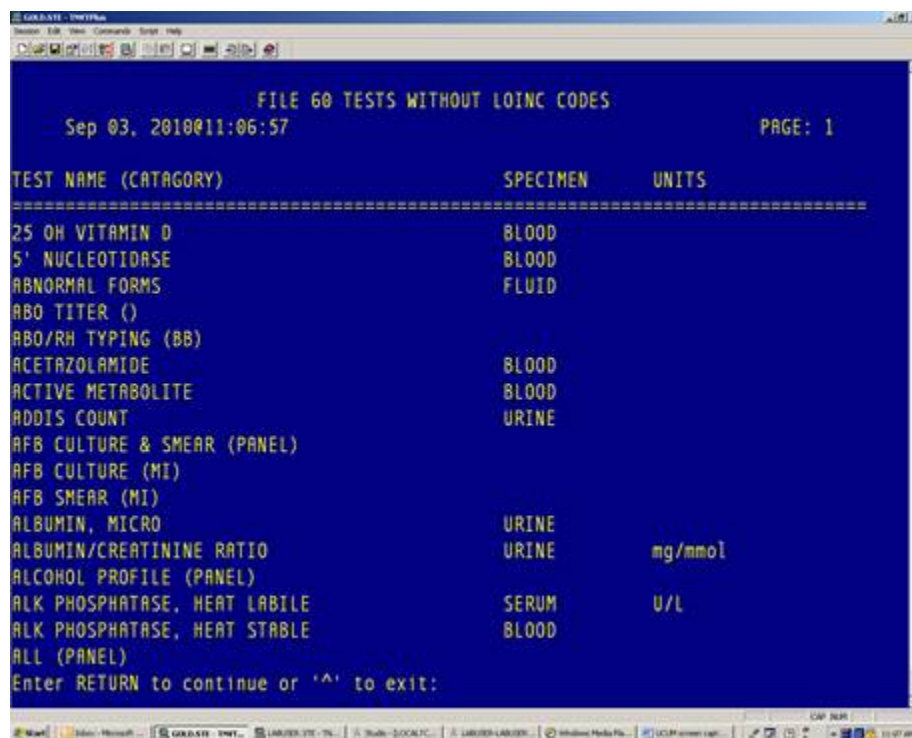
FILE 60 TESTS WITH LOINC CODES

Sep 03, 2010@11:01:20 PAGE: 1

TEST NAME	SPECIMEN	UNITS	LOINC
1,25-DIHYDROXYVIT D3 CALCITRIOL:MCNC:PT:SER:QN	SERUM	pg/mL	1649-3*
1/2HR LTT GLUCOSE-30M POST DOSE LACTOSE PO:MCNC:PT:SER/PLAS:QN	SERUM		26777-3
1/2HR GTT (URINE) GLUCOSE-30M POST DOSE GLUCOSE:MCNC:PT:UR:QN	URINE		25670-1
11-DEOXYCORTISOL 11-DEOXYCORTISOL:SCNC:PT:SER/PLAS:QN	BLOOD		14567-2
17-HYDROXYCORTICOSTEROIDS 17-HYDROXYCORTICOSTEROIDS:MRAT:24H:UR:QN	URINE		21036-9

Enter RETURN to continue or '^' to exit:

Figure 3-1: File 60 Tests with LOINC codes



FILE 60 TESTS WITHOUT LOINC CODES

Sep 03, 2010@11:06:57 PAGE: 1

TEST NAME (CATAGORY)	SPECIMEN	UNITS
25 OH VITAMIN D	BLOOD	
5' NUCLEOTIDASE	BLOOD	
ABNORMAL FORMS	FLUID	
ABO TITER ( )		
ABO/RH TYPING (BB)		
ACETAZOLAMIDE	BLOOD	
ACTIVE METABOLITE	BLOOD	
ADDIS COUNT	URINE	
AFB CULTURE & SMEAR (PANEL)		
AFB CULTURE (MI)		
AFB SMEAR (MI)		
ALBUMIN, MICRO	URINE	
ALBUMIN/CREATININE RATIO	URINE	mg/mmol
ALCOHOL PROFILE (PANEL)		
ALK PHOSPHATASE, HEAT LABILE	SERUM	U/L
ALK PHOSPHATASE, HEAT STABLE	BLOOD	
ALL (PANEL)		

Enter RETURN to continue or '^' to exit:

Figure 3-2: File 60 Tests without LOINC codes

### 3.3 LOINC Auto-Mapper

Option LAMP from the new IHS LOINC/UCUM MENU can be run repeatedly to go through File 60 and automatically map tests to the appropriate LOINC code, provided an entry containing the test's name, specimen and units is found in the IHS LOINC Master File (#90220). This Master File contains entries of the top orders as determined by HITSP and Regenstrief, as well as a representative sample of tests found at IHS facilities. Updating this file during the rollout phase will allow for greater automapping in the future.

### 3.4 LOINC Manual Mapper

Option LMMP from the new IHS LOINC/UCUM MENU can be run repeatedly to manually map tests to the appropriate LOINC code.

### 3.5 Lab Test File 60 Extract

Option LTXT from the new IHS LOINC/UCUM MENU can be run repeatedly to extract tests that have not yet been mapped to LOINC. The option creates a text file that can then be imported to Regenstrief's RELMA tool for mapping. Once the proper LOINC codes have been identified, this info will be added to the IHS LOINC Master File. The updated file will be installed at site and the automapper run again.

An example of this extract follows:

```
47-8728|FIO2 BLDA|%  
52-8819|PH BLDV|  
71|CBC|  
110-70|TSH (R) BLOOD|  
115-70|ALPHA-FETOPROTEIN Q237 BLOOD|ng/mL  
123-73|C REACTIVE PROTEIN PLAS|mg/dL  
133-70|IMMUNOGLOBULINS BLOOD|  
173-72|CREATININE SERUM|  
175-73|GLUCOSE (R) PLAS|  
175-3765|GLUCOSE (R) BLDC|mg/dL  
178-72|CHLORIDE SERUM|mmol/L  
179-72|CARBON DIOXIDE SERUM|
```

180-72|CALCIUM SERUM|

184-72|PROTEIN,TOTAL SERUM|

186-72|T BILIRUBIN (R) SERUM

## 3.6 Requirements

In order for the LOINC update and mapping to work:

1. The updated LOINC files must be properly installed.
2. The updated IHS LOINC Master File must be properly installed.
3. The modified routines and menu must be properly installed.
4. The UCUM conversion must be run on File 60.

## 4.0 Modified Routines

Several routines have been modified in order to add functionality, prevent errors, and/or correct issues.

### 4.1 BLRCINDX

This routine was modified to enable it to be tasked via TaskMan. It has also been modified to enable laboratory users with the LRSUPER key to be able to examine the tasked job's report via new options that will be added to the BLRMENU. The new options will be added during the post install phase of the Kernel Installation and Distribution System (KIDS) install.

### 4.2 BLRLINK3

This routine was modified to get the LOINC code from the newly created IHS LOINC field for tests and panels that do not have a dataname or site/specimen.

### 4.3 BLRPOC

This routine was modified to retrieve the proper UCUM units from the IHS UCUM file for inclusion on the EHR POC data entry form.

### 4.4 BLRRLHL

This routine was modified to update the location of the reference laboratory mnemonic from the EXTERNAL GROUP field of the INSURER file to the EXTERNAL ID 3 field of the INSURER file.

### 4.5 BLRTN

This routine was modified to retrieve the proper UCUM units from the IHS UCUM file for inclusion in the IHS LAB transaction log.

### 4.6 BLRTNA

This routine was modified to retrieve the proper UCUM units from the IHS UCUM file for inclusion in the IHS LAB transaction log.

### 4.7 BLRTNM1

This routine was modified to retrieve the proper UCUM units from the IHS UCUM file for inclusion in the IHS LAB transaction log.

## 4.8 BLRUTIL2

This routine was modified to restore page numbers to the interim reports.

## 4.9 BLSMAP

This routine was modified to go through File 60 directly, test by test, rather than through the “B” cross-reference for test names. Code was added to enable mapping of cosmic (panels) tests and non-CH subscripted tests (micro, BB, etc.) to LOINC with a new IHS LOINC field that is independent of a site/specimen. Added code to translate the units field pointer to actual UCUM units for lookup in the LOINC Master File. Added code to skip inactive tests and to log failures in mapping.

## 4.10 BLSMIT

This routine was modified to enable mapping of cosmic (panels) tests and non-CH subscripted tests (micro, BB, etc.) to LOINC with a new HIS LOINC field. Code was also added to translate units to their proper UCUM value for display. Lastly, an undefined error during lookup was corrected.

## 4.11 LR7OGMC

This routine was modified to call new routine BLR7OGMP rather than LR7OGMP.

## 4.12 LR7OSUM4

The reason for modifying it is to display the new UCUM units in the EHR Cumulative report.

## 4.13 LRLISTE

This routine was updated by VA Patch 318 and included in IHS Lab Patch 1027. The routine was modified to display the HRCN rather than the Social Security Number (SSN).

## 4.14 LRLNCX

Modified to skip inactive tests, extract panels and non-“CH” subscripted tests, strip off any leading underscores from test names, and translate units field pointer to UCUM value prior to extraction.

## 4.15 LROW2P

This routine was modified so that Date of Birth (DOB) will be printed on the Ward Collect Order. New code was added to ensure the DOB variable is populated.

## 4.16 LRRP1

This routine was modified to fix an issue that involved page numbers not printing for Interim Reports. The code was inadvertently left out during the updating of the routine from Veterans Administration (VA) code to IHS code.

## 5.0 New Routines

Six new routines will be added to the IHS Lab module.

### 5.1 BLR7OGMP

This new routine is a clone of LR7OGMP and is designed to print a 127-column report.

### 5.2 BLRDATAR

This new routine can be used to send pure ASCII code to a DataRay print server. The DataRay print server is being used by several sites within IHS to facilitate printing to Zebra label printers. For more information regarding the DataRay print server, contact the Help Desk.

### 5.3 BLRLRPT

This new routine allows for the printing of File 60 tests that are either mapped or not mapped to LOINC.

### 5.4 BLRPR28P

This new routine changes the EAG delta check during the postinstallation of LR\*5.2\*1028. The change is: if and only if the value from the A1C test is numeric will an EAG be calculated. Or, alternately, if the A1C result is not numeric, then no EAG will be generated.

### 5.5 BLRPRE28

This new routine is the IHS Lab PATCH 1028 Environment Checker/Pre and Postinstall routine.

### 5.6 BLRUCUM

This new routine scans the IHS Laboratory Test File (#60) for units and verifies/links those units to the appropriate UCUM format and replaces them with the UCUM entry's print name. Units for which no UCUM value can be identified will remain unchanged in File 60. A report will be available that shows which units could not be linked to a UCUM value.

## **6.0 VA Patch LR\*5.2\*232: Default LOINC Code**

Allows the mapping of laboratory tests to a default LOINC code. A default LOINC code is used to map laboratory tests to LOINC codes for specimens not in the SITE/SPECIMEN multiple of the LABORATORY TEST file (#60). The LAB LOINC (#95.3) file is updated to LOINC ® version 2.03.

This patch is required for the installation of VA Patch LR\*5.2\*334, but will not be implemented in the IHS Laboratory module.

## 7.0 VA Patch LR\*5.2\*272: Orphaned Mods and Other Changes

This patch is required for the installation of VA Patch LR\*5.2\*334.

Nineteen NOIS calls are addressed in this patch. These are:

- LAH-0301-61651: LAB RESULTS FOR URINE NOT TRIGGERING ALERT
- HIN-0301-40344: SPELLING NOTED
- ISF-0899-61570: LAB FILES ALLOWING LAGO TO FILE 200
- PHO-0699-61637: QMONTH GIVING ORDER FOR EVERY DAY, NOT EVERY MONTH
- NTH-0399-71865: QMONTHLY DOESN'T WORK WHEN ORDERING LABS IN CPRS
- FRE-0599-60964: IMMEDIATE COLLECT ALWAYS ON
- CHY-0798-52175: GRAPH RESULTS
- MOU-0498-32262: PROBLEM WITH 0.0 VALUES ON QC DISPLAY
- PUG-1297-50924: OPTION REQUIRES LOWER CASE
- MUS-0996-71712: NAT'L LAB TEST FILE LINKING SUBSCRIPT ERROR
- ALN-0496-10819: SERUM ANTIBIOTIC LEVELS LESS THAN 1
- TEM-0895-72227: SEPARATE REPORT LOCATIONS NOT WORKING
- BUF-0895-11662: USERS CHOOSE DEAD PROVIDER
- ALB-1099-52504: LAB PACKAGE ALLOWS SELECTION OF TERMINATED USERS
- SAM-0895-20499: CHECK FILES FOR INCONSISTENCIES
- AMA-0695-70804: E VARIABLE FOR %DT NOT WORKING
- HUN-0501-21203: INCORRECT SPELLING IN LOADLIST
- LEX-0201-41741- IMMEDIATE COLLECT SETTINGS BEING OVERRIDDEN
- HIN-0701-42680: QUESTION RE: Y2K DATE FORMAT

## **8.0 VA Patch LR\*5.2\*280: Test Selection during Result NLT Linking**

This patch addresses fixes to defects reported when using the option Link Result NLT Manual [LR70 MA RESULT NLT].

This patch is required for the installation of VA Patch LR\*5.2\*334, but will not be implemented in the IHS Laboratory module.

## **9.0 VA Patch LR\*5.2\*302: NLT/LOINC V2.13 UPDATE**

This patch updates the WKLD CODE (#64) file and replaces several laboratory standardized files associated with National Laboratory Test (NLT) package and LOINC coding. It removes certain WKLD CODE (#64) file duplicates, and corrects certain field definitions that produce invalid warnings by the FileMan Verify Field option.

This patch is required for the installation of VA Patch LR\*5.2\*33

## 10.0 VA Patch LR\*5.2\*334: NLT/LOINC V2.14 Update

Provides an update of NLT/LOINC to v2.14.

This patch is required for the installation of LR\*5.2\*1028.

*This patch is superseded by patch LR\*5.2\*1028.*

## 11.0 IHS LR\*5.2\*1028: UCUM Verification/LOINC v2.34 Update and Mapping

Provides for verification/linking of File 60 units to UCUM, an update of LOINC to v2.34, and mapping of File 60 tests to LOINC.

This patch contains the following enhancements:

- A new IHS UCUM file (#90475.3) containing valid UCUM format units, the units described in words, a print version of the units and one or more common synonyms of non-UCUM units to aid in mapping.
  - Updates to LAB LOINC file (#95.3), LAB LOINC COMPONENT file (#95.31), LAB ELECTRONIC CODES file (#64.061) and WKLD SUFFIX CODES file (#64.2).
  - BLR UCUM VERIFICATION [IHS UCUM VERIFICATION]
  - This option verifies/links all File 60 units found under the site/specimen node to the appropriate UCUM value and replaces them with the UCUM print name. This option is located on the new IHS LOINC/UCUM MENU.
  - BLR UCUM REPORT [IHS UCUM EXCEPTIONS REPORT]
  - This option prints a detailed exceptions report from the UCUM verification process. It is divided into four sections:
    - Panels, skipped—since panels do not have specimens; they also do not have units to convert.
    - Tests without specimens, skipped—many tests other than panels (micro, blood bank, etc.) do not have specimens, and therefore do not have any units to convert.
    - Specimens without units, skipped—many specimens do not have units since the results are either dimensionless or otherwise do not have a definable unit.
    - Units not linked to UCUM, skipped—this may be of the most value to the user. Units may be found for which no UCUM equivalent can be identified. Solution may be to change the units on the test/specimen to a known UCUM value or adding the units as a synonym for a defined UCUM value. Units not linked to a UCUM value will remain in File 60 and appear on all reports, but may not be supported for future interoperability.
  - BLR LOINC PRINT [IHS LOINC FILE 60 REPORTS]
- This option offers two reports. One will list the File 60 tests that have been mapped to LOINC. The report contains the test name, specimen, units, LOINC code, and the fully specified LOINC description. A second report lists the File 60 tests that have not been mapped to LOINC. It displays test name, specimen, and units.

- **BLR MAP LOINC TO TEST [IHS LOINC AUTO-MAPPER]**

This option will automatically go through File 60 and attempt to map each test that does not already contain a LOINC code. To map successfully, an exact match on test name, specimen, and units must be located in the IHS LOINC Master File (#90220). Otherwise, the test will not map and will continue to appear on the list of tests not mapped to LOINC.

- **BLR MAP IND TEST [IHS LOINC MANUAL MAPPER]**

This option allows for manually mapping an individual test to a LOINC code.

- **BLR LAB TEST EXTRACT [IHS LAB TEST FILE 60 EXTRACT]**

This option will extract all tests from File 60 that are not mapped to LOINC and place them into a file for upload into Regenstrief's RELMA tool. Once the nonmapped tests have been properly mapped in RELMA, new entries for the IHS LOINC Master File will be created and an update Master File will be sent to site.

# Glossary

**File**

A set of related records or entries treated as a single unit.

**FileMan**

The database management system for RPMS.

**Global**

In MUMPS, global refers to a variable stored on disk (global variable) or the array to which the global variable may belong (global array).

**IEN**

Internal Entry Number. A unique number used to identify an entry within a file.

**IHS**

Indian Health Service.

**LOINC**

Logical Observation Identifier Names and Codes

**Menu**

A list of choices for computing activity. A menu is a type of option designed to identify a series of items (other options) for presentation to the user for selection. When displayed, menu-type options are preceded by the word “Select” and followed by the word “option” as in “Select Menu Management option” (the menu’s select prompt).

**MUMPS**

Massachusetts General Hospital Utility Multiprogramming System. It is a procedural, interpreted general-purpose programming language oriented towards database applications.

**Parameter**

A name in a function or subroutine definition that is replaced by, or bound to, the corresponding actual argument when the function or subroutine is called.

**<PARAMETER>**

A Caché error caused by the number of parameters passed to a labeled routine by a user-written function reference or a DO command exceeding the number of formal parameters declared for the labeled line.

**RPMS**

Resource and Patient Management System. A suite of software applications used at IHS facilities to support administrative, clerical, and clinical functions.

**<SYNTAX>**

A Caché error caused by the malformation of a language construct, such as a misspelled or missing keyword.

**UCUM**

Unified Code for Units of Measure

**<UNDEFINED>**

A Caché error caused by a reference to an undefined variable.

## Contact Information

If you have any questions or comments regarding this distribution, please contact the OIT Help Desk (IHS).

**Phone:** (505) 248-4371 or (888) 830-7280 (toll free)

**Fax:** (505) 248-4363

**Web:** <http://www.ihs.gov/GeneralWeb/HelpCenter/Helpdesk/index.cfm>

**Email:** [support@ihs.gov](mailto:support@ihs.gov)