Increase Enrollment in My HealtheVet

# Introduction

The Increase Enrollment in MHV project was born from the Veterans Administration (VA) Innovation Program. Through this initiative, prospective projects submitted by VA employees scrutinize for benefit, funding, and development. Selected projects move to the first of two innovation phases, a prototype low bar phase, where the requested functionality is developed outside the VA Network in a virtual cloud environment known as the Future Technology Lab (FTL).

## Problem Statement

Currently, the MyHealtheVet (MHV) web portal is a vastly under-utilized resource by Veterans. As a result of its underutilization, patients are left with long wait times when trying to reach a VHA employee to determine their appointment time, refill their prescriptions, or talk with their doctor. All of these problems could easily be mitigated with enrollment into the MHV web portal. Veterans are not consistently asked about their desire to enroll in MHV or what their current MHV status is. The one standardized process performed by all Clerks across the VHA is the pre-registration of patients when they arrive for their appointment. To streamline the education of patients on MHV, VA requires a prompt in the VistA pre-registration screen to indicate both the Veterans' desire to participate in the MHV program as well as their current MHV status.

## Proposed Solution

The development team modified the Preregistration Interface (PI) within the current VistA Registration package, in the VA Innovations Sandbox environment. The modified PI includes query and response line items that define the patient’s desire to be enrolled in MHV as well as accounting for the new Federated Credential Impact update to MHV. If the patient is not interested in participating in MHV enrollment, VistA now populates a list of reason codes for MHV enrollment rejection.

The scope of the Increase Enrollment in My HealtheVet project is to enhance the Pre-Registration module in the VistA Registration package to support the following functionality:

* Display an alert to the clerk when the selected patient is missing required My HealtheVet enrollment information. The alert displays immediately after a patient is selected.
* Display a list of historical actions taken by registration clerks to assist the patient with enrollment in My HealtheVet. Historical actions for the five most recent My HealtheVet socialization sessions are displayed immediately after the alert text.
* Prompt the clerk to ask the patient about their My HealtheVet enrollment status and capture the patient’s response. The clerk is required to elicit a response from the patient to continue the Pre-Registration process.
* Prompt the clerk to select one or more actions they performed to assist the patient in enrolling in My HealtheVet and capture the selection(s). The clerk is required to select an action they performed to assist the patient in order to continue the Pre-Registration process.
* Store an audit of all patient responses and actions taken with the date/time the information was entered. A history of all My HealtheVet socialization responses and clerk actions are captured and are available for ad hoc reports.
* Create three fields to capture the patient’s current My HealtheVet enrollment status (MHV ENROLLED, MHV AUTHENTICATED, MHV SECURE MESSAGING), three fields to capture reasons why the patient declines enrollment (MHV ENROLLED DECLINED REASON, MHV AUTH DECLINED REASON, MHV MSG DECLINED REASON), three fields to capture free text when the declined reasons aren’t sufficient (MHV ENROLL DECLINED TEXT, MHV AUTH DECLINED TEXT, MHV MSG DECLINED TEXT), and two multiples to capture actions taken by the clerk to assist the patient with MHV enrollment (MHV AUTH ACTIONS, MHV MSG ACTIONS).
* Create an MHV enrollment screen to display and allow entry and editing of the three enrollment fields (MHV ENROLLED, MHV AUTHENTICATED, and MHV SECURE MESSAGING) and related declined reason, declined reason text, and actions.
* Keep a date/time audit of updates to the three enrollments fields so the MHV Alert can be turned off for six months after a patient has declined MHV enrollment. After six months has elapsed since the patient declined MHV enrollment, the alert is reactivated.
* Include MHV enrollment status fields in the Pre-Registration consistency check, prompt for missing/inconsistent MHV enrollment status fields.

# Technical Overview

The VISTA PIMS package provides a comprehensive range of software supporting the administrative functions of patient registration, admission, discharge, transfer, and appointment scheduling.

The Increase Enrollment in My HealtheVet (IEMHV) patch DG\*5.3\*903 enhances the Pre-Registration functionality in the Preregister a Patient [DGPRE PRE-REGISTER] option in the VistA Registration V.5.3 package to increase patient enrollment in My HealtheVet.

The associated Technical Manual provides a comprehensive list of all MUMPS software and Data Dictionary modifications and enhancements made in the Pre-Registration module to support this effort. Refer to the Technical Manual located on the MHV-Enrollment Github Repository at <https://github.com/VHAINNOVATIONS/MHV-Enrollment/blob/master/docs/IEMHV_TECHNICAL_MANUAL_FINAL.doc>

## Routines

The following new and modified routines are exported by patch DG\*5.3\*903.

Patch DG\*5.3\*903 Routines

|  |  |
| --- | --- |
| NEW DG ROUTINES | MODIFIED DG ROUTINES |
| DGMHV | DGPREP1 |
| DGMHVAC | DGRPC |
| DGMHVUTL | DGRPC3 |
|  | DGRPCE1 |

**DGMHV -** This routine contains Increase My HealtheVet functionality, including the alert, socialization questions, clerk actions, and display of historical actions.

**DGMHVAC** - This routine displays the three enrollment fields (MHV ENROLLED, MHV AUTHENTICATED, MHV SECURE MESSAGING) and provides functionality for editing these fields, as well as adding Declined Reasons, Declined Free Text, and In Progress Actions taken by the clerk.

**DGMHVUTL -** This routine contains utilities used by DGMHV and DGMHVAC.

**DGPREP1 -** This is the existing Pre-Registration routine driver that has been modified to call new routine DGMHV after a patient has been selected.

**DGRPC -** This is the existing Pre-Registration consistency check routine driver that has been modified to include new INCONSISTENT DATA ELEMENTS (#38.6) entry #315 – MHV ENROLLMENT INCOMPLETE.

**DGRPC3 -** This routine is a component of the existing Pre-Registration consistency check that has been modified to call $$MHVOK^DGMHVAC(DFN) to check MHV enrollment status fields consistency, and set FILERR(315)=”” if data is inconsistent/missing.

**DGRPCE1 -** This routine is a component of the existing Pre-Registration consistency check that has been modified to call routine MHVPCHK^DGMHVUTL when FILERR(315) has been set. MHVPCHK^DGMHVUTL will determine which MHV enrollment field(s) should be prompted for, prompt the user for these fields, and set FILERR(315) if the fields are not completely populated.

## Files

The following is a list of files that were modified or created to support the Increase Enrollment in My HealtheVet project.

|  |  |  |
| --- | --- | --- |
| FILE NUMBER | FILE NAME | GLOBAL |
| 2 | PATIENT | ^DPT( |
| 390.01 | MHV SOCIALIZATION | ^DGMHV(390.01 |
| 390.02 | MHV SOCIALIZATION ACTIONS | ^DGMHV(390.02 |
| 390.03 | MHV DECLINED REASONS | ^DGMHV(390.03 |
| 390.04 | MHV ACTION SELECTION | ^DGMHV(390.04 |

### File and Field Listings

#### PATIENT File (#2)

DATA NAME GLOBAL DATA

ELEMENT TITLE LOCATION TYPE

-----------------------------------------------------------------------------

2,537027 MHV ENROLLED 2;1 SET

'0' FOR NO;

'1' FOR YES;

LAST EDITED: OCT 13, 2014

2,537028 MHV AUTHENTICATED 2;2 SET

'0' FOR NO;

'1' FOR YES;

'2' FOR ACTION;

LAST EDITED: OCT 13, 2014

2,537029 MHV SECURE MESSAGING 2;3 SET

'0' FOR NO;

'1' FOR YES;

'2' FOR ACTION;

LAST EDITED: OCT 13, 2014

2,537030 MHVEN UPDATE DATE/TIME 2;4 DATE

INPUT TRANSFORM: S %DT="ESTXR" D ^%DT S X=Y K:Y<1 X

LAST EDITED: OCT 13, 2014

2,537031 MHVAUTH UPDATE DATE/TIME 2;5 DATE

INPUT TRANSFORM: S %DT="ESTR" D ^%DT S X=Y K:Y<1 X

LAST EDITED: OCT 13, 2014

2,537032 MHVSM UPDATE DATE/TIME 2;6 DATE

INPUT TRANSFORM: S %DT="ESTR" D ^%DT S X=Y K:Y<1 X

LAST EDITED: OCT 13, 2014

2,537033 MHV ENROLL DECLINED TEXT 2.1;1 FREE TEXT

INPUT TRANSFORM: K:$L(X)>250!($L(X)<2) X

LAST EDITED: OCT 16, 2014

HELP-PROMPT: Answer must be 2-250 characters in length.

2,537034 MHV AUTH DECLINED TEXT 2.2;1 FREE TEXT

INPUT TRANSFORM: K:$L(X)>250!($L(X)<2) X

LAST EDITED: OCT 16, 2014

HELP-PROMPT: Answer must be 2-250 characters in length.

2,537035 MHV MSG DECLINED TEXT 2.3;1 FREE TEXT

INPUT TRANSFORM: K:$L(X)>250!($L(X)<2) X

LAST EDITED: OCT 16, 2014

HELP-PROMPT: Answer must be 2-250 characters in length.

2,537036 MHV ENROLL DECLINED REASON 2;7 POINTER TO MHV DECLINED REASONS FI

LE (#390.03)

LAST EDITED: OCT 14, 2014

2,537037 MHV AUTH DECLINED REASON 2;8 POINTER TO MHV DECLINED REASONS FILE

(#390.03)

LAST EDITED: OCT 14, 2014

2,537038 MHV MSG DECLINED REASON 2;9 POINTER TO MHV DECLINED REASONS FILE

(#390.03)

LAST EDITED: OCT 14, 2014

2,537041 MHV MSG ACTIONS 3;0 POINTER Multiple #2.0537041

2.0537041,.01 MHV MSG ACTIONS 0;1 POINTER TO MHV SOCIALIZATION ACTIONS

FILE (#390.02)

LAST EDITED: OCT 17, 2014

CROSS-REFERENCE: 2.0537041^B

1)= S ^DPT(DA(1),3,"B",$E(X,1,30),DA)=""

2)= K ^DPT(DA(1),3,"B",$E(X,1,30),DA)

2,537042 MHV AUTH ACTIONS 4;0 POINTER Multiple #2.0537042

(Add New Entry without Asking)

2.0537042,.01 MHV AUTH ACTIONS 0;1 POINTER TO MHV SOCIALIZATION ACTIONS

FILE (#390.02)

LAST EDITED: OCT 17, 2014

CROSS-REFERENCE: 2.0537042^B

1)= S ^DPT(DA(1),4,"B",$E(X,1,30),DA)=""

2)= K ^DPT(DA(1),4,"B",$E(X,1,30),DA)

FILES POINTED TO FIELDS

MHV DECLINED REASONS (#390.03) MHV ENROLL DECLINED REASON (#537036)

MHV AUTH DECLINED REASON (#537037)

MHV MSG DECLINED REASON (#537038)

MHV SOCIALIZATION ACTIONS

(#390.02) MHV MSG ACTIONS:MHV MSG ACTIONS (#.01)

MHV AUTH ACTIONS:MHV AUTH ACTIONS (#.01)

#### MHV SOCIALIZATION File (#390.01)

STORED IN ^DGMHV(390.01, (5 ENTRIES) SITE: VEHU MASTER UCI: CPM,ROU

DATA NAME GLOBAL DATA

ELEMENT TITLE LOCATION TYPE

-------------------------------------------------------------------------------

DD ACCESS: @

RD ACCESS: @

WR ACCESS: @

DEL ACCESS: @

LAYGO ACCESS: @

AUDIT ACCESS: @

(NOTE: Kernel's File Access Security has been installed in this UCI.)

POINTED TO BY: SOCIALIZATION RESPONSE field (#1) of the MHV SOCIALIZATION

sub-field (#2.0537026) of the PATIENT File (#2)

CROSS REFERENCED BY: NAME(B), DISPLAY SEQUENCE(C)

390.01,.001 NUMBER NUMBER

INPUT TRANSFORM: K:+X'=X!(X>99)!(X<1)!(X?.E1"."1.N) X

LAST EDITED: SEP 15, 2014

HELP-PROMPT: Type a number between 1 and 99, 0 decimal

digits.

390.01,.01 NAME 0;1 FREE TEXT (Required)

INPUT TRANSFORM: K:$L(X)>60!($L(X)<3) X

LAST EDITED: SEP 15, 2014

HELP-PROMPT: Answer must be 3-60 characters in length.

CROSS-REFERENCE: 390.01^B

1)= S ^DGMHV(390.01,"B",$E(X,1,30),DA)=""

2)= K ^DGMHV(390.01,"B",$E(X,1,30),DA)

390.01,1 DISPLAY SEQUENCE 1;1 NUMBER

INPUT TRANSFORM: K:+X'=X!(X>99999)!(X<0)!(X?.E1"."1N.N) X

LAST EDITED: SEP 15, 2014

HELP-PROMPT: Type a number between 0 and 99999, 0 decimal

digits.

CROSS-REFERENCE: 390.01^C

1)= S ^DGMHV(390.01,"C",$E(X,1,30),DA)=""

2)= K ^DGMHV(390.01,"C",$E(X,1,30),DA)

390.01,1.5 DISPLAY TEXT 3;1 FREE TEXT (Required)

INPUT TRANSFORM: K:$L(X)>250!($L(X)<3) X

LAST EDITED: SEP 15, 2014

HELP-PROMPT: Answer must be 3-250 characters in length.

390.01,2 PATIENT TEXT 2;0 WORD-PROCESSING #390.12

(IGNORE "|")

390.01,3 FOLLOWUP ACTION 4;E1,245 MUMPS

INPUT TRANSFORM: K:$L(X)>245 X D:$D(X) ^DIM

LAST EDITED: SEP 16, 2014

HELP-PROMPT: This is Standard MUMPS code.

WRITE AUTHORITY: @

#### MHV SOCIALIZATION ACTIONS File (#390.02)

STORED IN ^DGMHV(390.02, (5 ENTRIES) SITE: VEHU MASTER UCI: CPM,ROU

DATA NAME GLOBAL DATA

ELEMENT TITLE LOCATION TYPE

----------------------------------------------------------------------------

DD ACCESS: @

RD ACCESS: @

WR ACCESS: @

DEL ACCESS: @

LAYGO ACCESS: @

AUDIT ACCESS: @

(NOTE: Kernel's File Access Security has been installed in this UCI.)

POINTED TO BY: SOCIALIZATION ACTIONS field (#.01) of the SOCIALIZATION ACTIONS

sub-field (#2.5370262) of the MHV SOCIALIZATION sub-field

(#2.0537026) of the PATIENT File (#2)

CROSS

REFERENCED BY: ACTION(B)

CREATED ON: SEP 15,2014 by PROGRAMMER,ONE

390.02,.001 NUMBER NUMBER

INPUT TRANSFORM: K:+X'=X!(X>99)!(X<1)!(X?.E1"."1N.N) X

LAST EDITED: SEP 15, 2014

HELP-PROMPT: Type a number between 1 and 99, 0 decimal

digits.

390.02,.01 ACTION 0;1 FREE TEXT (Required)

INPUT TRANSFORM: K:$L(X)>120!($L(X)<3)!'(X'?1P.E) X

LAST EDITED: SEP 15, 2014

HELP-PROMPT: Answer must be 3-120 characters in length.

CROSS-REFERENCE: 390.02^B

1)= S ^DGMHV(390.02,"B",$E(X,1,30),DA)=""

2)= K ^DGMHV(390.02,"B",$E(X,1,30),DA)

#### MHV DECLINED REASONS File (#390.03)

DATA NAME GLOBAL DATA

ELEMENT TITLE LOCATION TYPE

-----------------------------------------------------------------------------

DD ACCESS: @

RD ACCESS: @

WR ACCESS: @

DEL ACCESS: @

LAYGO ACCESS: @

AUDIT ACCESS: @

(NOTE: Kernel's File Access Security has been installed in this UCI.)

POINTED TO BY: MHV ENROLL DECLINED REASON field (#537036) of the PATIENT File

(#2)

MHV AUTH DECLINED REASON field (#537037) of the PATIENT File

(#2)

MHV MSG DECLINED REASON field (#537038) of the PATIENT File (#2)

CROSS

REFERENCED BY: NAME(B)

390.03,.001 NUMBER NUMBER

INPUT TRANSFORM: K:+X'=X!(X>99)!(X<1)!(X?.E1"."1N.N) X

LAST EDITED: OCT 09, 2014

HELP-PROMPT: Type a number between 1 and 99, 0 decimal

digits.

390.03,.01 NAME 0;1 FREE TEXT (Required)

INPUT TRANSFORM: K:$L(X)>60!($L(X)<3)!'(X'?1P.E) X

LAST EDITED: OCT 09, 2014

HELP-PROMPT: Answer must be 3-60 characters in length.

CROSS-REFERENCE: 390.03^B

1)= S ^DGMHV(390.03,"B",$E(X,1,30),DA)=""

2)= K ^DGMHV(390.03,"B",$E(X,1,30),DA)

390.03,1 SELECTABLE AT 0;2 SET

'1' FOR ENROLLMENT;

'2' FOR AUTHENTICATION;

'3' FOR SECURE MESSAGING;

'12' FOR ENROLLMENT,AUTHENTICATION;

'123' FOR ENROLLMENT,AUTHENTICATION,SECURE MESS

AGING;

'13' FOR ENROLLMENT,SECURE MESSAGING;

'23' FOR AUTHENTICATION,SECURE MESSAGING;

LAST EDITED: OCT 20, 2014

#### MHV ACTION SELECTION File (#390.04)

DATA NAME GLOBAL DATA

ELEMENT TITLE LOCATION TYPE

-----------------------------------------------------------------------------

DD ACCESS: @

RD ACCESS: @

WR ACCESS: @

DEL ACCESS: @

LAYGO ACCESS: @

AUDIT ACCESS: @

(NOTE: Kernel's File Access Security has been installed in this UCI.)

POINTED TO BY: SELECTABLE LOCATIONS field (#.01) of the SELECTABLE LOCATIONS

sub-field (#390.21) of the MHV SOCIALIZATION ACTIONS File

(#390.02)

CROSS

REFERENCED BY: NAME(B)

CREATED ON: OCT 23,2014 by PROGRAMMER,ONE

390.04,.01 NAME 0;1 SET

'S' FOR SOCIALIZATION;

'E' FOR ENROLLMENT;

'A' FOR AUTHENTICATION;

'M' FOR SECURE MESSAGING;

LAST EDITED: OCT 23, 2014

CROSS-REFERENCE: 390.04^B

1)= S ^DGMHV(390.04,"B",$E(X,1,30),DA)=""

2)= K ^DGMHV(390.04,"B",$E(X,1,30),DA)

390.04,1 DESCRIPTION 0;2 FREE TEXT

INPUT TRANSFORM: K:$L(X)>180!($L(X)<2) X

LAST EDITED: OCT 23, 2014

HELP-PROMPT: Answer must be 2-180 characters in length.

# Installation Instructions

1. OBTAIN PATCHES

Obtain the host file DG\_53\_903\_V1.KID which contains patch DG\*5.3\*903.

Interested parties can retrieve VistA software from the GitHub repository

<https://github.com/VHAINNOVATIONS/MHV-Enrollment>. If FTP is used to transport the file, use ASCII Mode when downloading.

1. START UP KIDS

Start up the Kernel Installation and Distribution System Menu option [XPD MAIN]:

Edits and Distribution ...

Utilities ...

Installation ...

Select Kernel Installation & Distribution System Option: Installation

Load a Distribution

Print Transport Global

Compare Transport Global to Current System

Verify Checksums in Transport Global

Install Package(s)

Restart Install of Package(s)

Unload a Distribution

Backup a Transport Global

Select Installation Option:

1. LOAD TRANSPORT GLOBAL

From the Installation menu, select the Load a Distribution option.

When prompted for "Enter a Host File:" Enter the full directory path where you saved the host file DG\_53\_903\_V1.KID (e.g., /srv/MHV-Enrollment/code/KIDS/DG\_53\_903\_VERSION1.KID)

When prompted for "OK to continue with Load? NO//", Enter "YES."

The following will display:

Loading Distribution...

DG\*5.3\*903

Use INSTALL NAME: DG\*5.3\*903 to install this Distribution.

1. RUN OPTIONAL INSTALLATION OPTIONS

From the Installation menu, you may select to use the following options (when prompted for the INSTALL NAME, enter DG\*5.3\*903

* 1. Backup a Transport Global - This option will create a backup message of any routines exported with this patch. It will not backup any other changes such as data dictionaries or templates.
  2. Compare Transport Global to Current System - This option will allow you to view all changes that will be made when this patch is installed. It compares all components of this patch (routines, data dictionaries, templates, etc.).
  3. Verify Checksums in Transport Global - This option will allow you to ensure the integrity of the routines that are in the transport global.

1. INSTALL PATCH

This is the step to start the installation of this KIDS patch. This will need to be run for DG\*5.3\*903.

* 1. Choose the Install Package(s) option to start the patch install.
  2. When prompted for the "Select INSTALL NAME:", enter DG\*5.3\*903.
  3. When prompted "Want KIDS to INHIBIT LOGONs during the install? NO//", answer NO.
  4. When prompted "Want to DISABLE Scheduled Options, Menu Options, and Protocols? NO//", answer NO.
  5. When prompted "Device: HOME//", enter HOME to display the Install message on the screen (or enter the device you want to print the Install message). You may queue the install if you wish.

# Testing Setup and Instructions

An extensive set of Functional Test scripts have been created and validated as part of the IEMHV Testing Manual to test the user interface and functionality developed to support patch DG\*5.3\*903. This documentation can be found at the Github repository located at: <https://github.com/VHAINNOVATIONS/MHV-Enrollment/blob/master/testing/functional/IEMHV_Testing_Manual%20FINAL.docx>

In addition to the manual test scripts in the Testing Manual, a full suite of Test scripts have been developed to provide Automated Unit and Regression Testing that run as part of the OSEHRA Automated Testing (OAT) Framework. These Python test scripts can be copied to a local OSEHRA/VistA cloned repository in the directory structure located in the “vista” directory of the MHV-Enrollment repository here: <https://github.com/VHAINNOVATIONS/MHV-Enrollment/tree/master/vista>

## Roll and Scroll (RAS) Test Scripts

Several new Python files were created to support the RAS Testing of the modifications and enhancements to the Pre-Register a Patient option in VistA. These files are located in the VistA/Packages/Registration/Testing/RAS directory of the MHV-Enrollment repository.

* The REG\_IEMHV\_test.py file is a Python script that initiates the full suite of tests.
* The REG\_IEMHV\_suite.py file is the full suite of test scripts called by the REG\_IEMHV\_test.py script to perform individual Regression Tests.
* The REG\_IEMHV.cfg file contains the connection configuration details for the local, or remote, VistA instance where patch DG\*5.3\*903 has been installed

The primary RAS scripts are found in the REG\_IEMHV\_Actions.py file located in the VistA/Testing/Functional/RAS/lib directory.

## MUnit:

One routine (ZZDGMHV1.m) was added to the VistA/Package/Registration/Testing/MUnit directory structure to support several MUnit tests to improve code coverage and test certain APIs that were not possible to test through the Roll and Scroll test scripts

## Running the Test Suite

To run the automated test suite, all that is needed is to copy all files to their respective directory in the OSEHRA/VistA repository. Once cMake has been configured and generated, open a git bash or command window and navigate to the build directory and type the cTest command ‘ctest –R RAS\_REG\_IEMHV\_test –VV’

