INPATIENT MEDICATIONS

TECHNICAL MANUAL/
SECURITY GUIDE

Version 5.0
December 1997

(Revised February 2007)

Department of Veterans Affairs
VistA Health Systems Design and Development

Revision History

Each time this manual is updated, the Title Page lists the new revised date and this page describes the changes. If the Revised Pages column lists "All," replace the existing manual with the reissued manual. If the Revised Pages column lists individual entries (e.g., 25, 32), either update the existing manual with the Change Pages Document or print the entire new manual.

Date	Revised Pages	Patch Number	Description
02/07	74-76	PSJ*5*178	MED ROUTE now appears in larger font on IV labels from the Zebra bar code printer. Med ROUTE now prints on the IV labels for bar-code enabled printers, and it prints in larger font than surrounding text. (R. Singer, PM; E. Phelps, Tech. Writer)
09/06	23, 94	PSJ*5*172	Encapsulation Cycle II project: Added PSJ53P1 to the Routine List in Section 5.1. Added DBIA 4537 to DBIA list. Changed the date on the Title Page to December 1997. (H. Whitley, PM; L. Woodson, TW)
05/06	v-viii 8a-8b 66-68b	PSJ*5*154	In Section 2.2.2 Added "PRIORITIES FOR NOTIFICATION" field. In Section 9.5, made correction to include the priority of ASAP in notifications. Added information regarding the three notifications parameters. (C. Greening, PM; T. Dawson, Tech. Writer)
12/2005	23	PSJ*5*146	Remote Data Interoperability (RDI) Project: Added PSJLMUT2 to the Routine List in Section 5.1. (E. Williamson, PM; M. Newman, Tech. Writer)
11/2005	All	PSJ*5*163	Encapsulation Cycle II project: Added PSJ59P5 to the Routine List in Section 5.1. Added DBIA 4819 to DBIA list. Deleted DBIAs 172, 634, and 1882 from the DBIA list. Reissued entire document due to a page numbering issue. (H. Whitley, PM; L. Woodson, TW)

(This page included for two-sided copying.)

11. Interfacing with the Bar Code Label Printer

The Inpatient Medications package includes an interface between the IV Medications module and the Bar Code label printer. The IV Medications module currently prints IV labels on a label printer. This interface allows a Unique Bar Code to be printed on the first line of the IV label.

Any printer that supports bar code printing can be used for the IV labels. However, the scan success rate will probably be lower if anything other than direct thermal transfer on synthetic labels is used. Labels from dot matrix printers, laser printers, or even barcode printers using other types of transfer, wipe off more easily. The label could become unreadable, especially in areas where the bag might become wet. With a direct thermal transfer onto a synthetic label, the print actually bonds to the label material. Essentially, the label would have to be ripped to damage the print.

11.1. Hardware Set Up

The printer must be physically connected to the network and then defined in the DEVICE (#3.5) and TERMINAL TYPE (#3.2) files.

11.2. Software Set Up

The type of printer will determine the next step. The Zebra printer requires Control Codes where the Dot Matrix or Laser printers do not require these codes. The IV label print routine checks the existence of the Control Codes before attempting to execute. It is not required for all Control Codes to be defined; just build the necessary Control Codes for the selected printer.

11.2.1. Zebra Printers

For this type of printer to print a Unique Bar Code on the IV labels, IRM must build Control Codes. The CONTROL CODES fields are added to the TERMINAL TYPE file (#3.2) in the Kernel patch XU*8*205. **This patch must be installed before proceeding**.

Control Code Set Up

The IV label print uses twelve control codes presently. These control codes must be built with FileMan using the names listed in order for the routine to work correctly. These twelve codes are listed below:

Code	Description
FI	Format Initialization
FE	Format End

Code	Description
SL	Start of Label
EL	End of Label
SB	Start of Bar Code
EB	End of Bar Code
SBF	Start of Bar Code Field
EBF	End of Bar Code Field
ST	Start of Text
ET	End of Text
STF	Start of Text Field
ETF	End of Text Field

Patch PSJ*5*178 provides the ability to make the medication route print on the IV labels as well as making it appear in a larger font than the other text. The following new control codes must be set up to provide this functionality:

Code	Description
SM	Start Med Route
EM	End Med Route
SMF	Start Med Route Field
EMF	End Med Route Field

Pseudo-Code Listing

The following pseudo-code listing shows the flow and the points at which each of the CONTROL CODES are used. (It is not required for all Control Codes to be defined; just build the necessary Control Codes for the selected printer.)

```
1. Label print routine invoked.
2. CONTROL CODES loaded into local array PSJIO. Variable PSJIO defined to
   indicate whether or not CONTROL CODES exist.
3. Format Initialization.
4. If selected, header label printed.
      a. Start of Label.
      b. Start of Text.*
      c. Start of Text Field.*
      d. Text Information.*
      e. End of Text Field.*
      f. End of Text.*
      g. End of Label.
5. IV label printed.
      a. Start of Label.
      b. Barcode unique ID assigned.
      c. Print barcode.
            i. If no CONTROL CODES, check for IOBARON and execute.
           ii. If CONTROL CODES, Start of Barcode, Start of Barcode Field.
          iii. Unique ID printed.
           iv. If no CONTROL CODES, check for IOBAROFF and execute.
            v. If CONTROL CODES, End of Barcode Field, End of Barcode.
      d. Start of Text.*
```

```
        e. Start of Text Field.*
        f. Text Information.*
        g. End of Text Field.*
        h. End of Text.*
        i. End of Label.
    6. Format End.
```

In the event the label text needs to continue on another label, the following
CONTROL CODE sequence will be used.
```
    1. End of Label.
    2. Start of Label.
```

'*' indicates items that may be executed repeatedly.

<u>Example Set Up</u>

The following is a setup example that was used in the development process. This example is
provided to guide the user in this set up. Please note that it is only an example and may not hold
true in all cases.

Example: Zebra Printer Example Set Up

```
NUMBER: 1                               ABBREVIATION: FI
  FULL NAME: FORMAT INITIALIZATION     CONTROL CODE: W "^XA",!,"^LH0,0^FS",!
NUMBER: 2                               ABBREVIATION: SB
  FULL NAME: START OF BARCODE
  CONTROL CODE: W "^BY2,3.0^FO60,25^B3N,N,80,Y,N"
NUMBER: 3                               ABBREVIATION: ST
  FULL NAME: START OF TEXT
  CONTROL CODE: W "^FO",PSJBARX,",",PSJBARY,"^A0N,30,20" S PSJBARY=PSJBARY+40
NUMBER: 6                               ABBREVIATION: EB
  FULL NAME: END OF BARCODE            CONTROL CODE: S LINE=LINE+1,PSJBARY=130
NUMBER: 7                               ABBREVIATION: STF
  FULL NAME: START OF TEXT FIELD       CONTROL CODE: W "^FD"
NUMBER: 8                               ABBREVIATION: SBF
  FULL NAME: START OF BARCODE FIELD    CONTROL CODE: W "^FD"
NUMBER: 9                               ABBREVIATION: ETF
  FULL NAME: END OF TEXT FIELD         CONTROL CODE: W "^FS",!
NUMBER: 10                              ABBREVIATION: SL
  FULL NAME: START OF LABEL
  CONTROL CODE: W "^XA",! S PSJBARY=50,PSJBARX=60
NUMBER: 11                              ABBREVIATION: EL
  FULL NAME: END OF LABEL              CONTROL CODE: W "^XZ",!
NUMBER: 12                              ABBREVIATION: EBF
  FULL NAME: END OF BARCODE FIELD      CONTROL CODE: W "^FS",!
NUMBER: 13                              CTRL CODE ABBREVIATION: SM
   FULL NAME: START MED ROUTE
   CONTROL CODE: W "^FO",PSJBARX,",",PSJBARY,"^A0N,36,30",!!
 NUMBER: 14                              CTRL CODE ABBREVIATION: EM
   FULL NAME: END MED ROUTE            CONTROL CODE: S PSJBARY=PSJBARY+40
 NUMBER: 15                              CTRL CODE ABBREVIATION: SMF
   FULL NAME: START MED ROUTE FIELD    CONTROL CODE: W "^FD"
 NUMBER: 16                              CTRL CODE ABBREVIATION: EMF
   FULL NAME: END MED ROUTE FIELD      CONTROL CODE: W "^FS",!
```

11.2.2. Dot Matrix and Laser Printers

The Control Codes in the TERMINAL TYPE file (#3.2) are not required for these printers.
However, the BAR CODE ON and BAR CODE OFF fields in the TERMINAL TYPE file (#3.2)
are needed.

An example of each field is shown below for the Output Technology Corporation (OTC) printers. Please note that it is only an example and may not hold true in all cases.

Example: OTC Printer Example

```
BAR CODE OFF: $C(27),"[0t",!   BAR CODE ON: $C(27),"[4;4;0;2;4;2;4;2}",$C(27),"[3t"
```

11.3. Printed Bar Code IV Label Sample

With this interface, a Unique Bar Code will be printed on the first line of the IV label with the label number printed below it. This label number is comprised of the patient IEN, a "V" as a delimiter, and the label sequential number for the patient (not the order). Depending upon the type of printer used, the asterisks (*) may or may not be printed on either side of the label number.

Example: Bar Code IV Label Example

```
        ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
            *520V452*

[65] 9111  ONE EAST 03/19/02
PSJPATIENT1,ONE  B-12

ACETAMINOPHEN 100 MEQ
0.9% SODIUM CHLORIDE 100 ML

Dose due at: _____
ROUTE: INTRAVENOUS
100 ml/hr
Fld by: ____  Chkd by: ____
1[1]
```