



RESOURCE AND PATIENT MANAGEMENT SYSTEM

Immunization Module

(BI)

Technical Manual

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Table of Contents

1.0	Introduction.....	1
2.0	Implementation and Maintenance	2
2.1	System Requirements	2
2.2	Key Variables.....	2
3.0	Menu Diagram.....	4
4.0	Routines	5
4.1	Routines to Map.....	5
4.2	Routines with Description	5
5.0	Files and Tables.....	10
5.1	File List	10
5.2	File Access	11
5.3	Cross References	13
5.4	Table Files	15
6.0	External Relations	18
6.1	External Calls.....	18
6.2	Published Entry Points.....	19
6.3	Exported Options	23
7.0	Internal Relations	25
8.0	Security Keys.....	26
9.0	Archiving and Purging	27
10.0	Documentation Resources	28
10.1	System Documentation.....	28
10.1.1	%INDEX	29
10.1.2	Inquire Option	29
10.1.3	Print Option File.....	29
10.1.4	List File Attributes	30
10.2	Online Help.....	31
11.0	SAC Requirements/Exemptions.....	32
	Glossary.....	33
	Contact Information	37

Preface

This is the Technical Manual for the Resource and Patient Management (RPMS) Immunization Module. Its purpose is to provide additional useful information to computer personnel regarding function and operation of the Immunization software. The Technical Manual is intended for use by knowledgeable computer personnel and not the typical end user.

1.0 Introduction

This manual provides Indian Health Service (IHS) site managers with a technical description of the Immunization Module routines, files, menus, cross references, globals, and other necessary information required to effectively manage the system.

All routines, files, options, and keys are namespaced starting with the letters “BI.”

The file number range for this package is 9002084-9002084.99.

2.0 Implementation and Maintenance

2.1 System Requirements

- Kernel v8 or later
- FileMan v22
- Immunization v8.2 or later, or Immunization never before installed
- XB/ZIB v3.0 through patch 11 (xb__0300.11k)
- IHS PCC Suite v2.0 patch 2 (bjpc0200.02k)
- PIMS v5.3 through patch 1004
- Only necessary if the site is using PIMS
- IHS Clinical Reporting System v9.0 through patch 1 (bgp_0900.01k)
- Caché 4.1 or later
- Caché \$ZF Heap of at least 124335

Note: It is *critically important* that the screen handling codes for C-VT100 in the Terminal Type File be up-to-date.

2.2 Key Variables

Table 2-1: Key variable names and descriptions

Name	Description
BIADFN	IEN of V IMMUNIZATION just created
BIBEGDT	Begin date of a date range
BICAT	Category: A (Ambul), I (Inpat), E (Event/Hist)
BICMGR	Case Manager
BIDATE	Date of Visit (FileMan format)
BIDFN	DFN of Patient in ^DPT and ^BIP
BIDOSE	Dose# number for this Immunization
BIENDDT	End date of a date range
BIIEN	IEN of an entry
BILOC	Location of encounter (IEN)
BILOT	Lot number for this Immunization (text)

Name	Description
BINAME	Patient Name
BIOLOC	Other Location of encounter (text)
BIPAGE	Page Count
BIPROV	Provider
BIPTR	Vaccine (IEN in IMMUNIZATION File)
BIREC	Vaccine Reaction (text)
BISSN	Social Security Number
BITITLE	Text of Title
BITYPE	Type of Visit (PCC Master Control File I,C,6)
BIVHL7	Vaccine HL7 Code
BIVNAM	Vaccine Name, short form
BIVSIT	IEN of Visit

Note: The above are only a few of the more commonly used variables in the package. No BI-namespaced variable can be assumed to be present in the local symbol table at all times. Many variables in the code are referenced extrinsically, calling code in the routines BIUTL1 through BIUTL8.

3.0 Menu Diagram

MAIN MENU

- |__Patient Menu
 - |__SGL - Single Patient Record
 - |__LET - Print Individual Patient Letter
 - |__LLS - Patient Lists and Letters
- |__Reports Menu
 - |__ADO - Adolescent Immunization Report
 - |__ADL - Adult Immunization Report
 - |__FLU - Influenza Report
 - |__H1 - H1N1 Accountability Report
 - |__QTR - 3-27 Month Report
 - |__TWO - Two-Yr-Old Immunization Rates
 - |__VAC - Vaccine Accountability Report
- |__Managers Menu
 - |__ERR - Edit Patient Errors
 - |__CMG - Add/Edit Case Manager
 - |__CMT - Transfer a Case Manager's Patients
 - |__SCN - Scan For Patients
 - |__ESP - Site Parameters Edit
 - |__PKG - Module Setup Information
 - |__LET - Form Letters Add/Edit
 - |__LOT - Lot Number Add/Edit
 - |__VAC - Vaccine Table Edit
 - |__RES - Restandardize Vaccine Table
 - |__EXP - Export Immunizations
 - |__KEY - Allocate/Deallocate Imm Menu Keys

3-1: BI Main Menu

4.0 Routines

4.1 Routines to Map

For those sites where routine mapping is applicable, all BI* routines should be mapped.

4.2 Routines with Description

Table 4-1: Routine names with descriptions

Routine	Developer	Description
BIAGE	IHS/CMI/MWR	PROCESS AGE RANGES, PROMPTS
BIAPCHS	IHS/CMI/MWR	PRODUCE IMMUNIZATION PATIENT RECORD FOR HEALTH SUMMARY.
BICMGR	IHS/CMI/MWR	ADD/EDIT CASE MANAGER
BIDTAB	IHS/CMI/MWR	VIEW DATA ELEMENTS
BIDU	IHS/CMI/MWR	DUE LIST/LETTERS, MAIN DRIVER
BIDU1	IHS/CMI/MWR	DUE LIST/LETTERS, HELP
BIDUPLT	IHS/CMI/MWR	BI PRINT LETTERS.
BIDUPLT1	IHS/CMI/MWR	BI PRINT LETTERS.
BIDUR	IHS/CMI/MWR	RETRIEVE PATIENTS.
BIDUR1	IHS/CMI/MWR	RETRIEVE/STORE PATIENTS.
BIDUVLS	IHS/CMI/MWR	VIEW DUE LIST.
BIDUVLS1	IHS/CMI/MWR	VIEW DUE LIST.
BIDUVLS2	IHS/CMI/MWR	VIEW DUE LIST VIEW.
BIDX	IHS/CMI/MWR	RISK FOR FLU & PNEUMO, CHECK FOR DIAGNOSES.
BIENVCHK	IHS/CMI/MWR	ENVIRONMENTAL CHECK FOR KIDS
BIETAB	IHS/CMI/MWR	VIEW ERROR CODE TABLE
BIEXP	IHS/CMI/MWR	EXPORT IMMUNIZATION RECORDS.
BIEXP1	IHS/CMI/MWR	EXPORT IMMUNIZATION RECORDS.
BIEXP2	IHS/CMI/MWR	EXPORT IMMUNIZATION RECORDS.
BIEXP3	IHS/CMI/MWR	EXPORT IMMUNIZATION RECORDS.
BIEXPRT2	IHS/CMI/MWR	EXPORT IMMUNIZATION RECORDS
BIEXPRT3	IHS/CMI/MWR	EXPORT IMMUNIZATION RECORDS
BIEXPRT4	IHS/CMI/MWR	EXPORT IMMUNIZATION RECORDS
BIEXPRT5	IHS/CMI/MWR	EXPORT IMMUNIZATION RECORDS
BIEXPRT8	IHS/CMI/MWR	EXPORT IMMUNIZATION RECORDS

Routine	Developer	Description
BIFMAN	IHS/CMI/MWR	FILEMAN CALLS
BIHELP	IHS/CMI/MWR	DISPLAY HELP TEXT
BIHS	IHS/CMI/MWR	DISPLAY HEALTH SUMMARY
BIKEY	IHS/CMI/MWR	UTIL: VIEW/ALLOCATE BI KEYS
BIKEY1	IHS/CMI/MWR	ALLOCATE/DEALLOCATE BI KEYS
BIKEY2	IHS/CMI/MWR	VIEW BIZ KEYS EXPLANATION.
BILETPR	IHS/CMI/MWR	PRINT PATIENT LETTERS.
BILETPR1	IHS/CMI/MWR	PRINT PATIENT LETTERS.
BILETPR2	IHS/CMI/MWR	PRINT PATIENT LETTERS
BILETPR3	IHS/CMI/MWR	PRINT PATIENT LETTERS.
BILETPR4	IHS/CMI/MWR	PRINT PATIENT LETTER
BILETVW	IHS/CMI/MWR	VIEW/EDIT FORM LETTERS
BILETVW1	IHS/CMI/MWR	VIEW/EDIT FORM LETTERS
BILETVW2	IHS/CMI/MWR	VIEW/EDIT FORM LETTERS
BILOGO	IHS/CMI/MWR	DISPLAY LOGO WH ENTERING PKG
BILOT	IHS/CMI/MWR	EDIT VACCINES.
BILOT1	IHS/CMI/MWR	EDIT VACCINES.
BILOT2	IHS/CMI/MWR	EDIT VACCINES.
BIMFI	IHS/CMI/MWR	MFI INTERFACE CODE
BINFO	IHS/CMI/MWR	VIEW PACKAGE INFORMATION.
BINTEG	IHS/CMI/MWR	INTEGRITY CHECKER
BIO	IHS/CMI/MWR	CALL DDIOL TO WRITE TO DISPLAY
BIOUTPT	IHS/CMI/MWR	HEADERS & PROMPTS FOR REPORTS.
BIOUTPT1	IHS/CMI/MWR	PROMPTS FOR REPORTS.
BIOUTPT2	IHS/CMI/MWR	PROMPTS FOR REPORTS.
BIOUTPT3	IHS/CMI/MWR	PROMPTS FOR REPORTS.
BIOUTPT4	IHS/CMI/MWR	PROMPTS FOR REPORTS.
BIOUTPT5	IHS/CMI/MWR	WRITE SUBHEADERS.
BIPATCO	IHS/CMI/MWR	EDIT CONTRAINDICATIONS
BIPATCO1	IHS/CMI/MWR	BUILD LIST ARRAY OF CONTRAS
BIPATCO2	IHS/CMI/MWR	ADD/DELETE CONTRAINDICATIONS
BIPATE	IHS/CMI/MWR	PATIENT CASE DATA EDIT
BIPATER	IHS/CMI/MWR	VIEW/EDIT PATIENT ERRORS
BIPATER1	IHS/CMI/MWR	EDIT PATIENT ERRORS.
BIPATPF	IHS/CMI/MWR	VIEW PATIENT PROFILE
BIPATUP	IHS/CMI/MWR	UPDATE PATIENT FORECAST
BIPATUP1	IHS/CMI/MWR	UPDATE PATIENT DATA
BIPATUP2	IHS/CMI/MWR	UPDATE PATIENT DATA 2
BIPATUP3	IHS/CMI/MWR	UPDATE PATIENT DATA 3
BIPATVW	IHS/CMI/MWR	VIEW PATIENT IMM DATA

Routine	Developer	Description
BIPATVW1	IHS/CMI/MWR	BUILD LIST ARRAY OF IMM DATA
BIPATVW2	IHS/CMI/MWR	ADD/EDIT/DELETE VISITS
BIPATVW3	IHS/CMI/MWR	ADD OTHER ITEMS, DISPLAY HELP
BIPCC	IHS/CMI/MWR	DISPLAY PCC LINK INFO
BIPOST	IHS/CMI/MWR	POST-INIT ROUTINE
BIPRE	IHS/CMI/MWR	PRE-INIT ROUTINE
BIREP	IHS/CMI/MWR	REPORT, GENERIC DISPLAYS
BIREPA	IHS/CMI/MWR	REPORT, VAC ACCOUNTABILITY
BIREPA1	IHS/CMI/MWR	REPORT, VAC ACCOUNTABILITY
BIREPA2	IHS/CMI/MWR	REPORT, VAC ACCOUNTABILITY
BIREPA3	IHS/CMI/MWR	REPORT, VAC ACCOUNTABILITY
BIREPD	IHS/CMI/MWR	REPORT, ADOLESCENT RATES
BIREPD1	IHS/CMI/MWR	REPORT, ADOLESCENT RATES
BIREPD2	IHS/CMI/MWR	REPORT, ADOLESCENT RATES
BIREPD3	IHS/CMI/MWR	REPORT, ADOLESCENT RATES
BIREPD4	IHS/CMI/MWR	REPORT, ADOLESCENT RATES
BIREPF	IHS/CMI/MWR	REPORT, FLU IMM
BIREPF1	IHS/CMI/MWR	REPORT, FLU IMM
BIREPF2	IHS/CMI/MWR	REPORT, FLU IMM
BIREPF3	IHS/CMI/MWR	REPORT, FLU IMM
BIREPF4	IHS/CMI/MWR	REPORT, FLU IMM
BIREPH	IHS/CMI/MWR	REPORT, H1N1 IMM
BIREPH1	IHS/CMI/MWR	REPORT, H1N1 IMM
BIREPH2	IHS/CMI/MWR	REPORT, H1N1 IMM
BIREPH3	IHS/CMI/MWR	REPORT, H1N1 IMM
BIREPL	IHS/CMI/MWR	REPORT, ADULT IMM
BIREPL1	IHS/CMI/MWR	REPORT, ADULT IMM
BIREPL2	IHS/CMI/MWR	REPORT, ADULT IMM
BIREPL3	IHS/CMI/MWR	REPORT, ADULT IMM
BIREPQ	IHS/CMI/MWR	REPORT, QUARTERLY IMM
BIREPQ1	IHS/CMI/MWR	REPORT, QUARTERLY IMM
BIREPQ2	IHS/CMI/MWR	REPORT, QUARTERLY IMM
BIREPQ3	IHS/CMI/MWR	REPORT, QUARTERLY IMM
BIREPQ4	IHS/CMI/MWR	REPORT, QUARTERLY IMM
BIREPT	IHS/CMI/MWR	REPORT, TWO-YR-OLD RATES
BIREPT1	IHS/CMI/MWR	REPORT, TWO-YR-OLD RATES
BIREPT2	IHS/CMI/MWR	REPORT, TWO-YR-OLD RATES
BIREPT3	IHS/CMI/MWR	REPORT, TWO-YR-OLD RATES
BIREPT4	IHS/CMI/MWR	REPORT, TWO-YR-OLD RATES
BIREPVP	IHS/CMI/MWR	REPORT, VIEW PATIENTS IN REPORT.

Routine	Developer	Description
BIRESTD	IHS/CMI/MWR	CHECK AND RESTANDARDIZE VACCINE TABLE.
BIRPC	IHS/CMI/MWR	REMOTE PROCEDURE CALLS
BIRPC1	IHS/CMI/MWR	REMOTE PROCEDURE CALLS
BIRPC2	IHS/CMI/MWR	REMOTE PROCEDURE CALLS
BIRPC3	IHS/CMI/MWR	REMOTE PROCEDURE CALLS
BIRPC4	IHS/CMI/MWR	REMOTE PROCEDURE CALLS
BIRPC5	IHS/CMI/MWR	REMOTE PROCEDURE CALLS
BIRPC6	IHS/CMI/MWR	REMOTE PROCEDURE CALLS
BISCAN	IHS/CMI/MWR	SCAN PATIENT DB FOR <36 MTHS, ADD TO IMM DB
BISELEC1	IHS/CMI/MWR	GENERIC SELECTION UTILITY
BISELEC2	IHS/CMI/MWR	GENERIC SELECTION UTILITY
BISELECT	IHS/CMI/MWR	GENERIC SELECTION UTILITY
BISITE	IHS/CMI/MWR	EDIT SITE PARAMETERS
BISITE1	IHS/CMI/MWR	EDIT SITE PARAMETERS
BISITE2	IHS/CMI/MWR	EDIT SITE PARAMETERS
BISITE3	IHS/CMI/MWR	EDIT SITE PARAMETERS
BISITE4	IHS/CMI/MWR	SELECT GPRA COMMUNITIES.
BITEST	IHS/CMI/MWR	TEST SPEED OF FORECASTING.
BITN	IHS/CMI/MWR	BUILD ^BITN GLOBAL.
BITN2	IHS/CMI/MWR	BUILD ^BITN GLOBAL SECOND HALF.
BITRS	IHS/CMI/MWR	TRANSFORM X INTO REQD CASE
BITX	IHS/CMI/MWR	ROUTINES TO CREATE RISK TAXONOMIES
BITXA	IHS/CMI/MWR	ROUTINES TO CREATE FLU RISK TAXONOMY
BITXB	IHS/CMI/MWR	ROUTINES TO CREATE PNEUMO RISK TAXONOMY
BITXC	IHS/CMI/MWR	ROUTINES TO CREATE PNEUMO RISK WITH SMOKING TAXONOMY
BIUTL1	IHS/CMI/MWR	UTIL: PATIENT DEMOGRAPHICS
BIUTL11	IHS/CMI/MWR	UTIL: PATIENT INFO
BIUTL2	IHS/CMI/MWR	UTIL: ZIS, PATH, ERRCODE
BIUTL3	IHS/CMI/MWR	UTIL: ZTSAVE, ASKDATE, DIRZ.
BIUTL4	IHS/CMI/MWR	UTIL: SCREENMAN CODE
BIUTL5	IHS/CMI/MWR	UTIL: MENU TITLS, DATE FORMAT
BIUTL6	IHS/CMI/MWR	UTIL: TEXT FOR POINTERS
BIUTL7	IHS/CMI/MWR	UTIL: SCREENMAN CODE
BIUTL8	IHS/CMI/MWR	UTIL: PATLKUP, PRTLST, ZGBL

Routine	Developer	Description
BIUTLFIX	IHS/CMI/MWR	UTIL: FIX STUFF.
BIVACED	IHS/CMI/MWR	EDIT VACCINES.
BIVACED1	IHS/CMI/MWR	EDIT VACCINES.
BIVGRP	IHS/CMI/MWR	EDIT VACCINE GROUPS.
BIVGRP1	IHS/CMI/MWR	EDIT VACCINES.
BIVISIT	IHS/CMI/MWR	ADD/EDIT IMM/SKIN VISITS.
BIVISIT1	IHS/CMI/MWR	CREATE/EDIT VISITS.
BIVISIT2	IHS/CMI/MWR	DELETE VISITS
BIVT100	IHS/CMI/MWR	UPDATE CODES FOR VT100
BIVTAB	IHS/CMI/MWR	VIEW VACCINE TRANSLATION TABLE
BIW	IHS/CMI/MWR	WRITE LINES TO ^TMP.
BIXCALL	IHS/CMI/MWR	XCALL TO IMMSERVE LIBRARY
BIXRPC	IHS/CMI/MWR	BI REMOTE PROCEDURE CALLS

5.0 Files and Tables

5.1 File List

Table 5-1: File numbers and names

File Number	File Name
9002084	BI PATIENT
9002084.01	BI CASE MANAGER
9002084.02	BI SITE PARAMETER
9002084.1	BI PATIENT IMMUNIZATIONS DUE
9002084.11	BI PATIENT CONTRAINDICATIONS
9002084.12	BI PATIENT FORECAST ERRORS
9002084.33	BI TABLE ERROR CODE
9002084.4	BI LETTER
9002084.45	BI LETTER SAMPLE
9002084.61	BI USER SELECTIONS
9002084.62	BI USER DATE-LOC LINE
9002084.63	BI USER AGE RANGE
9002084.7	BI PACKAGE INFORMATION
9002084.8	BI TABLE REACTION
9002084.81	BI TABLE CONTRA REASON
9002084.82	BI TABLE ADD INFO ITEMS
9002084.91	BI TABLE DATA ELEMENT
9002084.93	BI TABLE VACCINE GROUP (SERIES TYPE)
9002084.94	BI IMMUNIZATION TABLE HL7/CVX STANDARD
9002084.97	BI TABLE MANUFACTURERS

The following files may be distributed with the package due to Data Dictionary changes. (SAC Exemption 2/9/04.)

Table 5-2: File numbers and names

File Number	File Name
9000010.11	V Immunization
9000010.12	V Skin Test
9999999.04	IMM Manufacturer
9999999.14	Immunization
9999999.28	Skin Test
9999999.41	Immunization Lot

5.2 File Access

The following table indicates Read, Write, Laygo, Data Dictionary, and Delete Access Security for all BI Files.

Table 5-3: File access

FILE (#)	GL	RD	WR	LYG	DD	DEL
9002084 BI Patient	^BIP(	M	M	M	@	M
9002084.01 BI Case Manager	^BIMGR(	M	M	M	@	M
9002084.02 BI Site Parameter	^BISITE(	M	M	M	@	M
9002084.1 BI Patient Immunizations Due	^BIPDUE(	M	M	M	@	M
9002084.11 BI Patient Contraindications	^BIPC(	M	M	M	@	M
9002084.12 BI Patient Forecast Errors	^BIPERR(	M	M	M	@	M
9002084.33 BI Table Error Code	^BIERR(	M	M	M	@	M
9002084.4 BI Letter	^BILET(	M	M	M	@	M
9002084.45 BI Letter Sample	^BILETS(	M	M	M	@	M
9002084.61 BI User Selections	^BISELECT(	M	M	M	@	M
9002084.62 BI User Date-Loc Line	^BIDLOC(	M	M	M	@	M
9002084.63 BI User Age Range	^BIAGRG(	M	M	M	@	M
9002084.7 BI Package Information	^BINFO(	M	M	M	@	M

FILE (#)	GL	RD	WR	LYG	DD	DEL
9002084.8 BI Table Reaction	^BIREC(	M	M	M	@	M
9002084.81 BI Table Contra Reason	^BICONT(	M	M	M	@	M
9002084.82 BI Table Add Info Items	^BIADDIN(	M	M	M	@	M
9002084.91 BI Table Data Element	^BIEXPDD(	M	M	M	@	M
9002084.93 BI Table Vaccine Group (Series Type)	^BISERT(	M	M	M	@	M
9002084.94 BI Immunization Table HL7/CVX Standard	^BITN(	M	M	M	@	M
9002084.97 BI Table Manufacturers	^BIMAN(	M	M	M	@	M

5.3 Cross References

Table 5-4: Cross references

File Number	File Name Cross Reference	File#	Field#	Field Name
9002084	BI Patient			
	"B"	9002084	.01	Name
	"C"	9002084	.1	Case Manager
9002084.01	BI Case Manager "B"	9002084.01	.01	Case Manager
9002084.02	BI Site Parameter "B"	9002084.02	.01	Site/Facility Name
9002084.1	BI Patient Immunizations Due			
	"B"	9002084.1	.01	Patient Name
	"D"	9002084.1	.04	Recommended Date Due
	"DD"	9002084.1	.05	Date Past Due
	"E"	9002084.1	.05	Date Past Due
9002084.11	BI Patient Contraindications			
	"AC"	9002084.11	.02	Vaccine
	"B"	9002084.11	.01	Patient Name
9002084.12	BI Patient Forecast Errors "B"	9002084.12	.01	Patient Name
9002084.33	BI Table Error Code			
	"B"	9002084.33	.01	Error Code #
	"C"	9002084.33	.02	Error Code Text
	"U"	9002084.33	.02	Error Code Text
9002084.4	BI Letter			
	"B"	9002084.4	.01	Form Letter Name
	"U"	9002084.4	.01	Form Letter Name
9002084.45	BI Letter Sample "B"	9002084.45	.01	Form Letter Name
9002084.61	BI User Selections "B"	9002084.61	.01	DUZ-Dash-File #

File Number	File Name Cross Reference	File#	Field#	Field Name
9002084.62	BI User Date Loc-Line "B"	9002084.62	.01	DUZ
9002084.63	BI User Age Range "B"	9002084.63	.01	DUZ
9002084.7	BI Package Information "B"	9002084.7	.01	Name
9002084.8	BI Table Reaction "B" "C" "U"	9002084.8 9002084.8 9002084.8	.01 .02 .01	Reaction Numeric Code Reaction
9002084.81	BI Table Contra Reason "B" "U"	9002084.81 9002084.81	.01 .01	Contraindication Reason Contraindication Reason
9002084.82	BI Table Add Info Items "B" "U"	9002084.82 9002084.82	.01 .01	Item Name Item Name
9002084.91	BI Table Data Element "B" "C"	9002084.91 9002084.91	.01 .03	Data Element Name Synonym
9002084.93	BI Table Vaccine Group (Series Type) "B"	9002084.93	.01	Vaccine Group
9002084.94	BI Immunization Table HL7/CVX Standard "B" "C" "D" "E"	9002084.94 9002084.94 9002084.94 9002084.94	.01 .03 .02 .1	Name HL7-CVX Code Short Name Alternate Short Name
9002084.97	BI Table Manufacturers "B" "C"	9002084.97 9002084.97	.01 .02	Name MVX Code

5.4 Table Files

FILE: 9002084.33 BI TABLE ERROR CODE

GLOBAL: ^BIERR(

FIELD #	FIELD NAME	SUBSCRIPT	PIECE	TYPE
.01	ERROR CODE#	D0,0	1	N
.02	ERROR CODE TEXT	"	2	F
.03	ERROR ABBREVIATED TEXT	"	3	F

FILE: 9002084.8 BI TABLE REACTION

GLOBAL: ^BIREC(

FIELD #	FIELD NAME	SUBSCRIPT	PIECE	TYPE
.01	REACTION	D0,0	1	F
.02	NUMERIC CODE FOR THIS REACTION	"	2	N
.03	ACTIVE	"	3	S

FILE: 9002084.81 BI TABLE CONTRA REASON

GLOBAL: ^BICONT(

FIELD #	FIELD NAME	SUBSCRIPT	PIECE	TYPE
.01	CONTRAINDICATION REASON	D0,0	1	F
.02	WITHOLD CONTRA FROM FORECAST	"	2	S
.03	ACTIVE	"	3	S

FILE: 9002084.82 BI TABLE CONTRA REASON

GLOBAL: ^BIADDIN(

FIELD #	FIELD NAME	SUBSCRIPT	PIECE	TYPE
.01	ITEM NAME	D0,0	1	F
.02	NUMBER	"	2	N
.03	SHORT NAME	"	3	F

FILE: 9002084.91 BI TABLE DATA ELEMENT

GLOBAL: ^BIEXPDD(

FIELD #	FIELD NAME	SUBSCRIPT	PIECE	TYPE
.01	DATA ELEMENT NAME	D0,0	1	F
.02	DATA ELEMENT CODE	"	2	F
.03	SYNONYM	"	3	F
.04	TYPE OF VISIT	"	4	S

FILE: 9002084.93 BI TABLE VACCINE GROUP (SERIES TYPE)**GLOBAL: ^BISERT(**

FIELD #	FIELD NAME	SUBSCRIPT	PIECE	TYPE
.01	VACCINE GROUP (SERIES TYPE)	D0,0	1	F
.02	DISPLAY ORDER	"	2	N
.03	SHORT NAME	"	3	F
.04	MAX DOSES IN QUARTERLY REPORT	"	4	N
.05	FORECASTING ON/OFF	"	5	S
.06	AVAILABLE ON FORECASTING MENU	"	6	S

FILE: 9002084.94 BI IMMUNIZATION TABLE HL7/CVX STANDARD**GLOBAL: ^BITN(**

FIELD #	FIELD NAME	SUBSCRIPT	PIECE	TYPE
.01	NAME	D0,0	1	F
.02	SHORT NAME	"	2	F
.03	HL7-CVX CODE	"	3	N
.05	MAXIMUM# DOSES IN SERIES	"	5	N
.07	ACTIVE	"	7	S
.08	SKIN TEST	"	8	S
.09	VACCINE GROUP (SERIES TYPE)	"	9	P
.1	ALTERNATE SHORT NAME	"	10	F
.11	CPT CODE	"	11	P
.12	RELATED CONTRAIND HL7 CODES	"	12	F
.13	VIS DEFAULT DATE	"	13	D
.14	ICD DIAGNOSIS CODE	"	14	F
.15	ICD PROCEDURE CODE	"	15	F
.16	INCLUDE IN FORECAST	"	16	S
.17	INCLUDE IN VAC ACCOUNT REPORT	"	17	S
.18	DEFAULT VOLUME	"	18	N
.21	COMPONENT #1	"	21	P
.22	COMPONENT #2	"	22	P
.23	COMPONENT #3	"	23	P

FIELD #	FIELD NAME	SUBSCRIPT	PIECE	TYPE
.24	COMPONENT #4	"	24	P
.25	COMPONENT #5	"	25	P
.26	COMPONENT #6	"	26	P
1.01	BRAND #1	D0,1	1	F
1.03	BRAND #2	"	3	F
1.05	BRAND #3	"	5	F
1.07	BRAND #4	"	7	F
1.09	BRAND #5	"	9	F
1.14	FULL NAME	"	14	F
1.15	CPT CODE 2ND	"	15	p

FILE: 9002084.97 BI TABLE MANUFACTURERS
GLOBAL: ^BIMAN(

FIELD #	FIELD NAME	SUBSCRIPT	PIECE	TYPE
.01	NAME	D0,0	1	F
.02	MVX CODE	"	2	F
.03	ACTIVE	"	3	S
.04	FULL NAME	"	4	F

6.0 External Relations

A minimum of FileMan v22, Kernel v8, and PCC Health Summary v2.0 patch 10 is required to run the Immunization Module. It is also critically important that the screen handling codes for C-VT100 be up to date in the Terminal Type File.

The Immunization Module v8.4 makes use of commercial software called ImmServe, distributed by Medical Decisions Associates, Inc. (MDA). This software is an immunization forecasting utility. Immunization "forecasting" is the complex and ever-changing process of determining which immunizations patients are due for, based on their immunization history.

The IHS and MDA have worked closely to produce immunization forecasting for RPMS that utilizes the latest HL7/CVX codes for vaccines and vaccine combinations, as maintained now by the Centers for Disease Control (CDC). Renewal of the annual IHS-wide license with MDA for this software will allow the RPMS Immunization Package to remain abreast of the latest vaccines and vaccine combinations licensed by the Food and Drug Administration (FDA).

ImmServe is a C program that runs on the same host file server where Caché runs. The C program is loaded into memory by Caché's \$ZF functions and resides in memory until the host operating system is rebooted, which provides efficient processing of forecasts even when tens of thousands of patients are being processed for reports.

6.1 External Calls

Table 6-1: External calls

Routine Called	Invoked By
APCDALVR	BIVISIT
APCDALV	BIVISIT1
APCDAPI4	BIVISIT1
BSDAPI4	BIVISIT1
DIC	BIFMAN, BIUTL8
DIE	BIFMAN
DDS	BIFMAN
DIR	BIFMAN
FILE^DICN	BIFMAN
CLEAN^DILF	BIUTL8

Routine Called	Invoked By
EN^DIQ	BIFMAN
EN^DIQ1	BIFMAN
EN^VALM RE^VALM CLEAR^VALM1 FULL^VALM1 TERM^VALM0	BIDU, BIDTAB, BIETAB, BIEXP, BIEXP1, BIEXP2, BIEXP3, BIEXP4, BIINFO, BIKEY, BIKEY1, BIKEY2, BILETPR2, BILETPR4, BILETVW, BILETVW2, BIOUTPT, BIOUTPT1, BIOUTPT2, BIOUTPT3, BIOUTPT4, BIPATCO, BIPATCO2, BIPATER, BIPATER1, BIPATPF, BIPATVW, BIPATVW1, BIPATVW2, BIREPA, BIREPA1, BIREPL, BIREPL1, BIREPQ, BIREPQ1, BIREPT, BIREPT1, BISELEC1, BISELEC2, BISITE, BISITE2, BISITE3, BIUTL8, BIVACED, BIVACED1, BIVTAB
XBKVAR	BIUTL5, BIUTLFIX
VIEWR^XBLM	BIHS
EN^XBNEW	BIVISIT, BIVISIT2
EN^XBVK	BIUTL8

6.2 Published Entry Points

Table 6-2: Published entry points

Routine	Description	Required Variables
VER^BILOGO	Return Version# and Patch Level	None
AUTOADD^BIPATE	Automatically add a Patient to the Imm DB	1 - BIDFN (req) Patient's IEN in VA PATIENT File #2. 2 - BISITE (req) DUZ(2) for default Case Manager. 3 - BIERR (ret) Error text, if any. 4 - BINACT (opt) FileMan internal date Patient became Inactive.

Routine	Description	Required Variables
ADDPAT^BIPATE	Add a Patient to Imm DB	1 - BIDFN (req) Patient's IEN in VA PATIENT File #2. 2 - BISITE (req) DUZ(2) for default Case Manager. 3 - BIERR (ret) Error text, if any. 4 - BINACT (opt) FileMan internal date Patient became Inactive. 5 - BINACTR (opt) Internal code for Inactive Reason: m: Moved Elsewhere, t: Treatment Elsewhere, d: Deceased, p: Previously Inactivated, n: Never Activated 6 - BIAUTO (opt) If BIAUTO=1, set Field# .22="Automatically" added.
FORCALL^BIRPC	Update Forecast for all Immunization Patients.	None.
IMMHX^BIRPC	Return Immunization History	1 - BIHX (ret) String of patient's immunizations_ _Error. 2 - BIDFN (req) DFN of patient. 3 - BIDE (opt) Array of Data Elements to be returned: BIDE(IEN of Data Element). 4 - BISKIN (opt) =1 if Skin Tests should be included (DEFAULT); =0 if Skin Tests should NOT be included. 5 - BIFMT (opt) Format: 0=ASCII Split, 1=ASCII, 3=IMM/SERVE "Split" means the components of a combination vaccine will be split out as if they were given individually.

Routine	Description	Required Variables
IMMFORC^BIRPC	Return Immunization Forecast	1 - BIFORC (ret) String of patient's forecast_ _Error. 2 - BIDFN (req) DFN of patient. 3 - BIFDT (opt) Forecast Date (date used for forecast). 4 - BIUPD (opt) If BIUPD=1, do NOT update ImmServe Forecast. Default \$G(BIUPD)="", forecast gets updated. 5 - BIDUZ2 (opt) User's DUZ(2) to indicate ImmServe Forecasting Rules in Patient History data string. 6 - BIPDSS (ret) Returned string of Visit IEN's that are Problem Doses, according to ImmServe.
IMMPROF^BIRPC	Return ImmServe Profile in global array	1 - BIGBL (ret) Name of result global containing patient's ImmServe Profile, passed to Broker. 2 - BIDFN (req) DFN of patient. 3 - BIFDT (opt) Forecast Date (date used to calc Imms due). 4 - BIDUZ2 (opt) User's DUZ(2) to indicate ImmServe Forecasting Rules in Patient History data string.
CONTRAS^BIRPC5	Return Patient's Contraindications and their Reasons	1 - BICONTR (ret) String of patient's Contraindications_ _Error. 2 - BIDFN (req) DFN of patient.
GET^BIRPC1	Return data for one Immunization or Skin Test	1 - BIDATA (ret) Visit Data or Text of Error Code if any. 2 - BIDA (req) IEN of V IMM or V SKIN entry for data retrieval. 3 - BIVTYPE (req) "I"=Immunization Visit, "S"=Skin Text Visit. 4 - BIDE (opt) Local array for Data Elements to be returned.
ADDEDIT^BIRPC3	Add/Edit an V Immunization or V Skin Test	1 – BIERR (ret) Text of Error Code if any, otherwise null. 2 – BIDATA (req) String of data for the Visit to be added.

Routine	Description	Required Variables
DELETE^BIRPC3	Delete an Immunization or Skin Test	1 - BIERR (ret) Text of Error Code if any, otherwise null. 2 - BIDA (req) IEN of V IMM or V SKIN entry to be deleted. 3 - BIVTYPE (req) "I"=Immunization Visit, "S"=Skin Text Visit.
LOTDECR^BIRPC3	Decrement Lot Total for a given Lot Number	1 - BILOT (req) Lot Number IEN for this Immunization.
LOTRBAL^BIRPC3	Return Remaining Balance for a Lot Number	1 - BILIEN (req) Lot Number IEN for this Immunization.
LOTEXP^BIRPC3	Return Lot Expiration Date in format : MM/DD/YYYY	1 - BILIEN (req) Lot Number IEN for this Immunization. 2 - BIYY (opt) If BIYY=1, return 2-digit year: MM/DD/YY. If BIYY=2, return FileMan format of date.
ADDCONT^BIRPC4	Add a Contraindication	1 - BIERR (ret) Text of Error Code if any, otherwise null. 2 - BIDATA (req) String of data for the Contraindication to be added. Data elements are parsed by " " as follows: Patient IEN Vaccine IEN Contra Reason IEN Date Noted
DELCONT^BIRPC4	Delete a Contraindication	1 - BIERR (ret) Text of Error Code if any, otherwise null. 2 - BICIEN (req) IEN of BI CONTRAINDICATION to be deleted.
ACTLIST^BIRPC6	Produce ^TMP of Patients for Imm Report	1 - BIQDT (req) Quarter Ending Date. 2 - BITAR (opt) Two-Yr-Old Report Age Range: either "19-35" or "24-35" 3 - BISITE (req) Site IEN. 4 - BIERR (ret) Error text (if null, then no error).

Routine	Description	Required Variables
OTHERLOC^BIRPC6	Return IEN of the "OTHER" Location	1 - BIDUZ2 (req) IEN of "OTHER" in LOCATION File. 2 - Z (opt) If Z=1 return text of "OTHER" Location.
GETGPRA^BISITE4	Return GPRA Communities Array	1 - BIGPRA (ret) Array of GPRA IEN's in the COMMUNITY file - ^AUTTCOM(. 2 - BIDUZ (req) Site IEN or DUZ(2). 3 - BIERR (ret) Error text, if any.
ACTIVE^BIUTL1	Return Patient's Active Status in Immunization Package	1 - DFN (req) Patient's IEN (DFN).
INACT^BIUTL1	Return Date Patient became Inactive in the Imm Package	1 - DFN (req) Patient's IEN (DFN). 2 - TEXT (opt) If TEXT=1, return text of date.
ISGPRA^BIUTL11	Return 1 if Pt's Current Community is in Imm GPRA Set	1 - BIDFN (req) Patient's IEN (BIDFN). 2 - BISITE (req) IEN of Site (often the user's DUZ(2)).
LASTIMM^BIUTL11	Return latest date patient received CVX vaccine(s).	1 - BIDFN (req) IEN of Patient in ^DPT. 2 - BICVXS (req) String of CVX Codes to check, delimited by comma. 3 - BIQDT (opt) Quarter Ending Date (ignore Visits after this date).

6.3 Exported Options

Option Name	Description
BI CASE MANAGER ADD/EDIT	Add/Edit Case Manager
BI CASE MANAGER TRANSFER	Transfer a Case Manager's Patients
BI DUE LISTS & LETTERS PRINT	Due Lists and Letters
BI EXPORT IMMUNIZATIONS	Export Immunizations
BI KEYS ALLOCATE	Allocate/Deallocate Imm Menu Keys
BI LETTER EDIT	Form Letters Add/Edit
BI LINE FOR MENUS	

Option Name	Description
BI LOT NUMBER ADD/EDIT	Lot Number Add/Edit
BI LOT NUMBER NON-MANAGER	Lot Inventory for Non-Manager
BI MANUFACTURER ADD/EDIT	Manufacturer Add/Edit
BI MENU-MANAGER	Manager Menu
BI MENU-PATIENT	Patient Menu
BI MENU-REPORTS	Reports Menu
BI PACKAGE SETUP INFO VIEW	Package Setup Information
BI PATIENT ERRORS	Edit Patient Errors
BI PATIENT LETTER INDIVIDUAL	Print Individual Patient Letter
BI PATIENT LISTS & LETTERS	Patient Lists and Letters
BI PATIENT VIEW/EDIT	Single Patient Record
BI PATIENTS SCAN	Scan For Patients
BI REPORT ADOLESCENT IMMS	Adolescent Report
BI REPORT ADULT IMMS	Adult Immunization Report
BI REPORT FLU	Influenza Report
BI REPORT H1N1 ACCOUNTABILITY	H1N1 Report
BI REPORT QUARTERLY IMM	3-27 Month Report
BI REPORT TWO-YR RATES	Two-Yr-Old Immunization Rates
BI REPORT VAC ACCOUNTABILITY	Vaccine Accountability Report
BI SITE PARAMETERS EDIT	Site Parameters Edit
BI VACCINE TABLE EDIT	Vaccine Table Edit
BI VACCINE TABLE RESTAND	Re-standardize Vaccine Table

7.0 Internal Relations

There are no internal relations in this package.

8.0 Security Keys

There are four keys included in the Immunization v8.4 package.

Table 8-1: Key names and descriptions

Key Name	Description
BIZMENU	Key to the Main Menu of Immunization
BIZ EDIT PATIENTS	Key to allow enter/edit of Patient Data
BIZ MANAGER	Key to Manager Menu
BIZ LOT NON-MANAGER	Key to Lot Inventory for Non-Imm users

BIZMENU

The BIZMENU key gives users access to the Main Menu of the Immunization Package v8.4, with minimal permission to view patients' Immunization Data, to print Official Immunization Records, to view/print Due Lists, and to run reports.

BIZ EDIT PATIENTS

The BIZ EDIT PATIENTS key gives users the ability to ADD/EDIT the immunization data of patients, such as contraindications, skin tests, and other patient information. This key functions by making various Add/Edit actions available on the main Patient View screen of the Patient Immunization Record Option.

(Users without this key will still be able to view patient data from the Patient Immunization Record Option, but they will only be able to view the Immunization Data and the Health Summary, and print the Official Immunization Record.)

BIZ MANAGER

The BIZ MANAGER key gives users access to the Manager Menu of the New Immunization Package and the full range of Manager functions, such as editing Case Managers, editing Form Letters, editing Site Parameters, etc.

BIZ LOT NON-MANAGER

Assignment of the option BI LOT NUMBER NON-MANAGER to other menus in RPMS is done by the local site manager, as is the key BIZ LOT NON-MANAGER. This option and its key cannot be assigned from within the Immunization Package itself.

9.0 Archiving and Purging

There is no archiving and purging in this package. The sizes of the table files that come with the package are insignificant. Data storage for the package is very roughly 100 megabytes for a database of 25,000 patients with 1,000,000 immunizations.

10.0 Documentation Resources

This section describes a few methods to generate Immunization Module technical documentation.

10.1 System Documentation

Online Immunization Module software technical documentation, in addition to that which is located in the help prompts throughout the Immunization Module, can be generated through the use of several Kernel options. These include, but are not limited to, the following:

- %INDEX
- Menu Management
- Inquire Option
- Print Option File
- VA FileMan
- Data Dictionary Utilities
- List File Attributes

Typing ? at the “Select . . . Option” prompt provides online technical information.

- A single question mark (?) lists all options that can be accessed from the current option.
- Two question marks (??) list all options accessible from the current one, showing the formal name and lock for each.
- Three question marks (???) display a brief description for each option in a menu.
- An option name preceded by a question mark (?OPTION) shows extended help, if available, for that option.

For a more exhaustive option listing and further information about other utilities that supply online technical information, consult the DHCP Kernel Reference manual.

10.1.1 %INDEX

The %INDEX option analyzes the structure of a routine to determine, in part, if the routine adheres to RPMS programming standards. The output can include the following components:

- Compiled list of errors and warnings
- Routine listing
- Local variables
- Global variables
- Naked globals
- Label references
- External references

Running %INDEX for a specified set of routines allows users to discover any deviations from RPMS programming standards that exist, and to see how routines interact with one another (i.e., which routines call or are called by other routines).

To run %INDEX for the Immunization package, type **BI** at the “Routine(s)?” prompt.

10.1.2 Inquire Option

This menu management option provides the following information about a specified option:

- Option name
- Menu text
- Option description
- Type of option
- Lock (if any)

In addition, all items on the menu are listed for each menu option. To secure information about Immunization package options, specify the BI namespace.

10.1.3 Print Option File

The Print Option File utility generates a listing of options from the Option file (#19). Users can choose to print all of the entries in this file or specify a single option or range of options. For a list of Immunization Module options, refer to the Exported Options section of this manual.

10.1.4 List File Attributes

This VA FileMan option allows users to generate documentation pertaining to files and file structure. The standard format of this option provides the following data dictionary information for a specified file:

- File name and description
- Identifiers
- Cross-references
- Files pointed to by the file specified
- Files that point to the file specified
- Input, print, and sort templates

In addition, the following applicable data is supplied for each field in the file:

- Field name, number, title, and description
- Global location
- Help prompt
- Cross-references
- Input transform
- Date last edited
- Notes

Using the Global Map format of this option generates an output that lists the following information:

- All cross-references for the file selected
- Global location of each field in the file
- Input, print, and sort templates

For a comprehensive listing of Immunization Module files, see Section 5.0, “Files and Tables.”

10.2 Online Help

In addition to system documentation, RPMS includes special help displays for most menu options and data entry prompts. Typing ? at the “Select . . . Option” prompt displays information related to the current option, where

Typing . . .	Displays . . .
one question mark (?)	a list of all options accessible from the current option.
two question marks (??)	a list of all accessible options and their formal names
three question marks (???)	a brief description for each option in a menu.
one question mark (?) followed by an option name (?OPTION)	extended help, if available, for that option

11.0 SAC Requirements/Exemptions

The following exemptions to the SAC standards have been made for this version:

- The BIXCALL routines open, use, and close the Host File Server directly and temporarily resets the Error Trap during the \$ZF calls to ImmServe, the c-program commercial forecasting software. This is done to avoid losing IO variables and unintentionally closing printer devices while calling the HFS to produce Imm forecasts by ImmServe.
- The \$ZF calls are proprietary Caché functions.
- All code is ANSI M Standard.

Glossary

Archiving

The storing of historical or little-used data off-line (often on tape).

ASUFAC number

Area Service Unit Facility; a unique identifier for each facility within IHS. A six-digit number comprised of 2 digits for Area, 2 digits for Service Unit, and 2 digits for Facility.

Banner

A line of text with the name and domain of a user.

Browser

An interactive application that displays ASCII text on a terminal that supports a scroll region. The text can be in the form of a word-processing field or sequential local or global array. The user is allowed to navigate freely within the document.

Callable Entry Points

Places in a routine that can be called from an application program.

Cross-Reference

An indexing method whereby files can include pre-sorted lists of entries as part of the stored database. Cross-references (x-refs) facilitate look-up and reporting.

Default Facility

A user selects a facility identification to work with patients registered to that facility.

Entry Point

Entry point within a routine that is referenced by a “DO” or “GOTO” command from a routine internal to a package.

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).

Health Record Number (HRN)

Each facility assigns a unique number within that facility to each patient. Each HRN with its facility identification “ASUFAC” make a unique identifier within all of IHS.

INDEX (%INDEX)

A Kernel utility used to verify routines and other MUMPS code associated with a package. Checking is done according to current ANSI MUMPS standards and RPMS programming standards. This tool can be invoked through an option or from direct mode (>D ^%INDEX).

Init

Initialization of an application package. The initialization step in the installation process builds files from a set of routines (the init routines). Init is a shortened form of initialization.

Internal Entry Number (IEN)

The number used to identify an entry within a file. Every record has a unique internal entry number.

IRM

Information Resource Management. The IHS personnel responsible for information systems management and security.

Kernel

The set of MUMPS software utilities that function as an intermediary between the host operating system and application packages, such as Laboratory and Pharmacy. The Kernel provides a standard and consistent user and programmer interface between application packages and the underlying MUMPS implementation. These utilities provide the foundation for RPMS.

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).

Namespace

A unique set of 2 to 4 alpha characters that are assigned by the database administrator to a software application.

Official Registering Facility

A facility so designated that when HRNs are added/modified, those changes are sent to the central database. A Service Unit may have several satellites for which it is registering patients.

Option

An entry in the Option file. As an item on a menu, an option provides an opportunity for users to select it, thereby invoking the associated computing activity. Options may also be scheduled to run in the background, non-interactively, by TaskMan.

Patient Care Component (PCC)

The central repository for data in the Resource and Patient Management System (RPMS).

Queuing

Requesting that a job be processed at a later time rather than within the current session.

Routine

A program or sequence of instructions called by a program that may have some general or frequent use. MUMPS routines are groups of program lines that are saved, loaded, and called as a single unit via a specific name.

UCI

User Class Identification: a computing area.

Up-Hat (^)

A circumflex, also known as a “hat” or “caret,” that is used as a piece delimiter in a global. The up-hat is denoted as “^” and is typed by pressing Shift+6 on the keyboard.

Utility

A callable routine line tag or function. A universal routine usable by anyone.

Variable

A character or group of characters that refers to a value. MUMPS recognizes 3 types of variables: local variables, global variables, and special variables. Local variables exist in a partition of the main memory and disappear at sign-off. A global variable is stored on disk, potentially available to any user. Global variables usually exist as parts of global arrays.

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