RESOURCE AND PATIENT MANAGEMENT SYSTEM

Immunization Interface Management

(BYIM)

Technical Manual

Version 2.0
June 2019

Office of Information Technology
Division of Information Resource Management

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Document Version History

Version	Date	Notes
1.0	August 2005	Initial version
1.01	June 2008	Provides additional data structure and programming to allow automated exchange of the files created by the interface with the state immunization registries; allows for automatic importation of state immunization data into RPMS.
2.0	April 2010	Added the ability to expand age groups included in export to include 65 and older or all ages; the ability to exit (^) the manual export process; the ability to sort the NO MATCH report by patient name, date of birth, or import file date, and include a reason for each No Match; new statistical report for the number of children and immunizations in both the export and import processes, including the VFC status. Retitled manual from Immunization Data Exchange to Immunization Interface Management (IIMM)
2.01	July 2017	The following sections were modified based on changes for BYIM version 2.0 patch 8: • Section 2.2 (System Requirements) – Update Generic Interface version • Section 3.0 (BYIM Menu) – Add new options • Section 4.0 (Routines) – Add new routines • Section 5.0 (Files and Tables) – Add new files • Section 9.1 (System Documentation) – Change %XINDEX to XINDEX • Update for 508 compliance
2.02	June 2019	The following sections were modified based on changes for BYIM version 2.0 patch 10 • Section 2.2 (System Requirements) – Update patch levels • Section 2.3 (Security Keys) – Add new security key • Section 4.0 (Routines) – Add new routines • Section 5.0 (Files and Tables) – Add new files • Section 7.2 (Callable Routines) – Add new entry points

Preface

This manual contains the complete technical programming information related to the updates to this version of the Indian Health Service (IHS) Resource and Patient Management System (RPMS) Immunization Interface Management system.

1.0   Introduction

Immunization Interface Management (namespace BYIM), also known as Immunization Data Exchange, allows a two-way exchange of immunization data between facilities running the Resource and Patient Management System (RPMS) and state immunization registries. Immunization Interface Management Menu (IIMM) uses secured data exchange via secure Internet protocols to meet Health Insurance Portability and Accountability Act data security requirements for exchange of information between Indian Health Service (IHS) and Tribal facilities and state registries.

This manual provides IHS site managers with a technical description of the BYIM system routines, files, menus, and other information required to effectively manage the system.

All routines, options, and keys are namespaced, starting with the letters BYIM.

2.0   Implementation and Maintenance

2.1   General Information

The IIMM system resides in the BYIM namespace, and all related options, security keys, routines, and globals are namespaced BYIM.

2.2   System Requirements

- Kernel (namespace XU) v8.0 patch 1018 or later

- FileMan (namespace DI) v22 patch 1018 or later

- IHS PCC Suite v2.0 with latest patches

- IHS/VA Utilities (namespace XB/ZIB) v3.0 with latest patches

- IHS Patient Dictionaries (namespace AUPN) v99.1 patch 26

- Patient Information Management System (namespace PIMS) v5.3 with latest patches

- Generic Interface (namespace GIS) version 3.0 with latest patches

- IHS Immunization System (namespace BI) v8.5 with latest patches

- IHS Patient Registration v7.1 with latest patches

- For sites with the ability to transmit immunization data to/from their state immunization registry automatically, the Simple Message Mover software.

> **Note:** The site must have an account with their state immunization registry for secured transfer of the immunization data to the state.

2.3   Security Keys

Table 2-1 lists the IIMM security keys.

Table 2-1: IIMM security keys and descriptions

Key Name	Description
BYIMZMENU	Controls access to the primary menu option.
BYIMZ IZ EXPORT	Controls access to the immunization export function.
BYIMZ SET PARAMETERS	Controls access to the option to set parameters for the Immunization Data Exchange.
BYIMZ IZ AUTO IMPORT	Controls access to the automatic import function for the automated import of immunizations from the state registry.

Key Name	Description
BYIM IZ TEST EXPORT	Controls access to the option to create an initial small immunization data export file, to test the data exchange process.
BYIM IZ ADDITIONAL STATES	Controls access to option to setup and configure additional export states

3.0   BYIM Menu

The following are the IIMM menu options:

- **IZDE** Start Immunization Data Export
- **IZS**   Check Immunization Data Export Status
- **IZIM** Import Immunizations from State Registry
- **IZAD** Add Immunizations from State Registry
- **EXP**   Show Immunizations Exported for a Patient
- **IZFS**   File Statistics Report
- **NO**   Children for whom there is no match in RPMS
- **TEST** Create TEST Export File
- **SET**   Immunization Data Exchange Parameters
- **SET**   SET UP Immunization Data Exchange Parameters
- **ADD**   Define Additional Data Exchange Sites
- **IIS**   Add/Edit IIS Assigned Vaccine Inventory Codes
- **REL**   Review and Edit BYIM RELATIONSHIP Table Codes

4.0   Routine

Table 4-1 list the IIMM routines and their descriptions.

Table 4-1: IIMM routines and descriptions

Routine	Description
BYIMIMM	Manages primary data export, import, and review functions
BYIMIMM1	Extension of BYIMIMM
BYIMIMM2	Extension of BYIMIMM
BYIMIMM3	Extension of BYIMIMM
BYIMIMM4	Extension of BYIMIMM
BYIMIMM5	Extension of BYIMIMM
BYIMIMM6	Extension of BYIMIMM
BYIMIMM7	Extension of BYIMIMM
BYIMIMM8	Extension of BYIMIMM
BYIMPATC	Entry for all patch updates
BYIMSEGS	Controls HL7 segment creation
BYIMSEG1	Extension of BYIMSEGS
BYIMMU2	Setup for MU2 testing
BYIMMU21	Extension of BYIMMU2
BYIMRT	Extension of BYIMmu2
BYIMXIS	Controls device handling
BYIMPORT	Used to control the GIS import for initial setup
BYIMNTEG	Routine integrity check

5.0   Files and Tables

5.1   File List

Table 5-1: BYIM files and descriptions

File #	Global	Filename	Description
90480	^BYIMPARA(	IZ PARAMETERS	Contains setup parameters.
90480.1	^BYIMEXP(	IZ EXPORTS	Contains log of all immunizations exported to the state registry from RPMS, including identification of specific facilities.
90480.2	^BYIMRT(	IZ REAL-TIME QUERY	Contains structure for real-time HL7 message exchange.
90480.3	^BYIMTP(	IZ TRANSPORT FILES	Contains transport files for RT data exchange.
90480.4	^BYIMOBX(	IZ OBX SEGMENTS	Structure for specialized OBX segments.
90480.5	^BYIMNOS(	IZ NOS TABLE	Cross walk for NOS immunizations.
90480.6	^BYIMREL(	IZ RELATIONSHIP TABLE	Contains database for HL7 relationship cross references.
90480.7	^BYIMCDC(	IZ CDC RELATIONSHIP CODES	Contains database of CDC relationship codes.
90480.8	^BYIMCON(	IZ CONTRAINDICATION CODES	Contains immunization contraindication codes.

5.2   File Access

Not applicable.

5.3   Cross References

Table 5-2: BYIM cross references

File #	Filename	Field #	Field Name	Cross Reference
90480	IZ PARAMETERS	.01	SITE NAME	B
90480	IZ PARAMETERS	2	IMPORTED FILE	FILE
90480.1	IZ EXPORTS	.01	NAME	B
90480.1	IZ EXPORTS	.02	EXPORT DATE	C
90480.1	IZ EXPORTS	.02	EXPORT DATE	AC

6.0   Internal Relations

There are no interactive RPMS Server Menus for this package. Users do not need access to the appropriate options and keys.

7.0 External Relations

7.1 External Calls

There are no interactive programmer calls to this package.

7.2 Callable Routines

Table 7-1: BYIM callable routines

Routine Called	Invoked by
ENV^BYIMIMM	Installation process
DE^BYIMIMM	Option IZDE Start Immunization Data Export
DATE^BYIMIMM	Option BYIM IZ AUTO EXPORT
READY^BYIMIMM	Option BYIM IZ READY
PATH^BYIMIMM	Routines BYIMIMM1 and BYIMIMM2
MPORT^BYIMIMM	Used by the package installation process
MENU^BYIMIMM	Called by multiple BYIM options
RESTART^BYIMIMM	Called within the BYIMIMM routine
LOG^BYIMIMM	Called within the BYIMIMM routine
IMPORT^BYIMIMM1	Option IZIM Import Immunizations from State Registry
I1^BYIMIMM1	Called by routine BYIMIMM2
DEL^BYIMIMM1	Called from the BYIM DEL STATE IMMUNIZATIONS protocol
ADD^BYIMIMM1	Function to add immunizations from the state registry to RPMS.
FMINIT^BYIMIMM1	Called by lister to create list of kids and immunizations to list for display.
HDR^BYIMIMM1	Called by lister to create header for immunization list display.
START^BYIMIMM1	Called by lister to start immunization list display.
VALM^BYIMM1	Called by lister to control immunization list display.
PARAM^BYIMIMM1	Called from BYIM SET PARAMETERS option
PADD^BYIMIMM1	Called from within the BYIMIMM1 routine
MATCH^BYIMIMM2	Called from routine BYIMIMM1
AUTOIMP^BYIMIMM2	Called by option BYIM IZ AUTO IMPORT
FLIP^BYIMIMM2	Called by the package installation process
SHOW^BYIMIMM2	Called by the option BYIM IZ SHOW EXPORT
SDISP^BYIMIMM2	Called by report to display immunizations exported
SHEAD^BYIMIMM2	Called by report to display immunizations exported
INSET^BYIMIMM2	Called from routine BYIMIMM1

Routine Called	Invoked by
LOG^BYIMIMM2	Called from routine BYIMIMM and BYIMIMM1
BULLETIN^BYIMIMM2	Called from routine BYIMIMM2
KILL^BYIMIMM2	Called from routine BYIMIMM1
SELECT^BYIMIMM3	Called by option BYIM IZ FILE STATISTICS REPORT
DISP^BYIMIMM3	Called from routine BYIMIMM3
OL^BYIMIMM3	Called from routine BYIMIMM3
HX1^BYIMIMM3	Called from GIS HL7 message
HX2^BYIMIMM3	Called from GIS HL7 message
VFC^BYIMIMM3	Called from GIS HL7 message
VFCD^BYIMIMM3	Called from GIS HL7 message
RT^BYIMIMM3	Called by option BYIM RT MESSAGES
VXQ^BYIMIMM3	Called from GIS HL7 message
VXU^BYIMIMM3	Called from GIS HL7 message
FAC^BYIMIMM7	Set Option and BYIMIMM4
ASSET^BYIMIMM7	BYIMIMM5 and BYIMIMM8
HEADER^BYIMIMM7	BYIMIMM
HFSA^BYIMIMM8	BYIMIMM
LOG^BYIMIMM8	BYIMPATC
BYIMPATC	Called by KIDS post-install routine
ZIS^BYIMZIS	Called by routine BYIMIMM2

7.3   Published Entry Points

There are no documented entry points.

7.4   Exported Options

There are no Interactive RPMS Server Menus.

7.5   Remote Procedure Calls

There are no remote procedure calls.

8.0 Archiving and Purging

There is no archiving and purging for this package.

9.0   Documentation Resources

9.1   System Documentation

Online VPS system documentation can be generated through the use of several Kernel options, including (but not limited to) the following:

- XINDEX
- VA FileMan
- Data Dictionary Utilities
- List File Attributes

For more option listings and further information about other utilities that supply online technical information, see the Decentralized Hospital Computer Program (DHCP) Kernel Reference manual.

9.1.1   Index (XINDEX)

The XINDEX 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 XINDEX 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 XINDEX for the VPS system, at the "Routine(s)?" prompt, type the BYIM namespace.

9.1.2   List File Attributes

Not applicable.

9.1.3   Inquire Option

Not applicable.

9.1.4   Print File Option

Not applicable.

9.2   RPMS Online Help

In addition to system documentation, RPMS includes special help displays for most menu options and data entry prompts. Typing a question mark (**?**) at the "Select . . . Option" prompt displays information related to the current option, as shown in Table 9-1.

Table 9-1: RPMS online help options

Typing . . .	Displays . . .
A single 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.
A single question mark (?) Followed by an option name (**?option**)	Extended help, if available, for that option.

10.0   SAC Requirements and Exemptions

There are no exemptions to the SAC standards for this version.

Glossary

Archiving

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

Banner

A line of text with a user's name and domain.

Callable Entry Points

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

Caret (^)

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

Cross-reference

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

Entry Point

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

Event Type

A message that is sent, which signifies a particular event on the system (e.g., admit, discharge, etc.).

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 Level 7

The generally accepted standard for the exchange of certain specified types of medical information between applications. HL7 is both the name of the standards developing organization and the collection of protocols that the organization has developed and published. For more information, refer to the HL7 Web site: www.hl7.org.

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).

Information Resource Management

The IHS personnel responsible for information systems management and security.

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.

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 two to four alphabetic characters that are assigned by the database administrator to a software application.

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.

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.

Segment

A group of elements (also known as data fields) in an HL7 message that have been defined as logically belonging to the same category. Each segment contains a three-character Segment ID, the elements, administrative information (if applicable to that segment type), and designated delimiters between each element.

User Class Identification

A computing area

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 three 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.

Acronym List

Acronym	Meaning
HL7	Health Level 7
IHS	Indian Health Service
IIMM	Immunization Interface Management Menu
MU2	Meaningful Use 2
RPMS	Resource and Patient Management System
SAC	Standards and Conventions

Contact Information

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

Phone: (888) 830-7280 (toll free)

Web: https://www.ihs.gov/helpdesk/

Email: support@ihs.gov