RESOURCE AND PATIENT MANAGEMENT SYSTEM

# Prenatal Care Module

# (BJPN)

# Addendum to Technical Manual

Version 2.0 Patch 10
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Office of Information Technology
Division of Information Resource Management
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# Table of Contents

# Preface

The purpose of this manual is to provide technical information about the Electronic Health Record (EHR) Prenatal Care Module (PCM) components, specifically those changes introduced in p9 of the v2.0 release, which have been developed and released in the BJPN package namespace. The PCM allows users to manage prenatal problems and issues for patients over the course of their pregnancies.

# 1.0     Introduction

The Prenatal Graphical User Interface (GUI) software is a component of the Indian Health Service (IHS) Resource and Patient Management System (RPMS) and EHR that provides prenatal management functions.

This manual provides IHS site managers with a technical description of the BJPN routines, files, menus, cross references, globals, and other necessary information required to effectively manage the Prenatal GUI system.

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

The file number range for this package is 90680 – 90680.99.

# 2.0    Orientation

The PCM has no RPMS menu options for users. The only RPMS preparation specifically needed to run the PCM in EHR is to install the "PRENATAL CARE MODULE 2.0" Kernel Installation and Distribution System package and associated patches, such as p2.0, p3.0, p4.0, p5.0, p6.0, p7.0, and p8.0, assign the appropriate Remote Procedure Call (RPC) menu option to users, and install the required Prenatal Dynamic Link Library (DLL) files into the EHR "lib" file directory. EHR is run on the workstation and can be managed from there. See the patch installation notes for Prenatal v2.0 p9 for details on server and client installation and configuration.

Interaction between the PCM (via EHR) and the RPMS system is accomplished entirely through the use of RPCs. All RPCs in this package begin with the namespace letters BJPN.

# 3.0  Implementation and Maintenance

The PCM is designed to work with RPMS through the EHR application.

## 3.1  General Information

Table 3-1 shows the prerequisite patch requirements.

Table 3-1: Patch requirements

| Package and Version | Associated Patch Designation |
|---------------------|------------------------------|
| BJPN v2.0 p8 | BJPN*2.0*8 |

## 3.2  System Requirements

Table 3-2 shows the versions of other packages that should be installed for the PCM to work properly. These packages are not required for the installation of p9, however, because they would have already been installed as required patches for the installation of BJPN v2.0.

Table 3-2: System requirements

| Module | Minimum Version | Recommended Version |
|--------|-----------------|---------------------|
| VA FileMan (DI package) | v22.0 p1003 | |
| VA Kernel (XU package) | v8.0 p1015 | |
| BMXNet (BMX package) | v4.0 p4 | |
| IHS/VA Utilities (XB package) | v3.0 through p11 | |
| IHS STANDARD TERMINOLOGY (BSTS package) | v1.0 p6 | |
| IHS USER SECURITY AUDIT 1.0 (BUSA package) | v1.0 | |
| PCC Data Entry (APCD package) | v2.0 through p10 | |
| IHS PCC Suite (BJPC package) | v2.0 p17 | |
| EHR 1.1 | v1.1 p20 | |

## 3.3  Package-wide Variables

There are no package-wide BJPN variables in RPMS.

## 3.4      Security Keys

Table 3-3: Key names and descriptions

| Key Name | Description |
|---|---|
| ORES, ORELSE, BGOZ PROBLEM LIST EDIT, PROVIDER | Users holding one or more of these keys will be granted full edit privileges to the PCM. |
| BGOZ VIEW ONLY | This key should be assigned to the person who has VIEW ONLY permission to the PCM. This overrules any other edit security key. |

## 3.5      Parameters

There are two parameters delivered with the BJPN version 2.0 package.

Table 3-4: BJPN v2.0 parameters

| Parameter | Value Type | Precedence | Description |
|---|---|---|---|
| BJPN DISABLE PRENATAL EDITING | Boolean | User, Class | Users or users assigned to User Classes entered in this parameter will be excluded from using the PCM, regardless of their assigned security keys. |
| BJPN POST DEDD DAYS | Numeric | System | The number of days after a patient's definitive estimated date of delivery in which they can still make changes to their prenatal problem list. |

# 4.0    Menu

There are no RPMS menus included in the BJPN system.

# 5.0    Routine Descriptions

## 5.1    Routine List

The routines in Table 5-1 have been released with version 2.0 and subsequent patch releases of the prenatal care module package.

Table 5-1: BJPN version 2.0 routines

| Routine | Routine | Routine | Routine | Routine |
|---------|---------|---------|---------|---------|
| BJPN20AU | BJPN20EN | BJPN20P1 | BJPN20PR | BJPN20PS |
| BJPN20RG | BJPN2P01 | BJPN2P02 | BJPN2P03 | BJPN2P04 |
| BJPN2P05 | BJPN2P06 | BJPN2P07 | BJPN2P08 | BJPN2P09 |
| BJPNAPI | BJPNAPI1 | BJPNAPI2 | BJPNCPIP | BJPNFAUD |
| BJPNGNOT | BJPNGPIP | BJPNPBDT | BJPNPDET | BJPNPKL |
| BJPNPRL | BJPNPRNT | BJPNPRUT | BJPNPSET | BJPNPUP |
| BJPNPUTL | BJPNSPOV | BJPNSPRB | BJPNUTIL | BJPNVFIL |

## 5.2    Routines with Descriptions

Table 5-2: Routine list and descriptions

| Routine | Description |
|---------|-------------|
| BJPN20AU | BJPN v2.0 post-install audit handling routine |
| BJPN20EN | BJPN v2.0 environmental check routine |
| BJPN20P1 | BJPN v2.0 post-install conversion routine |
| BJPN20PR | BJPN v2.0 pre-install routine |
| BJPN20PS | BJPN v2.0 post-install front-end routine |
| BJPN20RG | BJPN v2.0 post-install component registration routine |
| BJPN2P01 | BJPN v2.0 p1 post-install routine |
| BJPN2P02 | BJPN v2.0 p2 post-install routine |
| BJPN2P03 | BJPN v2.0 p3 post-install routine |
| BJPN2P04 | BJPN v2.0 p4 post-install routine |
| BJPN2P05 | BJPN v2.0 p5 post-install routine |
| BJPN2P06 | BJPN v2.0 p6 post-install routine |
| BJPN2P07 | BJPN v2.0 p7 post-install routine |
| BJPN2P08 | BJPN v2.0 p8 post-install routine |
| BJPN2P09 | BJPN v2.0 p9 post-install routine |

| Routine | Description |
|---------|-------------|
| BJPNAPI | Routine containing Application Programmer Interface (API) calls utilized by Text Integration Utility (TIU) and Health Summary objects |
| BJPNAPI1 | API compile routine |
| BJPNAPI2 | API compile routine |
| BJPNCPIP | Routine containing problem handling calls |
| BJPNFAUD | Routine to retrieve audit history |
| BJPNGNOT | Routine to retrieve note details for the Pregnancy Issues and Problems list (PIP) |
| BJPNGPIP | Routine to retrieve PIP information |
| BJPNPBDT | Routine to retrieve problem detail history |
| BJPNPDET | Utility call routine |
| BJPNPKL | Pick list routine |
| BJPNPRL | Calls used by PIP |
| BJPNPRNT | Routine containing functions and RPCs to handle printing of patient audit history |
| BJPNPRUT | Routine which contains additional prenatal component function and RPCs |
| BJPNPSET | Set prenatal PIP problem routine |
| BJPNPUP | Routine which contains additional prenatal component function and RPCs |
| BJPNPUTL | Utility call routine |
| BJPNSPOV | Set as Purpose of Visit (POV) routine |
| BJPNSPRB | Set prenatal problem routine |
| BJPNUTIL | Utility call routine |
| BJPNVFIL | Old audit handling routine |

# 6.0　Files and Tables

## 6.1　File List

Table 6-1: File list with description

| File # | Filename | Description |
|--------|----------|-------------|
| 90680.01 | BJPN PRENATAL PROBLEMS | Contains a list of prenatal problems stored for patients, as well as the current information stored for each prenatal problem. |

## 6.2　File Access

Table 6-2: File access by number and name

| File # | Filename | GL | RD | WR | LYG | DD | DEL |
|--------|----------|----|----|----|-----|----|----|
| 90680.01 | BJPN PRENATAL PROBLEMS | ^BJPNPL( | @ | @ | @ | @ | @ |

## 6.3　Cross References

**90680.01 (BJPN PRENATAL PROBLEMS)**

.01 PLACEHOLDER FIELD

B Regular type cross reference

.02 PATIENT NAME

D Regular type cross reference

.03 *SNOMED TERM

C Regular type cross reference

AC New style cross reference

PATIENT NAME, *SNOMED TERM, IEN

AN New style cross reference

PATIENT NAME, *SNOMED TERM (FUTURE), IEN

G New style cross reference (Holdover from Prenatal 1.0)

PATIENT NAME, PROBLEM, IEN

.1 PROBLEM

E Regular type cross reference

F New style cross reference

PATIENT NAME, PROBLEM, IEN

## 6.4    Table File
**File: 90680.01 BJPN PRENATAL PROBLEMS**

**Global: ^BJPNPL(**

Table 6-3: Table file

| Field # | Field Name | Subscript | Piece | Type |
|---------|-----------|-----------|-------|------|
| .01 | PLACEHOLDER FIELD | D0,0 | 1 | N |
| .02 | PATIENT NAME | " | 2 | P9000001 |
| .03 | *SNOMED TERM | " | 3 | F (Previously P90680.02 in v1.0) |
| .04 | *SNOMED TERM (FUTURE) | " | 4 | Future field (v1.0) |
| .05 | *PROVIDER TEXT | " | 5 | P9999999.27 (v1.0) |
| .06 | CURRENT PRIORITY | " | 6 | S |
| .07 | CURRENT SCOPE | " | 7 | S |
| .08 | CURRENT STATUS | " | 8 | S |
| .09 | CURRENT DEFINITIVE EDD | " | 9 | D |
| .1 | PROBLEM | " | 10 | P9000011 |
| 1.01 | *ORIGINAL ENTRY DATE | D0,1 | 1 | D (v1.0) |
| 1.02 | *ORIGINAL ENTERED BY | " | 2 | P200 (v1.0) |
| 1.03 | *LAST MODIFIED DATE/TIME | " | 3 | D (v1.0) |
| 1.04 | *LAST MODIFIED BY | " | 4 | P200 (v1.0) |
| 2.01 | PROBLEM DELETED BY | D0,2 | 1 | P200 |
| 2.02 | DATE/TIME PROBLEM DELETED | " | 2 | D |
| 2.03 | REASON PROBLEM DELETED | " | 3 | S |
| 2.04 | DELETE REASON IF OTHER | " | 4 | F |
| 3 | *CURRENT NOTE | D0,3 | 1 | F (v1.0) |
| 4 | *HISTORICAL NOTES | D0,4 | | |
| .01 | HISTORICAL NOTES | " | 1 | F (v1.0) |

| Field # | Field Name | Subscript | Piece | Type |
|---------|-----------|-----------|-------|------|
| .02 | NOTE ENTRY DATE/TIME | " | 2 | D (v1.0) |
| .03 | NOTE ENTERED BY | " | 3 | P200 (v1.0) |
| 2.01 | NOTE DELETED BY | D0,5,D1,2 | 1 | P200 (v2.0) |
| 2.02 | DATE/TIME NOTE DELETED | " | 2 | D (v1.0) |
| 2.03 | REASON NOTE DELETED | " | 3 | S (v1.0) |
| 2.04 | DELETE REASON IF OTHER | " | 4 | F (v1.0) |
| 5 | IPL PIP | D0,5 | | |
| .01 | PIP DATE | D0,5,D1,0 | 1 | D |
| .02 | PIP | " | 2 | S |
| .03 | PIP USER | " | 3 | P200 |

# 7.0    External Relations

## 7.1    Callable Routines

Table 7-1: Routines by name, tag, and inactive status

| Name | Tag | Routine | Inactive |
|------|-----|---------|----------|
| BJPN CAN DELETE | CDEL | BJPNCPIP | |
| BJPN CAN EDIT PIP | EDIT | BJPNPDET | |
| BJPN CARE PLANS AND GOALS | NOTES | BJPNGPIP | |
| BJPN CHECK FOR ASTHMA | ASTHMA | BJPNUTIL | |
| BJPN CHECK FOR INJURY | ISINJ | BJPNUTIL | |
| BJPN CHECK FOR PROBLEM | PCHECK | BJPNSPRB | |
| BJPN CHECK PRB STATUS | SCHK | BJPNGNOT | |
| BJPN CHECK VISIT NOTE AUTHOR | AUTHORCK | BJPNPDET | Yes |
| BJPN CHK FOR VST NOTES | VNOTES | BJPNPRL | Yes |
| BJPN CLOSE PIP | CLOSE | BJPNPUTL | |
| BJPN DEL PRB VST NOTES | DVNOTES | BJPNPDET | Yes |
| BJPN DELETE PIP PROBLEM | DEL | BJPNCPIP | |
| BJPN DELETE POV | DPOV | BJPNPUTL | |
| BJPN DELETE PRB NOTE | DEL | BJPNPUP | Yes |
| BJPN FIRE EHR EVENT | FIREEV | BJPNPDET | |
| BJPN GET ABNORMAL | GETABN | BJPNPUTL | |
| BJPN GET ASTHMA CLASSES | ASTCLS | BJPNUTIL | |
| BJPN GET ASTHMA CONTROL | ASTCON | BJPNUTIL | |
| BJPN GET DEF PRNT | GDFLT | BJPNPRNT | |
| BJPN GET DX CAUSE | DXCAUSE | BJPNUTIL | |
| BJPN GET FRACTURE | FRACT | BJPNSPOV | |
| BJPN GET INJURY PLACE LIST | INJPLC | BJPNUTIL | |
| BJPN GET PICK LIST | PICK | BJPNPKL | |
| BJPN GET PICK LISTS | LST | BJPNPKL | |
| BJPN GET PIP | PIP | BJPNGPIP | |
| BJPN GET PR NOTES | NOTES | BJPNGPIP | |
| BJPN GET PRIMARY PROVIDER | PPRV | BJPNPUTL | |
| BJPN GET PRINTER LIST | DEVICE | BJPNPRNT | |
| BJPN GET PRLIST HDR | HDR | BJPNPRL | |
| BJPN GET PROB NOTES | NOTES | BJPNGNOT | |

| Name | Tag | Routine | Inactive |
|------|-----|---------|----------|
| BJPN GET PROBLEM | PROB | BJPNSPRB | |
| BJPN GET SNOMED TERMS | SNO | BJPNPKL | |
| BJPN GET SUBSET | SUBSET | BJPNSPRB | |
| BJPN OPEN PIP | OPEN | BJPNUTIL | |
| BJPN PICK LIST PRB DELETE | DEL | BJPNPKL | |
| BJPN PICK LIST TOGGLE STATUS | CPSTS | BJPNCPIP | |
| BJPN PRINT DETAIL | DETPRT | BJPNPRNT | |
| BJPN PROBLEM DETAIL | DET | BJPNPBDT | |
| BJPN SELECT INJURY CAUSE | GETCOI | BJPNUTIL | |
| BJPN SET AS POV | POV | BJPNPUP | Yes |
| BJPN SET DEDD | DEDD | BJPNUTIL | |
| BJPN SET DEF PRNT | SDFLT | BJPNPRNT | |
| BJPN SET FLAG | FLAG | BJPNVFIL | |
| BJPN SET PIP PROBLEM | SET | BJPNPSET | |
| BJPN SET POV | POV | BJPNSPOV | |
| BJPN SET PRB FROM PIP | ADD | BJPNPUP | Yes |
| BJPN SET PROB TO PIP | ADD | BJPNPRL | |
| BJPN SET PROBLEM | SET | BJPNPSET | |
| BJPN SET PROBLEM NOTE | SNOTE | BJPNPUP | Yes |
| BJPN SET PROVIDER | PRV | BJPNPUTL | |
| BJPN TOGGLE SCOPE | SCO | BJPNCPIP | |
| BJPN TOGGLE STATUS | STS | BJPNCPIP | |
| BJPN UPDATE PROBLEM | UPD | BJPNPRUT | Yes |
| BJPN USR CLASS MEMBER | CLSMBR | BJPNPRUT | |
| BJPN VISIT LOCK CHK | VLOCK | BJPNPRL | |

Table 7-2: Called routines with descriptions

| Routine Called | Description |
|----------------|-------------|
| EN^APCDALVR ;PEP | Called to create PCC V File entries |
| AGE^AUPNPAT ;PEP | Return patient age |
| HRN^AUPNPAT ;PEP | Return patient health record number |
| CHK^AUPNSICD | |
| ICCDX^AUPNVUTL | |
| ISLOCKED^BEHOENCX ;PEP | Returns whether visit has been locked for editing |
| VSTR2VIS^BEHOENXC ;PEP | Convert visit string to visit IEN |
| CHKASM^BGOASLK | |

| Routine Called | Description |
|---|---|
| GET^BGOCPLAN | |
| UPSTAT^BGOCPLAN | |
| CONCEPT^BGOPAUD | |
| GET^BGOPROB | |
| NEXTID^BGOPROB | |
| SET^BGOPROB | |
| EDIT^BGOPROB1 | |
| GETONE^BGOPROB1 | |
| DELETE^BGOUTL | |
| ERR^BGOUTL | |
| UPDATE^BGOUTL | |
| VFNEW^BGOUTL2 | |
| GETSET^BGOUTL3 | |
| DEL^BGOVPOV | Delete POV for visit |
| GET^BGOVPOV | |
| SET^BGOVPOV | Set POV for visit (Add) |
| INJURY^BGOVPOV2 | |
| EDIT^BGOVPOV3 | Set POV for visit (Edit) |
| SETVPRV^BGOVPRV | Set provider for visit |
| GET^BGOVTR | |
| GETEDU^BGOVTR | |
| FNUM^BGOVVI | |
| GET^BGOVVI | |
| CONC^BSTSAPI | |
| DESC^BSTSAPI | |
| I10ADV^BSTSAPI | |
| VALTERM^BSTSAPI | |
| SUBLST^BSTSAPI | |
| ICD10^BSTSUTIL | |
| LOG^BUSAAPI | |
| BRDCAST^CIANBEVT ;EP – Documented EHR function call | Fire EHR event |
| GETSUBSC^CIANBEVT ;EP – Documented EHR function call | Return list of subscribers to EHR event |
| HASKEY^CIAVCXUS ;EP – Documented EHR function call | Return whether user has the specified security key |

| Routine Called | Description |
|---|---|
| GETVAR^CIAVMEVT ; Documented EHR function call | Returns context variables for EHR patient/visit |
| GETPAR^CIAVMRPC ; Documented EHR function call | Returns the value for the specified parameter |
| DEVICE^CIAVUTIO ; Documented EHR function call | Returns a device listing |
| PRINT^CIAVUTIO ; Documented EHR function call | Prints compiled information |
| PRTGETDF^CIAVUTIO ; Documented EHR function call | Returns default print device for user |
| PRTSETDF^CIAVUTIO ; Documented EHR function call | Sets default print device for user |
| ICDDX^ICDCODE | |
| ICDDX^ICDEX | |
| IMP^ICDEXA | |
| LOOK^LEXA | |
| CONFIG^LEXSET | |
| ICDONE^LEXU | |
| ONE^LEXU | |

# 7.2    Published Entry Points

Table 7-3: Published entry points – routines and descriptions

| Routine | Description |
|---|---|
| EN^APCDALVR ;PEP | Called to create PCC V File entries |
| AGE^AUPNPAT ;PEP | Return patient age |
| HRN^AUPNPAT ;PEP | Return patient health record number |
| ISLOCKED^BEHOENCX ;PEP | Returns whether visit has been locked for editing |
| VSTR2VIS^BEHOENXC ;PEP | Convert visit string to visit IEN |
| DEL^BGOVPOV ;EP – Documented EHR function call | Delete POV for visit |
| SET^BGOVPOV ;EP – Documented EHR function call | Set POV for visit |
| SETVPRV^BGOVPRV ; Documented EHR function call | Set provider for visit |
| BRDCAST^CIANBEVT ;EP – Documented EHR function call | Fire EHR event |
| GETSUBSC^CIANBEVT ;EP – Documented EHR function call | Return list of subscribers to EHR event |

| Routine | Description |
|---|---|
| HASKEY^CIAVCXUS ;EP – Documented EHR function call | Return whether user has the specified security key |
| GETVAR^CIAVMEVT ; Documented EHR function call | Returns context variables for EHR patient/visit |
| GETPAR^CIAVMRPC ; Documented EHR function call | Returns the value for the specified parameter |
| DEVICE^CIAVUTIO ; Documented EHR function call | Returns a device listing |
| PRINT^CIAVUTIO ; Documented EHR function call | Prints compiled information |
| PRTGETDF^CIAVUTIO ; Documented EHR function call | Returns default print device for user |
| PRTSETDF^CIAVUTIO ; Documented EHR function call | Sets default print device for user |

# 7.3    Exported Options

There are no callable options in BJPN since the PCM components are accessed entirely from EHR. BJPNRPC is the broker option.

Table 7-4: Option name and description

| Option Name | Description |
|---|---|
| BJPNRPC | This option hosts RPCs in the BJPN namespace. Users must have access to this option in order to use the PCM. |

# 8.0    Internal Relations

All functions within this application work independently.

There are no documented internal relations in BJPN.

# 9.0    Archiving and Purging

There is no archiving or purging currently implemented in PCM.

# 10.0   Documentation Resources

This section describes a few methods to generate online technical documentation.

## 10.1   System Documentation

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

- %INDEX

- Menu Management

- Inquire Option

- Print Option File

- 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.

### 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 VPS system:

- At the "Routine(s)?" prompt, type the <<CC>> namespace.

## 10.1.2   Inquire Options

The Inquire 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 <<RPMSpackage>> options, specify the BJPN namespace.

## 10.1.3   Print Option File

The Print Option File utility generates a listing of options from the Option file (#19). Users can print all of the entries or a single option or range of options.

## 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 <<package name>> files, see Section 6.0.

## 10.2    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. Table 10-1 lists the displays for specific typed text.

Table 10-1: Typed commands and output displays

| 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 and Exemptions

The following is a Standards and Conventions (SAC) Exemption Request for use of third-party User Interface (UI) controls.

| Request for Exemption to RPMS Programming Standards |
|---|
| **Package:** BJPN                                   **Date:**  July '12 |
| **Program:** N/A |
| **Line Number:** N/A |
| **Applicable Standard:** Section 9 of the 2009 SAC |
| Section 9.3 states the following: Use of commercially purchased controls requires SAC Commission approval through the Request for Exemption process. The request must also contain the manufacturer's licensing and deployment agreements. |
| **Reason for Exemption:** |
| Requirements for the Prenatal application required the use of enhanced UI controls for datagrid, toolbars, tabbed MDI interface, Excel® export and print preview displays. To accommodate these needs without significant additional development time and cost associated with developing these custom controls, commercially available user interface controls were purchased from Infragistics for a nominal fee and were utilized within the GUI portion of the Prenatal application. The set of controls used at the time of this writing is the NetAdvantage® for Windows® Forms–Version 2010 Vol 3. A similar exemption was granted in January of 2007 for the ICARE MANAGEMENT SYSTEM (BQI) package. |
| The licensing agreement is attached with this application, and our understanding is that the control dll files may be incorporated and distributed with applications freely. The charge only comes into play for the developer licenses, i.e. in order for a developer to use these controls within a new application, they must have a properly licensed copy of the developer tools on the machines used for development. |
| Use of these tools was suggested and encouraged by IHS liaisons early in the design phase of the iCare project. |
| Additional information about these controls is available from the Infragistics® web site: |
| **Product Description:** |
| http://www.infragistics.com/dotnet/netadvantage/winforms.aspx#Overview |
| **508 Accessibility Information:** |
| https://www.infragistics.com/help/winforms/win-accessibility-overview |
| **Current license agreement:** |
| http://www.infragistics.com/legal/license |
| **Developer:** |
| **SACC Review**                                              **Date:** |
| Recommend  APPROVAL___  DISAPPROVAL___ |
| **Duration:** |
| **Comments:** |
| **OIT Action**                                              **Date:** |
| Request     APPROVED___  DISAPPROVED___ |
| **Comments:** |
| Director, DIT |

Figure 11-1: Example of SAC Exemption Request

# 12.0   Prenatal Client

## 12.1   Description of Development Environment

The Prenatal application was developed using the programming language C# within Microsoft® Visual Studio® 2012 integrated development environment (IDE). The PCM is written to utilize the Microsoft .NET 2.0 framework. All new classes created for the Prenatal application exist within the namespace IHS.PN.EHR.

In addition to the standard .NET object classes, the Prenatal application also uses commercially available Windows form controls from Infragistics. All the controls used were part of a package of controls named Infragistics NetAdvantage for Windows Forms 2010 Volume 3.

In addition, the Prenatal application also utilizes the BMX version 4.0 software to facilitate security authentication and communication between the EHR application and the RPMS server data. All data retrieval and updates are handled through the RPCs defined in the BJPN namespace.

All of the DLL files upon which Prenatal depend are delivered with the EHR application install package and are stored in the EHR program directory.

## 12.2   Prenatal RPMS Server Requirements

The RPMS server portion of the Prenatal application does not require a specific version of Caché® or operating system (OS). However, the server needs to be able to support BMX 4.0 fully and is therefore subject to any requirements needed to run that application. Please refer to the BMX version 4.0 Technical Manual for details.

Prenatal is included as part of EHR. Workstation OS and hardware requirements are the same as listed in EHR installation guide. Additional disk space (approximately 16 MB) will be required for the PCM's DLLs and help files.

## 12.3   Prenatal GUI Server–Install %

Table 12-1 lists the files that will be installed with the Prenatal application.

Table 12-1: Prenatal package installation files

| Filename | Assembly Version | Description |
|---|---|---|
| IHS.PN.EHR.PrenatalProblemList.dll | 2.0.10.0 | This dll provides all the functionality to implement Prenatal Problem List in EHR. |

| Filename | Assembly Version | Description |
|---|---|---|
| RichTextBoxPrintControl.dll | 1.0.0.0 | This class extends the RichTextBox control to allow for generation of formatted print documents in print preview and print-to-printer functions. Specifically, class is used to print character-based reports pulled from RPMS and displayed in the Prenatal application. |
| IHS.PN.EHR.PrenatalProblemList.chm | | Compiled HTML file that contains the online help for Prenatal Problem List. |

Table 12-2 lists files that are part of a set of enhanced UI controls from Infragistics called NetAdvantage for Windows Forms® Version 2010 Volume 3.

Table 12-2: Enhanced UI control files

| Filename | Assembly Version | Description |
|---|---|---|
| Infragistics2.Shared.v10.3.dll | 10.3.20103.1000 | This file contains general functions and types common to all of the Infragistics controls. |
| Infragistics2.Excel.v10.3.dll | 10.3.20103.1000 | This file contains helper classes that allow export to Excel format without requiring that Excel is installed on the client machine. |
| Infragistics2.Win.v10.3.dll | 10.3.20103.1000 | This file contains classes used at a high level to control application-wide styles and appearances and interface with Windows XP themes, etc. |
| Infragistics2.Win.Misc. v10.3.dll | 10.3.20103.1000 | This is a set of other miscellaneous functions and data types used when working with the other Infragistics classes. |
| Infragistics2.Win.UltraWinEditors.v10.3.dll | 10.3.20103.1000 | The UltraWinEditors is a set of editor controls. |
| Infragistics2.Win.UltraWinListView.v10.3.dll | 10.3.20103.1000 | The UltraWinListView is a user interface control to display lists of items. |
| Infragistics2.Win.UltraWinStatusBar.v10.3.dll | 10.3.20103.1000 | The UltraWinStatusBar provides the enhanced status bar used at the bottom of form to provide status text and row counts. |

| Filename | Assembly Version | Description |
|---|---|---|
| Infragistics2.Win.UltraWinGrid.v10.3.dll | 10.3.20103.1000 | The UltraGrid™ is an enhanced data-bound DataGrid used to display tabular data to the user. This also allows users to sort, filter, arrange columns, and select rows of data at run time. |
| Infragistics2.Win.UltraWinToolbars.v10.3.dll | 10.3.20103.1000 | This file contains classes to handle the toolbars, menus, and context menus (right-click) within Windows forms. |
| Infragistics2.Win.UltraWinTabControl.v10.3.dll | 10.3.20103.1000 | This file contains classes to handle the tabs controls. |
| Infragistics2.Win.UltraWinGrid.ExcelExport.v10.3.dll | 10.3.20103.1000 | This file contains the classes used to handle export of information from UltraGrid DataGrid to Excel format. |
| Infragistics2.Win.UltraWinPrintPreviewDialog.v10.3.dll | 10.3.20103.1000 | This file contains classes to handle print preview windows for printable items with the application and allows for zoom, page-layout adjustments, etc. |
| BEHPovCvg.dll | 1.0.6527.19754 | The file contains classes to handle the POV and CVG (Care Plan, Visit Instructions, Goal Notes) screens from the Integrated Problem List provided by Medsphere. |
| IndianHealthService.SNOMEDCTSearch.dll | 1.0.9.0 | SNOMED CT Search tool. |

# Glossary

### Pregnancy Issues and Problems List

New functionality created in the BJPN namespace to implement pregnancy problem tracking for the Systematized Nomenclature of Medicine—Clinical Terms (SNOMED CT®) terms.

### Electronic Health Record

An application used by medical organizations to track patient medical records and care.

### ICD Codes

One of several code sets used by the healthcare industry to standardize data. The International Classification of Disease (ICD) codes are an international diagnostic coding scheme. In addition to diseases, ICD also includes several families of terms for medical-specialty diagnoses, health status, disablements, procedures, and reasons for contact with HCPs. IHS currently uses ICD-9 for coding.

### Purpose of Visit

In RPMS, ICD codes and narratives describing the patient's purpose of visit (POV) are documented in PCC V POV.

### Resource and Patient Management System

A series of integrated software components that includes clinical, administrative, and financial functions.

### Text Integration Utility

Refers to functions within RPMS used to store long blocks of text in the medical record.

### Visual Studio

Microsoft software development tool and IDE used to develop the Prenatal application.

# Acronym List

| Acronym | Meaning |
|---|---|
| API | Application Programmer Interface |
| DLL | Dynamic Link Library |
| EHR | Electronic Health Record |
| GUI | Graphical User Interface |
| ICD | International Classification of Disease |
| IDE | Integrated Development Environment |
| IHS | Indian Health Service |
| OS | Operating System |
| PCM | Prenatal Care Module |
| PIP | Pregnancy Issues and Problems |
| POV | Purpose of Visit |
| RPC | Remote Procedure Call |
| RPMS | Resource and Patient Management System |
| SAC | Standards and Conventions |
| SNOMED CT | Systematized Nomenclature of Medicine—Clinical Terms |
| TIU | Text Integration Utility |
| UI | User Interface |
| VA | U.S. Department of Veteran Affairs |

# 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/

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