

Medicare Severity Diagnosis Related Groups (MS-DRG) Software

Software Installation Guide for z/OS Batch

ICD-9-CM

Software version 34.0A - for data analysis purposes only

PBL-008
10/16

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Preface

The intent of this software release is to assist any providers who may want to conduct any specific analysis using both the ICD-9 and the ICD-10 versions of MS-DRG.

This manual contains the information needed to use the Medicare Severity Diagnosis Related Groups (MS-DRG) Software (the grouper), version 34.0A in a mainframe environment. Two interface versions to the MS-DRG software are supplied. One, the standard version, assumes that the operating system is z/OS Batch. The second is re-entrant and uses no macros and so can be used in a variety of operating system environments, although it requires additional parameters from the calling program.

This manual provides technical personnel with the detail necessary to install, debug, and support the MS-DRG software. The first four chapters describe installing, testing, and running the grouper. Chapter 5 provides detailed information on the logic of the executor and the construction of the tables. An appendix provides grouping results for the test database.

Users already familiar with the MS-DRG software are encouraged to read this manual to ensure that installation, testing, and production runs perform without incident. If you have never used the software, we strongly recommend that you read the manual thoroughly to become familiar with it before installation.

The manual assumes that you are familiar with:

- IBM Basic Assembler Language (BAL)
- IBM MVS Job Control Language
- The ICD-9-CM coding scheme from a computer standpoint (e.g., diagnosis codes are 5-character alphanumerics that are left-justified in an 8-byte field and blank-filled).

Chapter 1: Introduction

This manual provides technical personnel with the detail necessary to install and understand the Medicare Severity Diagnosis Related Groups (MS-DRG) Software (the grouper) so they can install, interface with, and support it.

The MS-DRG software may be implemented either as a set of subroutines to be called from a program written in Assembler or a higher level language (e.g., COBOL) or as a utility program with all parameters passed through a job's SYSIN input stream.

Grouper tables

Minimally, the grouper consists of three programs. One of the programs consists of tables which contain information for all valid diagnoses, procedures, and DRGs. The diagnosis and procedure tables were prepared from the CPHA ICD-9-CM codes and abbreviated description tape (December 1979 revision) and the additional codes documented in the Federal Registers detailing final grouper changes for versions 4.0 through 34.0A. Plain text (EBCDIC) versions of the tables embedded in the programs are supplied as well.

Data format requirements

The grouper executor is contained in three Basic Assembler Language (BAL) programs. The data formats required by the executor are shown in the following table.

If these data requirements are met, the grouper may be implemented by using a utility program (see "[Using and testing the grouper utility](#)" on page 39). Whenever these requirements are not met, the grouper must be implemented as a subroutine to a higher level language program that re-codes the information as necessary (see "[Using the grouper with higher-level languages](#)" on page 47).

Table 1. Required data formats

| Name | Length in bytes | Description |
|-------------|------------------------|--|
| Diagnosis | 8 | <p>First 7 bytes represent the diagnosis code. Left-justified, blank-filled, up to 25 accepted.</p> <p>The eighth byte represents the POA indicator.</p> <p>Y - Yes, present at the time of inpatient admission</p> <p>N - No, not present at the time of inpatient admission</p> <p>U - Insufficient documentation to determine if present on admission</p> <p>W - Clinically unable to determine if present at time of admission</p> <p>1 - Code is exempt from POA reporting (Used on 4010 form)</p> <p>Blank - Code is exempt from POA reporting (Used on 5010 form, effective 01/01/2011)</p> |
| Procedure | 7 | Left-justified, blank-filled, up to 25 accepted |
| Age | 3 | 0 (zero) through 124, right-justified |
| Sex | 1 | 0-2 (0-unknown, 1-male, 2-female) |

| Name | Length in bytes | Description |
|------------------|-----------------|---|
| Discharge Status | 2 | 01-Home, Self-Care 02-Short Term Hosp 03-SNF 04-Custodial/supportive care (effective 10/1/2009) 05-Canc/Child hosp 06-Home Health Service 07-Against Medical Advice 20-Died 21-Court/law enfrc 30-Still A Patient 43-FedHospital 50-Hospice-Home 51-Hospice-Medical Facility 61-Swing Bed 62-Rehab facility/rehab unit 63-Long term care hospital 64-Nursing facility - Medicaid certified 65-Psych hosp/unit 66-Critical Access Hospital 69-Designated Disaster Alternative Care Site 70-Oth institution 81-Home-Self care w Planned Readmission 82-Short Term Hospital w Planned Readmission 83-SNF w Planned Readmission 84-Cust/supp care w Planned Readmission 85-Canc/child hosp w Planned Readmission 86-Home Health Service w Planned Readmission 87-Court/law enfrc w Planned Readmission 88-Federal Hospital w Planned Readmission 89-Swing Bed w Planned Readmission 90-Rehab Facility/ Unit w Planned Readmission 91-LTCH w Planned Readmission 92-Nursg Fac-Medicaid Cert w Planned Readmiss 93-Psych Hosp/Unit w Planned Readmission 94-Crit Acc Hosp w Planned Readmission 95-Oth Institution w Planned Readmission |
| POA logic | 1 | Present On Admission (POA) logic indicator. X - Exempt from POA reporting Z - Requires POA reporting |
| Admit Date | 8 | Format = YYYYMMDD (for use with future POA logic) |
| Discharge Date | 8 | Format = YYYYMMDD (for use with future POA logic) |
| Procedure Dates | 200 | Date of each procedure code Format = YYYYMMDD (for use with future POA logic) |

Information returned by the grouper

The information returned by the grouper is shown in the following tables.

The field DRG listed below represents the 3-digit MS-DRG number used by the Centers for Medicare & Medicaid Services (CMS) for DRG payment purposes. The 3-byte “initial DRG” field in the ancillary buffer represents the DRG prior to the application of the HAC logic. The ancillary buffer also contains 4-byte initial and final DRG numbers. These 4-byte DRG numbers are for statistical purposes only. Each 3-digit DRG concept is split on MCC, CC, and non-CC to create the 4-digit DRG.

For example, as a 3-digit DRG, Non-specific CVA & precerebral occlusion w/o infarction is split into 067 (w MCC) and 068 (w/o MCC). As a 4-digit DRG, Non-specific CVA & precerebral occlusion is split into 0671 (w MCC), 0672 (w CC), and 0673 (w/o CC/MCC). There are also “initial” and “final” flags in the diagnosis flag buffer.

Table 2. Information returned by the MS-DRG software

| Name | Length in bytes | Description |
|------|-----------------|--|
| RTC | 2 | <p>Grouper return code (see "Grouper return code" on page 11)</p> <p>00-Record grouped</p> <p>01-Diagnosis code cannot be used as principal dx</p> <p>02-Record does not meet criteria for any DRG in the MDC that is indicated by principal dx</p> <p>03-Invalid age</p> <p>04-Invalid sex</p> <p>05-Invalid discharge status</p> <p>06-Illogical principal diagnosis</p> <p>07-Invalid principal diagnosis</p> <p>09-POA logic indicator = Z and at least one HAC POA is invalid, missing, or 1</p> <p>10-POA logic indicator is invalid or missing and at least one HAC POA is N or U</p> <p>11-POA logic indicator is missing or invalid, and at least one HAC POA is invalid, missing, or 1</p> <p>12-(not valid effective 10/1/2010) POA logic indicator = Z and at least one HAC POA =1</p> <p>13-(not valid effective 10/1/2010) POA logic indicator is invalid or missing and at least one HAC POA = 1</p> <p>14-(not valid effective 10/1/2010) POA logic indicator = Z and there are multiple HACs that have different HAC POA values that are not Y, W, N, U</p> <p>15-POA logic indicator is missing or invalid, and there are multiple HACs that have different HAC POA values that are not Y or W</p> |

| Name | Length in bytes | Description |
|-----------|-----------------|--|
| Final MDC | 2 | Major Diagnostic Category number (00 - 25) assigned to patient record |
| Final DRG | 4 | Diagnosis Related Group number (0001 - 0999) assigned to patient record (after HAC logic is applied) |
| GRFLGS | 5 | See table for "Grouper flags returned by the MS-DRG software" (page 12) |
| DXFLGS | 625 | See table for "Diagnosis flags returned by the grouper" (page 12) |
| PRFLGS | 500 | See table for "Procedure flags returned by the grouper" (page 14) |

Grouper return code

The grouper return code (RTC) indicates whether or not the grouping process was successful for a given record. The following table describes the values for the Return Code.

Table 3. Return code descriptions

| Return code | Description |
|---------------|--|
| 1 | The first listed diagnosis is a valid code but it can not be used as principal diagnosis. An example of this situation would be any one of the "E" codes, which are not indicative of the MDC into which this patient should be classified. |
| 2 | This code occurs when all of the DRG criteria for the MDC have been examined and the record does not match any of them. |
| 3, 4 and 5 | These codes occur only for those DRGs that are part of grouping criteria (i.e., the grouper does not perform an automatic edit check of age, sex, and discharge status). |
| 6 | The principal diagnosis is considered illogical, meaning that it is unlikely that there would be an occurrence. For example, diagnosis code 76509 (extreme immat 2500+g) is flagged as an illogical diagnosis whenever it is coded as the principal diagnosis. |
| 7 | The code used as principal diagnosis is not a valid ICD-9-CM code. |
| 9, 10, 11, 15 | These codes occur when there is at least one HAC on the record and there is an issue with either the POA logic indicator or the POA values assigned to the HAC. |

Flags returned by the grouper

The following tables show the information returned by the grouper regarding DRGs, diagnoses, and procedures.

Some secondary diagnosis codes can be assigned to multiple Hospital Acquired Conditions (HACs). In the diagnosis flags table, the fields for Hospital Acquired Condition (HAC) assignment criteria and Hospital Acquired Condition (HAC) Usage have been expanded to five occurrences. This allows for the capture of all HACs met by a secondary diagnosis. In the procedure flags table, the Hospital Acquired Condition (HAC) assignment criteria field has been expanded to five occurrences to reflect all HACs the procedure was used in, along with the secondary diagnosis that satisfied the HAC criteria.

Table 4. Grouper flags returned by the MS-DRG software

| Position | Description |
|----------|--|
| 1 and 2 | Number of unique Hospital Acquired Conditions (HAC) met |
| 3 | Final CC/MCC impact on DRG assignment: 0 = DRG assigned is not based on the presence of a CC or MCC 1 = DRG assigned is based on presence of MCC 2 = DRG assigned is based on presence of CC |
| 4 | Initial CC/MCC impact on DRG assignment: 0 = DRG assigned is not based on the presence of a CC or MCC 1 = DRG assigned is based on presence of MCC 2 = DRG assigned is based on presence of CC |
| 5 | HAC Status 0 = HAC Not Applicable; Hospital is exempt or HAC criteria not met 1 = Criteria for one or more HACs met, Final DRG did not change 2 = Criteria for one or more HACs met, Final DRG changed 3 = Criteria for one or more HACs met, Final DRG changed to 999 |

Table 5. Diagnosis flags returned by the grouper

| Position | Description (25 characters per diagnosis) |
|----------|--|
| 1 | 0 = Diagnosis invalid 1 = Diagnosis valid |
| 2 | Diagnosis affects DRG 0 = Diagnosis not used to assign DRG 1 = Diagnosis affected the initial DRG only 2 = Diagnosis affected the final DRG only 3 = Diagnosis affected both initial and final DRG |

| Position | Description (25 characters per diagnosis) |
|-----------|--|
| 3 | CC/MCC Categorization 0 = Diagnosis is not considered a Major CC or CC for this patient 1 = Diagnosis is a Major CC for both initial and final DRG 2 = Diagnosis is a CC for both initial and final DRG 3 = Diagnosis is a MCC for initial DRG and a Non-CC for final DRG 4 = Diagnosis is a CC for initial DRG and a Non-CC for final DRG 5 = Diagnosis is a MCC but not considered due to PDX/SDX exclusion 6 = Diagnosis is a CC but not considered due to PDX/SDX exclusion |
| 4 and 5 | Hospital Acquired Condition (HAC) assignment criteria #1 00 = Criteria to be assigned as an HAC not met 01 = Foreign Object Retained After Surgery 02 = Air Embolism 03 = Blood Incompatibility 04 = Pressure Ulcers 05 = Falls and Trauma 06 = Catheter Associated UTI 07 = Vascular Catheter-Associated Infection 08 = Infection after CABG 09 = Manifestations of poor glycemic control 10 = DVT/PE after knee or hip replacement 11 = Infection after bariatric surgery 12 = Infection after certain orthopedic procedures of spine, shoulder and elbow 13 = Surgical site infection (SSI) following cardiac implantable electronic device (CIED) procedures 14 = Iatrogenic pneumothorax w/ venous catheterization |
| 6 | Hospital Acquired Condition (HAC) Usage #1 0 = Dx not on HAC list, not applicable 1 = Dx on HAC list and HAC criteria met 2 = Dx on HAC list and HAC criteria not met 3 = Dx on HAC list, but HAC not applicable due to PDX/SDX exclusion 4 = HAC not applicable, hospital is exempt from POA reporting |
| 7 and 8 | Hospital Acquired Condition (HAC) assignment criteria #2 Refer to positions 4 and 5 for a list of values |
| 9 | Hospital Acquired Condition (HAC) Usage #2 Refer to position 6 for a list of values. |
| 10 and 11 | Hospital Acquired Condition (HAC) assignment criteria #3 Refer to positions 4 and 5 for a list of values |
| 12 | Hospital Acquired Condition (HAC) Usage #3 Refer to position 6 for a list of values. |
| 13 and 14 | Hospital Acquired Condition (HAC) assignment criteria #4 Refer to positions 4 and 5 for a list of values |
| 15 | Hospital Acquired Condition (HAC) Usage #4 Refer to position 6 for a list of values. |

| Position | Description (25 characters per diagnosis) |
|-----------|---|
| 16 and 17 | Hospital Acquired Condition (HAC) assignment criteria #5 Refer to positions 4 and 5 for a list of values |
| 18 | Hospital Acquired Condition (HAC) Usage #5 Refer to position 6 for a list of values. |
| 19 - 25 | Filler |

Table 6. Procedure flags returned by the grouper

| Position | Description (20 characters per procedure) |
|----------|---|
| 1 | 0 = Procedure invalid 1 = Procedure valid |
| 2 | Procedure affects DRG* 0 = Procedure did not affect DRG assignment 1 = Procedure affected the initial DRG assignment only 2 = Procedure affected the final DRG assignment only 3 = Procedure affected both initial and final DRG assignment * When there are two or more procedures on the record that could impact either the initial, final or both DRG assignments: If one of these procedures is in the first procedure position, that procedure will be be flagged as 1, 2 or 3 with the following exceptions: a. If a single procedure designating a complete system is tied with a combination pair that also designated a complete system, the single procedure will be flagged regardless of position. b. If multiple combinations of lead/device pairs are tied then only one pair will be flagged regardless of position. c. If the two procedures tied are an OR and non-OR, the OR will be flagged regardless of position. If none of the tied procedures is in the first procedure position, then the procedure with the lowest ascii/index value will be flagged as 1, 2 or 3. |
| 3 | 0 = Procedure is not an OR procedure 1 = Procedure is an OR procedure |
| 4 and 5 | Hospital Acquired Condition (HAC) assignment criteria #1 00 = Criteria to be assigned as an HAC not met 08 = Infection after CABG 10 = DVT/PE after knee or hip replacement 11 = Infection after bariatric surgery 12 = Infection after certain orthopedic procedures of spine, shoulder and elbow 13 = Surgical site infection (SSI) following cardiac implantable electronic device (CIED) procedures 14 = Iatrogenic pneumothorax w/ venous catheterization |

| Position | Description (20 characters per procedure) |
|-----------|--|
| 6 and 7 | Hospital Acquired Condition (HAC) assignment criteria #2 Refer to positions 4 and 5 for a list of values. |
| 8 and 9 | Hospital Acquired Condition (HAC) assignment criteria #3 Refer to positions 4 and 5 for a list of values. |
| 10 and 11 | Hospital Acquired Condition (HAC) assignment criteria #4 Refer to positions 4 and 5 for a list of values. |
| 12 and 13 | Hospital Acquired Condition (HAC) assignment criteria #5 Refer to positions 4 and 5 for a list of values. |
| 14 - 20 | Filler |

Ancillary buffer

The version number identifies the version of the grouper that is running.

Table 7. Additional flag information

| Length in bytes | Description |
|-----------------|--|
| 5 | 1 byte reserved space (zero-filled) followed by 4-byte final DRG (after HAC logic applied) |
| 1 | Final DRG Medical/Surgical Indicator 0 = RTC is non-zero 1 = Medical DRG 2 = Surgical DRG |
| 4 | 1 byte reserved space (zero-filled) followed by 3-byte initial DRG (prior to HAC logic) |
| 5 | 1 byte reserved space (zero-filled) followed by 4-byte initial DRG (prior to HAC logic) |
| 1 | Initial DRG Medical/Surgical indicator 0 = RTC is non-zero 1 = Medical DRG 2 = Surgical DRG |
| 8 | Version ID returned by the grouper (PPPVVUU) PPP = 001 (MS-DRG) VVV = 340 (Grouper version 34.0A) UU = 00 (update 00) |

Chapter 2: Installing the MS-DRG Software

Downloading and installing the Medicare Severity Diagnosis Related Groups (MS-DRG) Software (the grouper) consists of three steps:

1. Downloading and unzipping the file to your local machine
2. Allocating and FTPing the files to the mainframe
3. Link-editing the Assembler subroutines and testing the grouper

The first two steps are discussed in this chapter.

Step 3, the procedure for link-editing and testing the programs, depends on the way in which the grouper is implemented at your installation. Chapter 3 (page [39](#)) explains how to use the grouper utility and contains JCL for using it to run the test database. Chapter 4 (page [47](#)) shows how to link-edit the grouper programs for use as subroutines for a higher-level language. Two COBOL programs using the test database are included on the media, and the JCL for using them to test the installation is included in chapter 4.

The content of the distribution is shown in the following table.

Table 8. MS-DRG system distribution contents

| File | File name | LRECL | BLKSIZE | Description |
|------|-----------|-------|---------|----------------|
| 1 | OBJLIB | 80 | 27920 | Object library |
| 2 | SRCLIB | 80 | 27920 | Source library |
| 3 | LOADLIB | 0 | 6233 | Load library |

The content of the miscellaneous folder is shown in the following table.

Table 9. Miscellaneous folder contents

| File | File name | LRECL | BLKSIZE | Description |
|------|-----------|-------|---------|----------------------|
| 1 | TESTDB | 1760 | 26400 | Test database |
| 2 | MDCDSC | 80 | 27920 | MDC titles |
| 3 | DRGDSC3 | 80 | 27920 | DRG titles (3-digit) |
| 4 | DRGDSC4 | 85 | 27965 | DRG titles (4-digit) |
| 5 | DXEBC | 125 | 27875 | EBCDIC DXTAB |
| 6 | SGEBC | 211 | 27852 | EBCDIC SGTAB |
| 7 | DRGEBC | 522 | 27666 | EBCDIC DRGTAB |

| File | File name | LRECL | BLKSIZE | Description |
|------|-----------|-------|---------|---------------------------|
| 8 | CCEBC | 9 | 27990 | EBCDIC CC exclusion pairs |

eDownload instructions

This section contains instructions for downloading program files from the Internet or from a CD for the Medicare Severity Diagnosis Related Groups (MS-DRG) Software.

Grouper program installation

All required software for executing the MS-DRG grouper is contained in the folders in this directory.

This directory contains the following folders:

- Load library - MS-DRG grouper load modules
- Object library - MS-DRG grouper object modules
- Source library - MS-DRG grouper source programs
- Miscellaneous
 - Test database file
 - EBCDIC files
 - DRG and MDC description

Load library

The load library is a sequential file, FTPLOAD.

The load library consists of the load modules for the MS-DRG Grouper. The entire load library is optional if you intend to use the object modules.

1. Pre-allocate a sequential file (PS) on your mainframe to receive the file using the following file characteristics:
 - DSN = [e.g. YOURID.GROUPER.FTPLOAD]
 - RECFM = FB
 - LRECL = 80
 - BLKSIZE = 3120
 - SPACE = (CYL(10,1),RLSE)

2. FTP in BINARY mode the FTPLOAD file into the sequential dataset you allocated above.
3. Pre-allocate a load library PDS on the mainframe using the following file characteristics:
 - DSN = [e.g. YOURID.GROUPER.LOADLIB]
 - RECFM = U
 - BLKSIZE = 6233
 - SPACE = (CYL(10,2,5),RLSE)
4. Modify BUILD PDS in library YOURID.GROUPER.JCL as follows:
 - Add your JOBCARD
 - Modify dataset names as necessary
 - ◆ INDATASET = sequential dataset that was FTP'd to the mainframe in the step above.
 - ◆ DATASET = pre-allocated load library PDS that was created in the step above.

Note: The BUILD PDS JCL below executes the utility, IKJEFT01, a terminal monitor program that executes the TSO commands via batch processing. This will populate the LOADLIB from the FTP'd load sequential file. A copy is shown below.

```
//JOB CARD FOR YOUR INSTALLATION
//*****
//* *** RECEIVE FTP'D SEQUENTIAL FILES TO CREATE LOAD LIBRARY PDS ***
//*****
//BDLOAD EXEC PGM=IKJEFT01
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD *
RECEIVE INDATASET ('YOURID.GROUPER.FTPLOAD')
DATASET ('YOURID.GROUPER.LOADLIB')
/*
```

5. After you modify the BUILD PDS, execute the JCL.

Table 10. Load library contents

| Number | Name | Description |
|--------|---------|--|
| 1 | ALTTEST | Sample COBOL program (alternate interface) |
| 2 | COBTEST | Sample COBOL (standard interface) program |
| 3 | D340CA | Control program (alternate interface) |
| 4 | D340CN | Control program (standard interface) |

Object library

This information is for the object library. This directory contains an object module folder.

Table 11. Object library contents

| Program | Description |
|---------|--|
| D340CN | The main control program (standard interface) |
| D340GR | The grouper program |
| D340RT | The grouper tables |
| D340CA | The main control program (alternate interface) |
| D340UT | The grouper utility interface |

The first three programs (D340CN, D340GR, D340RT) comprise the main grouper executor using the standard interface. Substitute D340CA for D340CN (that is, use D340CA, D340GR, and D340RT) to compile the main grouper executor using the alternate (re-entrant, macro-free) interface. D340UT is a utility program that can serve as an interface if your input data meets specific criteria. Chapter 3 (page [39](#)) discusses this program.

All of the programs contained on the distribution were written in IBM Basic Assembler. There may be some reprogramming involved for those installations that do not have IBM equipment. The source code for each of the programs is provided in the distribution (page [17](#)).

Important! Object module files must be FTP'd in BINARY.

The following steps download the object library.

1. Allocate a PDS on your mainframe with the following characteristics:
 - DSN = [e.g. YOURID.GROUPER.OBJLIB]
 - RECFM = FB
 - LRECL = 80
 - BLKSIZE = 27920
 - SPACE = (CYL(10,1,5),RLSE)
2. FTP in **BINARY mode** all of the files in the object library folder into the PDS allocated in step 1.

Source library

There are several datasets included on the distribution that are not needed for the grouping process but may be useful to the grouper users.

The folder contains the source library for all the grouper programs, tables, and the COBOL test programs. The library contains seven members, listed in the following table.

Table 12. Source library contents

| Program | Description |
|---------|---|
| D340CN | The main control program (standard interface) |

| Program | Description |
|----------------|--|
| D340GR | The grouper program |
| D340RT | The grouper tables |
| D340UT | The grouper utility interface program |
| D340CA | The main control program (alternate interface) |
| COBTEST | The COBOL test interface program (standard interface) |
| ALTTEST | The COBOL test interface program (alternate interface) |

Comments are also included in the source programs, D340CN and D340UT, describing the modifications needed to convert the programs to VSE.

The following steps download the source library.

1. Allocate a PDS on your mainframe with the following characteristics:
 - DSN = [e.g. YOURID.GROUPER.SRCLIB]
 - RECFM = FB
 - LRECL = 80
 - BLKSIZE - 27920
 - SPACE = (CYL(10,1,4),RLSE)
2. FTP in ASCII mode all of the files in the source library folder into the PDS allocated in step 1.

Miscellaneous files installation

Test Database File

The following steps load the test database file to the mainframe.

1. Allocate a sequential file (PS) on your mainframe using the attributes below.
 - DSN=YOURID.GROUPER.TESTDB
 - RECFM=FB
 - LRECL=1760
 - BLKSIZE=26400
 - SPACE=(CYL,(50,1),RLSE)
2. FTP the TESTDB file from the miscellaneous folder in ASCII mode into a mainframe sequential file, "YOURID.GROUPER.TESTDB."

Table 13. Record layout for grouper test database

| Location | Name | Description |
|-----------|----------------|--|
| 1-3 | AGE | Age on admission, in years |
| 4-4 | SEX | Gender |
| 5-6 | DSP | Discharge status (disposition) |
| 7-7 | POALOG | POA logic indicator |
| 8-15 | ADATE | Admission date (YYYYMMDD) |
| 16-23 | DDATE | Discharge date (YYYYMMDD) |
| 24-223 | DX1-25 | Diagnosis codes (DX1=Principal) |
| 224-398 | PROC1-25 | Procedure codes |
| 399-598 | PRDATES (1-25) | Procedure dates (YYYYMMDD) |
| 599-600 | RTC | Return code from the grouper |
| 601-602 | MDC | MDC number returned by the grouper |
| 603-606 | DRG | Final DRG number returned by the grouper |
| 607-611 | GRFLGS | Output grouper flags |
| 612-1236 | DXFLGS | Output diagnosis flags (25x25) |
| 1237-1736 | PRFLGS | Output procedure flags (25x20) |
| 1737-1760 | BUFF | Output ancillary buffer |

MDC Description File

The following steps send the MDC description file to the mainframe.

1. Allocate a sequential file (PS) on your mainframe using the attributes below.
 - DSN=YOURID.GROUPER.MDCDSC
 - RECFM=FB
 - LRECL=80
 - BLKSIZE=27920
 - SPACE=(TRK,(1,2),RLSE)
2. FTP the MDCDSC file from the miscellaneous folder in ASCII mode into a mainframe sequential file, "YOURID.GROUPER.MDCDSC."

Table 14. Record layout for MDCDSC

| Column | Description |
|--------|-------------|
| 1-2 | MDC number |
| 3-3 | Comma (,) |
| 4-80 | MDC title |

DRG Description File

The following steps load the DRG description file to the mainframe.

1. Allocate a sequential file (PS) on your mainframe using the attributes below.
 - DSN=YOURID.GROUPER.DRGDSC3
 - RECFM=FB
 - LRECL=80
 - BLKSIZE=27920
 - SPACE=(TRK,(2,2),RLSE)
2. FTP the DRGDSC3 file from the miscellaneous folder in ASCII mode into a mainframe sequential file, YOURID.GROUPER.DRGDSC3.

Table 15. Record layout for DRGDSC3

| Column | Description |
|--------|---------------------------------|
| 1-3 | DRG number |
| 4-4 | Comma (,) |
| 5-7 | Constant 'MDC' |
| 8-8 | Blank |
| 9-10 | MDC number |
| 11-11 | 'M' (medical) or 'P' (surgical) |
| 12-12 | Comma (,) |
| 13-80 | DRG title |

DRG Description File

The following steps load the DRG description file to the mainframe.

1. Allocate a sequential file (PS) on your mainframe using the attributes below.
 - DSN=YOURID.GROUPER.DRGDSC4
 - RECFM=FB
 - LRECL=85
 - BLKSIZE=27965
 - SPACE=(TRK,(2,2),RLSE)
2. FTP the DRGDSC4 file from the miscellaneous folder in ASCII mode into a mainframe sequential file, YOURID.GROUPER.DRGDSC4.

Table 16. Record layout for DRGDSC4

| Column | Description |
|--------|-------------|
| 1-4 | DRG number |
| 5-5 | Comma (,) |
| 6-85 | DRG title |

MS-DRG v34.0A EBCDIC tables

The tables that drive the grouper are expressed in Extended Binary Coded Decimal Interchange Code (EBCDIC) as four files.

Diagnosis EBCDIC Table

Contains one row per ICD-9-CM diagnosis, with diagnosis attributes. The following steps load the Diagnosis EBCDIC table to the mainframe.

1. Allocate a sequential file (PS) using the following attributes:
 - DSN=YOURID.GROUPER.DXEBC
 - LRECL=125
 - BLKSIZE=27875
 - RECFM=FB
 - SPACE=(CYL(3),RLSE)
2. FTP the DXEBC file from the miscellaneous folder in ASCII mode into a mainframe sequential file, "YOURID.GROUPER.DXEBC".

Table 17. Diagnosis table

| Name | Pos | Len | Description |
|-------------|------------|------------|--|
| Diagnosis | 1 | 5 | ICD-9-CM diagnosis |
| Sex | 6 | 1 | 1=Male only 2=Female only 0=Both |
| Index | 7 | 5 | Index number used in exclusion table |
| MDC | 12 | 2 | MDC when principal dx |
| DxCat | 14 | 2 | Diagnosis category when principal dx |
| HAC_GRP1 | 16 | 2 | HAC Group Number |
| HAC_GRP2 | 18 | 2 | HAC Group Number |
| HAC_GRP3 | 20 | 2 | HAC Group Number |
| HAC_GRP4 | 22 | 2 | HAC Group Number |
| HAC_GRP5 | 24 | 2 | HAC Group Number |
| CC_group | 26 | 4 | CC exclusion group (0=no exclusions 1=self only) |
| acutecons | 30 | 1 | Acute complex CNS |
| ami | 31 | 1 | AMI |
| brstmal | 32 | 1 | Breast malignancy |
| chfami | 33 | 1 | AMI and heart failure |
| compapp | 34 | 1 | Appendectomy with complications |
| curvmalig | 35 | 1 | Curvature of spine or malignancy |
| curvoth | 36 | 1 | Spinal fusion except cervical |
| delcomp | 37 | 1 | Vaginal delivery with complications |
| diabetes | 38 | 1 | Diabetes |
| dxcc | 39 | 1 | CC unless excluded |
| dxcc01 | 40 | 1 | CC unless excluded list 01 |
| dxcc02 | 41 | 1 | CC unless excluded list 02 |
| dxcc03 | 42 | 1 | CC unless excluded list 03 |
| dxcc04 | 43 | 1 | CC unless excluded list 04 |
| dxcc05 | 44 | 1 | CC unless excluded list 05 |
| dxcc06 | 45 | 1 | CC unless excluded list 06 |
| dxcc07 | 46 | 1 | CC unless excluded list 07 |
| dxcc08 | 47 | 1 | CC unless excluded list 08 |
| dxcc09 | 48 | 1 | CC unless excluded list 09 |
| dxcc10 | 49 | 1 | CC unless excluded list 10 |
| dxcc11 | 50 | 1 | CC unless excluded list 11 |

| Name | Pos | Len | Description |
|-------------|------------|------------|----------------------------------|
| dxcc12 | 51 | 1 | CC unless excluded list 12 |
| dxcc13 | 52 | 1 | CC unless excluded list 13 |
| dxcc14 | 53 | 1 | CC unless excluded list 14 |
| dxcc15 | 54 | 1 | CC unless excluded list 15 |
| dxcc16 | 55 | 1 | CC unless excluded list 16 |
| dxcc17 | 56 | 1 | CC unless excluded list 17 |
| dxcc18 | 57 | 1 | CC unless excluded list 18 |
| dxcc19 | 58 | 1 | CC unless excluded list 19 |
| dxcc20 | 59 | 1 | CC unless excluded list 20 |
| dxcc21 | 60 | 1 | CC unless excluded list 21 |
| dxccm | 61 | 1 | Major CC unless excluded |
| dxccm01 | 62 | 1 | Major CC unless excluded list 01 |
| dxccm02 | 63 | 1 | Major CC unless excluded list 02 |
| dxccm03 | 64 | 1 | Major CC unless excluded list 03 |
| dxccm04 | 65 | 1 | Major CC unless excluded list 04 |
| dxccm05 | 66 | 1 | Major CC unless excluded list 05 |
| dxccm06 | 67 | 1 | Major CC unless excluded list 06 |
| dxccm07 | 68 | 1 | Major CC unless excluded list 07 |
| dxccm08 | 69 | 1 | Major CC unless excluded list 08 |
| dxccm09 | 70 | 1 | Major CC unless excluded list 09 |
| dxccm10 | 71 | 1 | Major CC unless excluded list 10 |
| dxccm11 | 72 | 1 | Major CC unless excluded list 11 |
| dxccm12 | 73 | 1 | Major CC unless excluded list 12 |
| dxccm13 | 74 | 1 | Major CC unless excluded list 13 |
| dxccm14 | 75 | 1 | Major CC unless excluded list 14 |
| dxccm15 | 76 | 1 | Major CC unless excluded list 15 |
| dxccm16 | 77 | 1 | Major CC unless excluded list 16 |
| dxccm17 | 78 | 1 | Major CC unless excluded list 17 |
| dxccm18 | 79 | 1 | Major CC unless excluded list 18 |
| dxccm19 | 80 | 1 | Major CC unless excluded list 19 |
| dxccm20 | 81 | 1 | Major CC unless excluded list 20 |
| dxccm21 | 82 | 1 | Major CC unless excluded list 21 |
| ecode | 83 | 1 | E-code |

| Name | Pos | Len | Description |
|------------|-----|-----|--|
| extburn | 84 | 1 | Extensive 3rd degree burns |
| extimm | 85 | 1 | Extreme immaturity or RDS |
| fullburn | 86 | 1 | Full thickness burn |
| hac06_sdx | 87 | 1 | SDX on record for HAC 06 |
| hac11_pdx | 88 | 1 | PDX required for HAC 11 |
| hemorrhage | 89 | 1 | PDX hemorrhage |
| hiv | 90 | 1 | HIV |
| hivmaj | 91 | 1 | HIV major |
| hivsig | 92 | 1 | Significant HIV related condition |
| illogical | 93 | 1 | Ungroupable |
| incident | 94 | 1 | Normal newborn |
| infection | 95 | 1 | Infection |
| inhalinj | 96 | 1 | Inhalation injury |
| lorl | 97 | 1 | Lymphoma or leukemia |
| mccalive | 98 | 1 | Is MCC only if discharged alive |
| mcomp | 99 | 1 | Other antepartum with complication |
| nbmaj | 100 | 1 | New born with major problems |
| nomouthlp | 101 | 1 | Except face, mouth and neck |
| nonextburn | 102 | 1 | Non-extensive burns |
| nonmalig | 103 | 1 | Uterine and adnexa for non-malignancy |
| ovadm | 104 | 1 | Ovarian and adnexal malignancy |
| pneufly | 105 | 1 | Influenza with pneumonia |
| pneuinf | 106 | 1 | Pneumonia with infection |
| postop | 107 | 1 | postop |
| preterm | 108 | 1 | Prematurity |
| procoma | 109 | 1 | Traumatic stupor and coma |
| renaldiab | 110 | 1 | Other kidney & urinary tract procedures |
| renalfail | 111 | 1 | Renal failure |
| s492 | 112 | 1 | Acute leukemia |
| skinulc | 113 | 1 | Skin ulcers |
| stabdom | 114 | 1 | Significant trauma - abdomen |
| stchest | 115 | 1 | Significant trauma - chest and respiratory |
| sthead | 116 | 1 | Significant trauma – head, face and neck |

| Name | Pos | Len | Description |
|----------|-----|-----|--------------------------------------|
| stkidney | 117 | 1 | Significant trauma - kidney |
| stlolim | 118 | 1 | Significant trauma - lower limb |
| stpel | 119 | 1 | Significant trauma - spine / pelvis |
| strauma | 120 | 1 | Trauma |
| stroke | 121 | 1 | Acute ischemic stroke |
| stuplim | 122 | 1 | Significant trauma - upper limb |
| sturin | 123 | 1 | Significant trauma - urinary system |
| trlist1 | 124 | 1 | NY Trauma registry list 1 |
| uaothmal | 125 | 1 | Non-ovarian & non-adnexal malignancy |

Procedure EBCDIC Table

Contains one row per ICD-9-CM procedure, with procedure attributes. The following steps load the Procedure EBCDIC table to the mainframe.

- Allocate a sequential file (PS) using the following attributes:
 - DSN=YOURID.GROUPER.SGEB
 - LRECL=211
 - BLKSIZE=27852
 - RECFM=FB
 - SPACE=(TRK(15),RLSE)
- FTP the SGEB file from the miscellaneous folder in ASCII mode into a mainframe sequential file, "YOURID.GROUPER.SGEB".

Table 18. Procedure table

| Name | Pos | Len | Description |
|---------|-----|-----|--------------------------------------|
| Proc | 1 | 4 | ICD-9-CM procedure code |
| abdom | 5 | 1 | Rectal resection |
| aicd | 6 | 1 | AICD lead and generator procedures |
| allobmt | 7 | 1 | Allogenic bone marrow transplant |
| amp18 | 8 | 1 | Amputation of musculoskeletal system |
| ampul | 9 | 1 | Amputation of upper limb and toe |
| amputat | 10 | 1 | Amputation except limb and toe |

| Name | Pos | Len | Description |
|-------------|------------|------------|---|
| anal | 11 | 1 | Anal procedures |
| antfuse | 12 | 1 | Anterior spinal fusion |
| aorheart | 13 | 1 | aortic & heart assist procs |
| append | 14 | 1 | Appendectomy |
| apt | 15 | 1 | Adrenal and pituitary |
| arterial | 16 | 1 | PTCA |
| arthrosc | 17 | 1 | Arthroscopy |
| autobmt | 18 | 1 | Autologous bone marrow transplant |
| awdsg | 19 | 1 | Amputation due to metabolic disorders |
| backneck | 20 | 1 | Back and neck procs |
| biop18 | 21 | 1 | Biopsies |
| bladur | 22 | 1 | Minor bowel procs |
| bowel | 23 | 1 | Bowel procedures |
| breastext | 24 | 1 | Mastectomy |
| bypass | 25 | 1 | Coronary bypass |
| cardthor | 26 | 1 | Other cardiothoracic repairs |
| cbdexpl | 27 | 1 | Common duct exploration |
| cervfuse | 28 | 1 | Cervical fusion |
| chestcl | 29 | 1 | Other respiratory procs |
| chestopn | 30 | 1 | Major chest procs |
| cochimpl | 31 | 1 | Cochlear implant |
| comp468 | 32 | 1 | Extensive O.R. procedure except minor vaginal |
| comp476 | 33 | 1 | Prostatic O.R. procedure |
| comp477 | 34 | 1 | Non-extensive O.R. procedure except minor vaginal |
| cran | 35 | 1 | Craniotomy |
| cranface | 36 | 1 | Cranial or facial procedures |
| csect | 37 | 1 | C-section |
| d197 | 38 | 1 | Cholecystomy except by laparoscope |
| d468 | 39 | 1 | Extensive O.R. procedure |
| d476 | 40 | 1 | Prostatic proc unrelated to PDX |
| d477 | 41 | 1 | Non-extensive proc unrelated to pdx |

| Name | Pos | Len | Description |
|-------------|------------|------------|---|
| d484 | 42 | 1 | Craniotomy for multiple significant trauma |
| d485 | 43 | 1 | Limb, hip and femur for multiple significant trauma |
| d486 | 44 | 1 | Other procs for multiple significant trauma |
| d491 | 45 | 1 | Major joint and limb reattachment |
| d493 | 46 | 1 | Laparoscopic cholecystomy |
| d819 | 47 | 1 | Percutaneous intracardial Non-OR proc |
| dc16 | 48 | 1 | Abortion with D&C |
| defib | 49 | 1 | Cardiac defibrillator |
| defibgen | 50 | 1 | Cardiac defib implant |
| device1 | 51 | 1 | Cardiac device 1 |
| device2 | 52 | 1 | Cardiac device 2 |
| device3 | 53 | 1 | Cardiac device 3 |
| device4 | 54 | 1 | Cardiac device 4 |
| device5 | 55 | 1 | Cardiac device 5 |
| device6 | 56 | 1 | Cardiac device 6 |
| discdevice | 57 | 1 | Insertion of spinal disc devices |
| ecmo | 58 | 1 | ECMO |
| endovasc | 59 | 1 | Endovascular cardiac valve replacement |
| esoph | 60 | 1 | Stomach, esoph and duodenal procs |
| exp12 | 61 | 1 | Hepatobiliary procs |
| femhip | 62 | 1 | Fix hip and femur procs |
| foot | 63 | 1 | Foot and toe procedures |
| freeskin | 64 | 1 | Skin grafts |
| fusion | 65 | 1 | Dorsal & lumbar fusion procs |
| gbbd | 66 | 1 | Biliary tract |
| graft | 67 | 1 | Skin graft |
| hac08_proc | 68 | 1 | CABG needed for HAC 08 |
| hac10_proc | 69 | 1 | Procedures needed for HAC 10 |
| hac11_proc | 70 | 1 | Procedures needed for HAC 11 |

| Name | Pos | Len | Description |
|-------------|------------|------------|---|
| hac12_proc | 71 | 1 | Procedures needed for HAC 12 |
| hac13_proc | 72 | 1 | Procedures needed for HAC 13 |
| hac14_proc | 73 | 1 | Procedures needed for HAC 14 |
| hand | 74 | 1 | Hand procedures |
| hand22 | 75 | 1 | Hand procedures |
| headneck | 76 | 1 | Other major head and neck procs |
| heartsys | 77 | 1 | Heart assist transplant |
| heartxp | 78 | 1 | Heart transplant |
| hernia | 79 | 1 | Hernia procs expect inguinal or femoral |
| impgen | 80 | 1 | Implant cardiofib generator |
| implead | 81 | 1 | Implant cardiofib leads |
| impsys | 82 | 1 | Implant external heart assist system |
| incsur16 | 83 | 1 | Vaginal delivery w/complications |
| ingfem | 84 | 1 | Inguinal, femoral and umbilical procs |
| intracran | 85 | 1 | Intracranial vascular procedures |
| intxp | 86 | 1 | Transplant of intestine |
| kidneyxp | 87 | 1 | Kidney transplant |
| knee | 88 | 1 | Knee procedures |
| kuret | 89 | 1 | Kidney, ureter and major bladder procs |
| lapint | 90 | 1 | Laparoscopy and tubal interruption |
| laryng | 91 | 1 | Laryngectomy |
| lead1 | 92 | 1 | Cardiac lead 1 |
| lead2 | 93 | 1 | Cardiac lead 2 |
| lead3 | 94 | 1 | Cardiac lead 3 |
| lead4 | 95 | 1 | Cardiac lead 4 |
| lead5 | 96 | 1 | Cardiac lead 5 |
| lead6 | 97 | 1 | Cardiac lead 6 |
| leadleft | 98 | 1 | Lead venous system |
| liverxp | 99 | 1 | Liver transplant |
| locexc | 100 | 1 | Local excision of musculoskeletal |
| lungxp | 101 | 1 | Lung transplant |

| Name | Pos | Len | Description |
|--------------|------------|------------|---|
| lysis | 102 | 1 | Peritoneal adhesiolysis |
| maj04 | 103 | 1 | Major OR procs for lymphoma and leukemia |
| majblad | 104 | 1 | Major bladder |
| minbow | 105 | 1 | Minor bowel procs |
| mse | 106 | 1 | Major shoulder and elbow |
| multjoint | 107 | 1 | Multiple joint procs of lower extremity |
| mvr | 108 | 1 | Major cardiovascular |
| mwth | 109 | 1 | Thumb, joint and wrist procedures |
| neurogen | 110 | 1 | Insertion or replacement of neurostimulator pulse generator |
| NORarternor | 111 | 1 | NOR cardiac mapping |
| NORcardcath | 112 | 1 | NOR cardiac valve w/cardiac catheterization |
| NORcarstent | 113 | 1 | Percutaneous insertion of carotid artery stent(s) |
| NORcathnor | 114 | 1 | NOR cardiac cath |
| NORchemoimp | 115 | 1 | NOR chemo agent implant |
| NORdrugstent | 116 | 1 | NOR drug-eluting stent |
| NOReswl | 117 | 1 | NOR extracorporeal shockwave lithotripsy |
| NORfuse9plus | 118 | 1 | Fusion or refusion of 9 or more vertebrae |
| NORhighdose | 119 | 1 | NOR high dose chemo agent |
| NORislets | 120 | 1 | Other NOR kidney & urinary tract procedures |
| NORmvge96h | 121 | 1 | At least 96 hours on mechanical ventilator |
| NORmvt96h | 122 | 1 | Less than 96 hours on mechanical ventilator |
| NORnorminor | 123 | 1 | NOR for lymphoma and non-acute leukemia |
| NORnoroth02 | 124 | 1 | NOR radiosurgery |
| NORnorpercut | 125 | 1 | NOR percutaneous cardiovascular |
| NORnorperi | 126 | 1 | NOR peripheral and cranial nerve |
| NORnorskin | 127 | 1 | NOR skin |

| Name | Pos | Len | Description |
|---------------|------------|------------|---|
| NORrehab | 128 | 1 | NOR rehab and detox therapy |
| NORstent | 129 | 1 | NOR stent |
| NORstent4plus | 130 | 1 | Procedure on 4 or more vessels or insertion of 4 or more stents |
| NORtemptrach | 131 | 1 | NOR temporary tracheostomy |
| NORthrombo | 132 | 1 | Thrombolytic agent |
| NORvascdev | 133 | 1 | NOR vascular access device |
| obesity | 134 | 1 | Obesity procedure |
| oral | 135 | 1 | Mouth procedures |
| orbit | 136 | 1 | Orbital procs |
| or_indic | 137 | 1 | Operating Room procedure |
| oth02 | 138 | 1 | Other endocrine and metabolic procs |
| oth03 | 139 | 1 | Other blood and blood forming organs |
| oth08 | 140 | 1 | Other ear, nose, mouth and throat |
| oth09 | 141 | 1 | Other circulatory system |
| oth11 | 142 | 1 | Other digestive system |
| oth12 | 143 | 1 | Other hepatobiliary procs |
| oth13 | 144 | 1 | Other kidney and urinary tract |
| oth14 | 145 | 1 | Other male reproductive system |
| oth15 | 146 | 1 | Other female reproductive system |
| oth16 | 147 | 1 | Vaginal delivery except sterilization |
| oth17 | 148 | 1 | Other skin, breast and subcutaneous tissue |
| oth18 | 149 | 1 | Other musculoskeletal procs |
| oth22 | 150 | 1 | Other injuries |
| othbt | 151 | 1 | Other biliary tract procedures |
| othexoc | 152 | 1 | Other extraocular procs |
| othhf | 153 | 1 | Hip and femur |
| othinoc | 154 | 1 | Other intraocular procs |
| othleg | 155 | 1 | Lower extremity |
| othtrach | 156 | 1 | Other tracheostomy |
| pacegen | 157 | 1 | Pacemaker generator |
| pacerepl | 158 | 1 | Cardiac pacemaker & defib device replacement |

| Name | Pos | Len | Description |
|-------------|------------|------------|---|
| pacesys | 159 | 1 | Pacemaker system |
| pancby | 160 | 1 | Pancreas shunt |
| pancxp | 161 | 1 | Pancreas transplant |
| pelvevis | 162 | 1 | Pelvic evisceration |
| pelvic | 163 | 1 | Major male pelvis procs |
| penis | 164 | 1 | Penis procs |
| perangio | 165 | 1 | Percutaneous angioplasty or atherectomy of precerebral (extracranial) vessel(s) |
| percintra | 166 | 1 | percutaneous intracardial procs |
| percut | 167 | 1 | PTCA or coronary atherectomy |
| perilead | 168 | 1 | Implantation or replacement of peripheral neurostimulator |
| perinerv | 169 | 1 | Peripheral nerve disorders |
| postfuse | 170 | 1 | Posterior spinal fusion |
| pros | 171 | 1 | Prostate procs |
| ptca | 172 | 1 | PTCA |
| pulsegen | 173 | 1 | Insertion or replacement of dual array neurostimulator pulse generator |
| radioimp | 174 | 1 | Radioactive element implant |
| recon | 175 | 1 | Female reconstructive procs |
| remsys | 176 | 1 | Remove external heart assist system |
| repgen | 177 | 1 | Replacement cardiodefibr generator |
| replacex | 178 | 1 | Major joint replacement or reattachment of lower extremity |
| replead | 179 | 1 | Replacement cardiodefibr leads |
| reppulgen | 180 | 1 | Replacement pacemaker device |
| revision | 181 | 1 | Revision of hip or knee replacement |
| salivary | 182 | 1 | Salivary gland procs |
| sensor | 183 | 1 | Imp/rep impl sensor lead |
| septal | 184 | 1 | Percutaneous cardiovascular procedures |
| sgraft02 | 185 | 1 | Skin graft due to metabolic disorders |
| sgraft20 | 186 | 1 | Skin graft |
| sinus | 187 | 1 | Sinus & mastoid procs |

| Name | Pos | Len | Description |
|------------|-----|-----|---|
| skgrft | 188 | 1 | Skin graft |
| softiss | 189 | 1 | Soft tissue procs |
| spinal | 190 | 1 | Spinal procs |
| spinallead | 191 | 1 | Implantation or replacement of spinal neurostimulator |
| splenect | 192 | 1 | Splenectomy |
| steril | 193 | 1 | Sterilization and/or D&C procs |
| stimlead | 194 | 1 | Implantation of intracranial neurostimulator |
| subcue | 195 | 1 | Imp/rep subcutaneous card dev |
| subtot | 196 | 1 | Subtotal mastectomy |
| testic | 197 | 1 | Testes procs |
| thyroid | 198 | 1 | Thyroid, parathyroid and thyroglossal |
| totchol | 199 | 1 | Cholecystomy |
| turp | 200 | 1 | Transurethral prostatectomy |
| tusurg | 201 | 1 | Transurethral procedures |
| ua | 202 | 1 | Uterine and adnexa |
| upextrem | 203 | 1 | Upper extremity |
| urethra | 204 | 1 | Urethral & transurethral procs |
| vagcerv | 205 | 1 | Vaginal, cervix and vulva procs |
| valve | 206 | 1 | cardiac valve procs |
| vascular | 207 | 1 | Other vascular procs |
| veinstrip | 208 | 1 | Vein ligation & strip |
| vshunt | 209 | 1 | Ventricular shunt |
| wndebrid | 210 | 1 | Wound debridements |
| xcranvasc | 211 | 1 | Extracranial vascular procedures |

Exclusion EBCDIC Table

Contains lists of secondary diagnoses that are not considered a CC or MCC when in the presence of certain principal diagnoses. The following steps load the Exclusion EBCDIC table to the mainframe.

1. Allocate a sequential file (PS) using the following attributes:

- DSN=YOURID.GROUPER.CCEBC
 - LRECL=9
 - BLKSIZE=27990
 - RECFM=FB
 - SPACE=(TRK(9),RLSE)
2. FTP the CCEBC file from the miscellaneous folder in ASCII mode into a mainframe sequential file, "YOURID.GROUPER.CCEBC".

Table 19. Exclusion table

| Name | Pos | Len | Description |
|-------|-----|-----|-------------------------------|
| Group | 1 | 4 | Exclusion group from dx table |
| Index | 5 | 5 | Diagnosis index |

DRG EBCDIC Table

Contains grouper logic and DRG assignment by MDC. The following steps load the DRG EBCDIC table to the mainframe.

1. Allocate a sequential file (PS) using the following attributes:
 - DSN=YOURID.GROUPER.DRGEBC
 - LRECL=522
 - BLKSIZE=27666
 - RECFM=FB
 - SPACE=(TRK(15),RLSE)
2. FTP the DRGEBC file from the miscellaneous folder in ASCII mode into a mainframe sequential file, "YOURID.GROUPER.DRGEBC".

Table 20. DRG table

| Name | Pos | Len | Description |
|---------|-----|-----|--|
| MDC | 1 | 2 | Major Diagnostic Category |
| Seqno | 3 | 3 | Sequence number within MDC |
| DRG | 6 | 3 | DRG if row assigns one, zero otherwise |
| DxCat | 9 | 2 | Diagnosis Category if row requires one, zero otherwise |
| NewMDC | 11 | 2 | New MDC if row reroutes, zero otherwise |
| MedSurg | 13 | 1 | 1=Medical DRG, 2=Surgical DRG, 0 otherwise |

| Name | Pos | Len | Description |
|-------------|------------|------------|--|
| GRC | 14 | 1 | Group return code |
| ALIVE | 15 | 1 | Discharged alive |
| AMA | 16 | 1 | Left against medical advice |
| ANYCOMB | 17 | 1 | At least 2 different procedures among procedure criteria listed |
| ANYDX | 18 | 1 | Any diagnosis |
| DIED | 19 | 1 | Died |
| INVDSTAT | 20 | 1 | Invalid discharge status |
| INVPDX | 21 | 1 | Invalid PDX |
| INVSEX | 22 | 1 | Invalid sex |
| LDPAIR | 23 | 1 | Lead-device pair |
| MULTST | 24 | 1 | Multiple significant trauma |
| ONLYDX | 25 | 1 | Only diagnosis from the following list |
| ORindic | 26 | 1 | OR procedure(s) on record |
| XFRNB | 27 | 1 | Transferred to another facility |
| pdx mask | 28 | 96 | Principal dx criteria. See dx table positions 30 to end. Add -2. |
| sdx mask | 124 | 96 | Secondary dx criteria. See dx table positions 30 to end. Add 94. |
| adx mask | 220 | 96 | Any dx criteria. See dx table positions 30 to end. Add 190. |
| proc mask | 316 | 207 | Procedure criteria. See proc table positions 5 to end. Add 314. |

Chapter 3: Using and testing the grouper utility

Installations with data that conforms to the grouper requirements provided in chapter 1 (page 8) and whose output record length does not exceed 2992 bytes, may implement the grouper as a utility program that receives all information pertaining to the input record layout from the job's SYSIN stream. To use the grouper utility, you must have FTP'd the grouper object library members from the media to the mainframe. See chapter 2 (page 17) for more detail.

Link-editing the grouper utility

The sample JCL for creating a load module for the grouper utility is shown in the following figure.

```
//JOB CARD FOR YOUR INSTALLATION
//* *****
//* THIS JOB CREATES A GROUPEr UTILITY LOAD MODULE *
//* *****
//LKED EXEC PGM=HEWL, PARM='LIST,MAP,AMODE=31,RMODE=ANY',
// REGION=1024K
//SYSLMOD DD DSN=GROUPEr.UTIL.LOAD,DISP=OLD
//SYSUT1 DD UNIT=DISK,SPACE=(CYL,(1,1))
//SYSPRINT DD SYSOUT=*
//OBJECT DD DSN=GROUPEr.OBJLIB,DISP=OLD
//SYSLIN DD *
INCLUDE OBJECT(D340UT,D340CN,D340GR,D340RT)
ENTRY D340UT
NAME D340UT
/*
```

Using the grouper utility

As previously mentioned, the grouper utility receives all information pertaining to the input and output record layouts from the job's SYSIN stream. When using the grouper utility, you must provide 16 SYSIN control statements shown in the following table. These statements must be present in the order shown. Each control statement consists of a 3-character keyword followed by at least one 4-digit field, right-justified and zero-filled, indicating the starting position of the variable.

Table 21. Control statements required by the grouper utility

| Control statement | Keyword | Identifies the starting position(s) of... |
|-------------------|---------|---|
| 1 | DDX | Each 8-byte diagnosis code |
| 2 | SRG | Each 7-byte procedure code |

| Control statement | Keyword | Identifies the starting position(s) of... |
|-------------------|---------|---|
| 3 | AGE | The age field |
| 4 | SEX | The sex field |
| 5 | DSP | The discharge status field |
| 6 | POA | Present on admission logic |
| 7 | ADT | Admission date |
| 8 | DDT | Discharge date |
| 9 | SDT | Procedure dates |
| 10 | RTC | The grouper return code |
| 11 | MDC | The MDC number returned by the grouper |
| 12 | DRG | The DRG number returned by the grouper |
| 13 | GFL | Grouper flags |
| 14 | DFL | Diagnosis flags |
| 15 | SFL | Procedure flags |
| 16 | BUF | Grouper buffer |

Control statement examples

The following examples of the control statements use the 1760-byte record from the test database as input. The first 598 bytes contain the data that must be passed to the grouper, and the next 1162 bytes contain the information filled in by the previous grouper. The output record is 1162 bytes larger, with those 1162 bytes containing the data returned by the new grouper when you run the test.

The discharge diagnosis control statement (DDX)

The DDX control statement specifies the starting position of each discharge diagnosis code in the patient record to be used in the grouping process. Blanks must be inserted between each position specified. The grouper assumes that the first specified diagnosis is the principal discharge diagnosis. You may specify up to 24 secondary diagnoses to be considered in the grouping process so there may be at most 25 diagnosis positions specified on the control statement. For example, the DDX control statement shown below indicates that the principal diagnosis started at position 24 and that there were 24 secondary diagnoses to be used by the grouper, which began at position 32.

The grouper assumes that each diagnosis code specified is left-justified in a 8-byte field. All codes must be blank-filled. Zero-filled codes are not allowed. The 8th byte in each field is the POA indicator.

```

Contents      DDX 0024 0032 0040 0048 0056 0064 0072 0080 0088 0096 0104 0112 0120 0128 0136 *
              DDX 0144 0152 0160 0168 0176 0184 0192 0200 0208 0216

```

When there are more than 15 diagnoses, the asterisk (*) must be placed in column 80.

The procedure control statement (SRG)

The SRG control statement specifies the starting position of each procedure code in the patient record to be used in the grouping process. As with the diagnosis control statement, you specify each starting position as a 4-digit number. Blanks must be inserted between each position specified. You may provide up to 25 procedures for use by the grouper. For example, the SRG control statement shown below indicates that there were 25 procedure codes to be used in the grouping process, with the first procedure beginning at position 224, the second procedure beginning at position 231, and so on.

The grouper assumes that each procedure code specified is left-justified in a 7-byte field. Short codes must be blank-filled. Zero-filled codes are not allowed.

```

Contents      SRG 0224 0231 0238 0245 0252 0259 0266 0273 0280 0287 0294 0301 0308 0315 0322 *
              SRG 0329 0336 0343 0350 0357 0364 0371 0378 0385 0392

```

When there are more than 15 procedures, the asterisk (*) must be placed in column 80.

The age control statement (AGE)

The AGE control statement specifies the starting position of the field containing the patient age. Only ages between 0 and 124 are considered valid for grouping. The age field is assumed to be three bytes in length, containing right-justified numerics, and may be either zero- or blank-filled. For example, the AGE control statement displayed below indicates that the 3-byte age field appears on the patient record starting at position 1.

```

Column      123456789
Contents    AGE 0001

```

The sex control statement (SEX)

The SEX control statement specifies the starting position of the field containing the patient's sex. The grouper assumes that the sex field is one byte in length, containing the values 0 through 2 (unknown/male/female respectively). The test database SEX control statement is:

```

Column      123456789
Contents    SEX 0004

```

The discharge status control statement (DSP)

The DSP control statement specifies the position of the discharge status on the patient's record. The grouper assumes this is a 2-byte, right-justified field, with values as specified in chapter 1

(page 8). Short codes (i.e., codes with fewer than two digits) may be either blank- or zero-filled. The test database DSP control statement is:

```
Column      123456789
Contents    DSP 0005
```

The present on admission control statement (POA)

The POA control statement specifies the starting position of the field containing the Present on Admission logic flag. The grouper assumes the POA flag is one byte in length, containing the values specified in chapter 1 (page 8). The test database control statement is:

```
Column      1234567890
Contents    POA 0007
```

The admission date control statement (ADT)

The ADT control statement specifies the starting position of the field containing the patient's admission date. The grouper assumes the admission date is 8 bytes in length, formatted as YYYYMMDD. The test database control statement is:

```
Column      1234567890
Contents    ADT 0008
```

The discharge date control statement (DDT)

The DDT control statement specifies the starting position of the field containing the patient's discharge date. The grouper assumes the discharge date is 8 bytes in length, formatted as YYYYMMDD. The test database control statement is:

```
Column      1234567890
Contents    DDT 0016
```

The procedure dates control statement (SDT)

The SDT control statement specifies the starting position of a 200-byte buffer containing the date of each procedure coded on the patient record. The grouper assumes each procedure date is 8 bytes in length, formatted as YYYYMMDD. The test database control statement is:

```
Column      1234567890
Contents    SDT 0399
```

Grouper output control statements

It is important to note that none of the data returned by the grouper needs be written to the output record, although presumably you would want at least DRG and MDC numbers and the grouper return code (RTC). Regardless of whether you choose to output the data or not, a control

statement with an output position must be supplied for each of the elements specified below (RTC, MDC, DRG, GFL, DFL, SFL, BUF).

You must ensure that the storage for all fields returned by the grouper can be contained on the output record. The utility program determines the output record length from the JCL DCB specifications for the output dataset. If the position specified is beyond the end of the output record but within the maximum record length allowed, the field is dropped when the output record is written.

The return code control statement (RTC)

The RTC control statement specifies the location of a 2-byte field, which is used to store the grouper return code. The test database return code control statement is:

| | |
|----------|-----------|
| Column | 123456789 |
| Contents | RTC 0599 |

The MDC control statement (MDC)

The MDC control statement specifies the starting position for the storage of the MDC number returned by the grouper. The MDC number is a 2-byte, right-justified numeric value. The test database MDC control statement is:

| | |
|----------|-----------|
| Column | 123456789 |
| Contents | MDC 0601 |

The DRG control statement (DRG)

The DRG control statement specifies where on the output record the grouper should store the Final DRG number. The Final DRG number returned by the grouper is a 4-byte, right-justified numeric value. The test database DRG control statement is:

| | |
|----------|-----------|
| Column | 123456789 |
| Contents | DRG 0603 |

The grouper flags control statement (GFL)

The GFL control statement specifies the starting position of the grouper flags. The grouper assumes this field to be 5 bytes in length. The test database control statement is:

| | |
|----------|------------|
| Column | 1234567890 |
| Contents | GFL 0607 |

The diagnosis flags control statement (DFL)

The DFL control statement specifies the starting position of the diagnosis flags. The grouper assumes this field to be 625 bytes in length. There are 25 diagnosis flags for each diagnosis on the record, up to a total of 25 diagnosis codes. The test database control statement is:

```
Column      1234567890
Contents    DFL 0612
```

The procedure flags control statement (SFL)

The SFL control statement specifies the starting position of the procedure flags. The grouper assumes this field to be 500 bytes in length. There are 20 procedure flags for each procedure on the record, up to a total of 25 procedure codes. The test database control statement is:

```
Column      1234567890
Contents    SFL 1237
```

The buffer control statement (BUF)

The BUF control statement specifies the starting position of the buffer of additional DRG information. The grouper assumes this field to be 24 bytes in length. The test database control statement is:

```
Column      1234567890
Contents    BUF 1737
```

Running the grouper utility program

The table below shows the ABENDs (abnormal end of jobs) possible from the grouper utility program.

Table 22. ABEND codes

| Code | Description |
|-------------|--|
| 80A | Insufficient region size |
| 001 | Control statements missing or out of order |
| 002 | Non numeric data in position field on control statement |
| 003 | Missing control statement |
| 004 | Unsuccessful open of input database |
| 005 | Unsuccessful open of output database |
| 006 | Continuation character (*) found with less than 15 codes |

The JCL for executing the grouper utility program is shown in the following figure.

```
//GO EXEC PGM=D340UT
//STEPLIB DD DSN=GROUPER.UTIL.LOAD,DISP=SHR
//IN DD DSN=YOURID.GROUPER.TESTDB,DISP=SHR
//OUT DD DSN=GROUPER.OUTTEST.DATA,
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// DCB=(LRECL=1760,BLKSIZE=26400,RECFM=FB),
// SPACE=(CYL,(10,1),RLSE)
//SYSPRINT DD SYSOUT=*,DCB=(RECFM=FA,BLKSIZE=133,BUFNO=1)
//SYSIN DD *
DDX 0024 0032 0040 0048 0056 0064 0072 0080 0088 0096 0104 0112 0120 0128 0136 *
DDX 0144 0152 0160 0168 0176 0184 0192 0200 0208 0216
SRG 0224 0231 0238 0245 0252 0259 0266 0273 0280 0287 0294 0301 0308 0315 0322 *
SRG 0329 0336 0343 0350 0357 0364 0371 0378 0385 0392
AGE 0001
SEX 0004
DSP 0005
POA 0007
ADT 0008
DDT 0016
SDT 0399
RTC 0599
MDC 0601
DRG 0603
GFL 0607
DFL 0612
SFL 1237
BUF 1737
```

Note: The SYSIN control statements must not contain line numbers, as the entire 80 bytes is considered input. Failure to do this causes User ABEND 001.

Chapter 4: Using the grouper with higher-level languages

The grouper executor may be implemented as a subroutine to be called from Assembler or a higher-level language program. This chapter shows how this may be done for a COBOL programming environment. To create the subroutines, you must have FTP'd the grouper object library members from the media to the mainframe. See chapter 2 (page [17](#)) for more detail.

General strategy for COBOL driving program

A typical COBOL grouping utility might operate as follows:

- Opens the input and output datasets
- Reads records from the input dataset
- Reformats and recodes the input data to a form acceptable to the grouper
- Calls the grouper
- Stores the grouper return information on the output record
- Writes a new dataset containing the original data and the grouping information

A COBOL program (COBTEST) using the sample database is included on the installation media.

The following sample JCL is for grouping test database in the COBOL environment.

```

//JOB CARD FOR YOUR INSTALLATION
//* *****
//* SAMPLE JCL FOR GROUPING TEST DATABASE IN THE COBOL *
//* ENVIRONMENT. *
//* *
//* BOTH OBJECT AND LOAD MODULES ARE TEMPORARY. *
//* *****
//COBUCLG PROC
//* COBOL FOR MVS COMPILE AND LE370 LINK
//COB EXEC PGM=IGYCRCTL,PARM='RENT,NODYNAM'
//STEPLIB DD DSN=IGYV3R4.SIGYCOMP,DISP=SHR
//SYSLIB DD DSN=GROUPER.SRCLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN DD DSN=GROUPER.SRCLIB(COBTST),DISP=SHR
//SYSUT1 DD UNIT=DISK,SPACE=(CYL,(1,1))
//SYSUT2 DD UNIT=DISK,SPACE=(CYL,(1,1))
//SYSUT3 DD UNIT=DISK,SPACE=(CYL,(1,1))
//SYSUT4 DD UNIT=DISK,SPACE=(CYL,(1,1))
//SYSUT5 DD UNIT=DISK,SPACE=(CYL,(1,1))
//SYSUT6 DD UNIT=DISK,SPACE=(CYL,(1,1))
//SYSUT7 DD UNIT=DISK,SPACE=(CYL,(1,1))
//SYSLIN DD DSN=&&LOADSET,UNIT=DISK,DISP=(MOD,PASS),
// SPACE=(TRK,(3,3)),DCB=BLKSIZE=800
//*
//LKED EXEC PGM=IEWL,PARM='LIST,MAP,AMODE=31,RMODE=ANY',
// COND=(5,LT,COB)
//SYSLIB DD DSN=CEE.SCEELKED,DISP=SHR
//SYSLMOD DD DSN=&&GOSET(GO),DISP=(,PASS),UNIT=DISK,
// SPACE=(CYL,(5,1,5))
//SYSUT1 DD UNIT=DISK,SPACE=(CYL,(1,1))
//SYSPRINT DD SYSOUT=*
//SYSLIN DD DSN=&&LOADSET,DISP=(OLD,DELETE)
// DD DDNAME=SYSIN
//OBJECT DD DSN=GROUPER.OBJLIB,DISP=OLD
//*
//GO EXEC PGM=COBTST,COND=((5,LT,COB),(5,LT,LKED))
//STEPLIB DD DISP=SHR,DSN=CEE.SCEERUN
// DD DISP=SHR,DSN=&&GOSET
//SYSPRINT DD SYSOUT=*
//INFILE DD DSN=YOURID.GROUPER.TESTDB,DISP=SHR
// PEND
//*
//PROG1 EXEC COBUCLG,PROD=DRG340A
//LKED.SYSIN DD *
INCLUDE OBJECT(D340CN,D340GR,D340RT)
ENTRY COBTST
NAME COBTST
/*

```

Input to the grouper subroutines

The grouper control program (D340CN) assumes that general purpose register 1 is pointing to a list of addresses with the structure shown in the following table.

Table 23. MS-DRG software address list

| Offset | Fullword pointer to... |
|--------|--|
| 0 | The buffer containing the ICD-9-CM diagnosis codes for the record to be grouped. The first code is assumed to be principal diagnosis. |
| 4 | 4-byte binary (PIC 9(8) COMP) field indicating the number of diagnoses contained in the buffer discussed above. This can be the actual number of codes in the buffer, or the maximum number of codes that the buffer can hold. This number cannot be less than 1 nor greater than 25. If greater than 25, the software uses only the first 25 fields in the buffer and ignores the rest. |
| 8 | The buffer containing the procedure codes for the record to be grouped. |
| 12 | 4-byte binary (PIC 9(8) COMP) field indicating the number of procedures present. This field has the same rules as for diagnoses, except that it may be zero. |
| 16 | 3-byte numeric field containing the patient's age in years. |
| 20 | 1-byte numeric field containing the patient's sex. |
| 24 | 2-byte numeric field containing the patient's discharge status. |
| 28 | 1-byte field containing the POA logic indicator |
| 32 | 8-byte numeric field containing the patient's admission date (YYYYMMDD) |
| 36 | 8-byte numeric containing the patient's discharge date (YYYYMMDD) |
| 40 | 200-byte buffer containing the dates of the procedure codes. The buffer can hold up to a maximum of 25 dates, 8-bytes each (YYYYMMDD). |
| 44 | 2-byte numeric field to hold the grouper return code. |
| 48 | 2-byte numeric field to hold the MDC number. |
| 52 | 4-byte numeric field to hold the DRG number. |
| 56 | 5-byte field to hold the grouper flags. |
| 60 | 625-byte field to hold the diagnosis flags. |
| 64 | 500-byte field to hold the procedure flags. |
| 68 | 24-byte field to hold the buffer of additional DRG information. |

Note: COBOL applications programmers need not concern themselves with implementing this structure since COBOL automatically creates it when a CALL USING statement is issued.

You must ensure that each diagnosis code is left-justified in a 8-byte field and that all of the diagnoses are in contiguous locations in the buffer whose address is in the first pointer described above. Empty fields may be interspersed throughout the buffer. A detailed discussion of the way in which fields in the buffer are processed is located at the end of this chapter.

Similarly, each procedure code must be left-justified in a 7-byte field, and all of the procedure codes must be in contiguous locations in the buffer whose address is in the third pointer described above.

Each diagnosis and procedure code must be blank-filled if it is shorter than the maximum field length. *Zero filling is not allowed.*

The patient's age must be right-justified in a 3-byte field. Valid ages for grouping are between 0 and 124. The age may be either zero- or blank-filled.

The patient's sex must be contained in a 1-byte field, in the range 0 through 2 (Unknown/Male/Female, respectively).

The discharge status must be contained in a 2-byte field which is coded according to the conventions shown in the "Required data formats" table (page 8). The code must be right-justified and may be either zero- or blank-filled.

Output from the grouper subroutines

On return from the grouper executor, the DRG, MDC, return code, and the grouper, diagnosis, and procedure flags fields are filled in, along with the buffer of additional DRG information. The DRG and MDC numbers are right-justified. The grouper return code is filled in according to the conventions detailed in chapter 1 (page 7).

Using the alternate interface

The alternate grouper control program, (D340CA) operates the same as the standard grouper control program (D340CN) except that it does not contain any macros and is written to be re-entrant, so it should run in a wider variety of mainframe environments. Whereas the standard interface uses GETMAIN to obtain a 24,000 byte work area, the alternate interface requires that the calling program provide the work area. It must do so by providing two additional addresses in the list pointed to by general register 1. For details see the "MS-DRG software address list" table (page 48).

The table below gives the additional work area parameters required by the alternate interface.

Table 24. Work area parameters

| Offset | Full word pointer to... |
|--------|--|
| 72 | A buffer of at least 24,000 bytes. |
| 76 | 4-byte binary (PIC 9(8) comp) field containing the actual length in bytes of the work area. The value of this field should not be less than 24,000 bytes, though larger values are acceptable. |

To use the alternate interface, substitute D340CA for D340CN and provide these two extra parameters. See the COBOL program ALTTEST, provided in the source library, for an example of how to set up a work area and pass it to D340CA.

Assembler programmers should note that the length of the work area is *not* given in the full word at the offset 76 from R1 but rather a *pointer* to the full word containing the length is given at offset 76.

Sample JCL for running ALTTEST may be created by modifying the JCL for grouping the test database in COBOL environment (page [47](#)). To modify the JCL, change all occurrences of COBTEST to ALTTEST and change D340CN to D340CA.

Executor processing of the diagnosis and procedure buffers

The way in which the grouper retrieves diagnosis and procedure codes for processing is to loop through the related buffers using the counts addressed by the second and fourth pointers. If any diagnosis or procedure field is all zeroes or all blanks, then that field is considered empty and the code is flagged as invalid and is ignored. Codes are saved in an internal work area that is subsequently used for construction of the record mask (page [53](#)). Because processing is done this way, it is possible to pass a buffer that contains both valid and empty fields.

For example, assume there is a record containing a maximum of five diagnosis codes, three of which are coded for this abstract. The number of diagnoses passed would be five, and the buffer could look like any of the following:

```
3310  Y40210  Y5601  N
3310  Y      40210  Y5601  N
3310  Y00000  40210  Y5601  N00000
```

The principal diagnoses must be in the first field of the buffer. If the field is empty or invalid, the record is assigned DRG 999 (ungroupable) with a return code of 7 (invalid principal diagnosis).

Chapter 5: The MS-DRG grouper executor

To use the information in this chapter, you should have:

- A working knowledge of IBM Basic Assembler Language
- At least a rudimentary understanding of the underlying logic on which all DRG decisions are based
- Access to the *Medicare Severity Diagnosis Related Groups Definitions Manual*, which explains the principles on which all decisions are made

The executor essentially makes its decisions by comparing indicators for each DRG within an MDC. Indicators are set by the elements found on the patient record. These sets of indicators are referred to as masks. The content of the masks are listed in the EBCDIC tables (see "[MS-DRG v34.0A EBCDIC tables](#)" on page [24](#)).

The tables are represented as hexadecimal constants in the module D340RT and are present in memory when the grouper is loaded for execution. All table lookups are in-memory binary searches.

The executor begins its basic task by creating masks that are indicative of the conditions found on the patient record. These are called the record masks.

Once the record masks have been constructed, the corresponding DRG masks for the MDC indicated by the principal diagnosis are compared to them, until a match is found or the DRG masks for the MDC are exhausted.

Because the internal format of the grouper tables is optimized in D340RT for fast lookups and is therefore difficult to read, the four principal tables included in D340RT are provided as flat EBCDIC files on the distribution media. See chapter 2 (page [24](#)) for table layout details.

Construction of the record mask

The following list describes how the executor constructs the record masks.

1. Sex is tested for validity (0-2).
 - An error indicator is turned on if sex is out of that range.
 - If not, the appropriate indicator is set in the record mask.
2. Discharge status is tested for validity (01-07, 20, 21, 30, 43, 50, 51, 61-66, 69, 70, 81-95)
 - An error indicator is turned on if discharge status is out of range.
 - Otherwise, the appropriate indicators are set in the record mask.
3. The first listed diagnosis (assumed principal) is looked up in the Diagnosis Table.

- If no entry is found, the record is assigned DRG 999, RTC 7 and no further processing occurs.
 - If an entry is found, but the MDC number is 0, the record is assigned DRG 999, RTC 7 and no further processing occurs.
 - Otherwise, the MDC and DXCAT are saved and the indicators for this diagnosis code are moved to the mask where principal diagnosis indicators are positioned.
4. All secondary diagnoses are looked up in the Diagnosis Table and their bit indicators “OR’d” together in the mask reserved for secondary diagnosis indicators. Additionally, if any of the secondaries is a complication or comorbidity, the CC exclusion subroutine is called to determine if the CC flag in the record mask should be set. A complete discussion of the CC exclusion subroutine appears later in this chapter (page 55).
- Any secondary diagnosis for which there is no Diagnosis Table entry does not cause an error, but is instead ignored. MDC and DXCAT numbers are of no importance for secondaries.
5. Once all diagnoses have been processed, the indicators for principal and secondary are “OR’d” together in yet another indicator section mask for ALLDX criteria.
6. All procedure codes are looked up in Procedure Table and their bit indicators “OR’d” together in the mask reserved for procedure indicators. As with secondary diagnoses, invalid procedure codes do not generate errors, but are ignored.

DRG determination

Once the record masks have been constructed, the executor loops through the DRG masks for the MDC indicated by the principal diagnosis, comparing them with the record masks.

1. The comparison is done by moving the record mask to a work area and ANDing it with the current DRG mask.
2. The result of the ANDed work mask is then compared with the DRG mask.
 - If the results are identical, the associated DRG number is assigned and the processing to find and return the diagnosis and procedure flags is executed.
 - Otherwise, looping continues until a match is found or the DRG list is exhausted, at which time DRG 999 is assigned.

The rest of this section discusses some special conditions in the grouper logic.

Testing for the ONLY surgery condition

When the DRG mask indicates that ONLY specific surgeries can be present, the executor loops through the saved O.R. surgeries from the record, making decisions as follows:

1. The O.R. portion of the DRG mask is moved to a work area.
2. The work mask is ANDed with the mask of the saved O.R. surgery.
 - If the result of the ANDing is zero, this indicates that the surgery found on the record is other than the ONLY surgery allowed. The executor ceases looping and gets the next DRG mask.

- Otherwise, the process continues until all saved O.R. surgeries have been tested.

Testing for the ONLY DX condition

The testing for this condition is virtually identical to that done for the ONLY surgery condition, except that the comparison is done on saved diagnoses against the ALLDX portion of the DRG mask.

Testing for the OWISE condition

This condition exists for DRGs 794, 963-965 and 997. This is essentially the “fall through” DRG for the MDC and is assigned when no other DRG criteria have been met. The “anydx” bit in the DRG mask is turned on, leaving a mask with only that bit on, thereby guaranteeing a match.

Testing for the ANYCOMB condition

This condition exists only for DRG 461-462 in MDC 8. The test is done by comparing all coded O.R. procedures with the procedure portion of the DRG mask and adding one to an accumulator for each procedure that has a matching mask. If the resulting count is less than two, this record does not meet the “anycomb” condition, and the next DRG mask is retrieved.

CC exclusion subroutine

A large subset of the diagnosis codes are flagged as complication/comorbidity codes (CC) or major complication/comorbidity codes (MCC). Many of these codes are not really CC/MCC codes at all times because there are many conditions for which the secondary diagnosis is a natural side effect of the principal diagnosis. The CC/MCC exclusion table is organized to reflect a direct relationship between a principal diagnosis and selected secondaries.

Because the ICD-9-CM codes are non-contiguous and do not lend themselves well to defining ranges of codes, an index number is associated with each diagnosis and the CC/MCC exclusion table is constructed entirely from those index numbers.

To determine whether a secondary should be considered a CC/MCC, the executor accesses the CC/MCC table, using the principal diagnosis CC/MCC exclusion category as the key each time a secondary flagged as CC/MCC is encountered.

- If no entry is found for the exclusion category, that means that there are no exclusions and the secondary is considered a CC/MCC code.
- If an entry is found, then the secondary is excluded as a CC/MCC.

Testing for the OTHOR condition

This test is similar in logic to the test for the ONLY conditions, except that it tests for procedures in addition to the O.R. criteria in the DRG mask. When the DRG mask indicates that other O.R. procedures must be present, the executor loops through the O.R. procedures from the record, making decisions as follows:

1. The O.R. portion of the DRG mask is moved to a work area.
2. The work mask is ANDed with the mask of the saved O.R. procedure.
 - If the result of the ANDing is zero, this indicates that the procedure is other than the specific procedure required (e.g., T&A) and therefore satisfies the other O.R. criteria. When that occurs, looping ceases and processing continues for the DRG.
 - Otherwise, the loop continues until a procedure satisfies the other condition. If all saved procedures are exhausted without finding one that satisfies the other condition, then processing for that DRG is ended.

Testing for illogical principal diagnosis

When a DRG has been matched, and the DRG number is 999, the cause is an illogical principal diagnosis. To indicate this, the return code is changed to 6.

Testing for multiple significant trauma

The principal diagnosis is tested to see if it is a trauma code. If it is, processing continues to test for multiple significant trauma. Otherwise, no further trauma testing is done.

To qualify as multiple significant trauma, two significant trauma codes from *different* body sites must be present. The diagnosis mask contains special trauma indicators, with each body site trauma represented by a different flag.

The mask of the first diagnosis (either principal or secondary) that is flagged as a significant trauma is saved. The mask of each subsequent diagnosis that is also flagged is compared with the initial saved mask. If they are not the same, the record is flagged as a multiple significant trauma episode. If they are the same, the next diagnosis is tested until the multiple condition is satisfied or the diagnoses are exhausted.

Finding codes that affect Initial DRG assignment

After the DRG has been determined, the grouper executor analyzes the saved diagnosis and procedure masks, comparing them against the masks which were used to determine MDC and DRG. Codes which were necessary for the determination of the MDC/DRG are flagged with an "affect flag."

Final DRG

If no Hospital Acquired Conditions (HACs) are found on the record, then the initial DRG becomes the final DRG. Otherwise, the record is re-grouped demoting the HAC secondary diagnosis which may or may not change the DRG assignment based on what DRG it was initially assigned to, and/or the presence of other codes that are CCs or MCCs.

Executor ABEND codes

There is one ABEND (abnormal end of job) code that can be generated by the executor, standard version only.

Table 25. ABEND codes generated by the executor—standard version

| Code | Description |
|------|---|
| 108 | Not able to GETMAIN a work area of sufficient size. |

The alternate interface does not contain any ABEND macros.

Appendix A: Grouping results for the test database

The following is a partial listing of the output produced by the grouper utility program (D340UT). The program's printout is a distribution of record counts by final DRG, MDC, and return code (RTC), respectively. The test database used a POA indicator of Z. There were no POAs assigned to the diagnosis codes. The printout of counts from your test run may differ in appearance from what is shown in the appendix, but the content should be the same if the test is successful. Some editing was done in order to fit the text into this manual.

The test, when performed on an IBM Z12 model 607, used 248K of virtual storage, and took less than 1 CPU second.

COUNTS BY DRG

| | | | | | | | | | | | | | | | |
|----|----|----|----|-----|----|-----|----|-----|-----|-----|-----|-----|----|-----|----|
| 1 | 27 | 51 | 0 | 101 | 52 | 151 | 29 | 201 | 7 | 251 | 41 | 301 | 31 | 351 | 40 |
| 2 | 51 | 52 | 3 | 102 | 3 | 152 | 11 | 202 | 50 | 252 | 50 | 302 | 20 | 352 | 51 |
| 3 | 50 | 53 | 27 | 103 | 39 | 153 | 35 | 203 | 50 | 253 | 50 | 303 | 50 | 353 | 39 |
| 4 | 50 | 54 | 19 | 104 | 0 | 154 | 11 | 204 | 51 | 254 | 50 | 304 | 5 | 354 | 50 |
| 5 | 6 | 55 | 57 | 105 | 0 | 155 | 29 | 205 | 22 | 255 | 45 | 305 | 50 | 355 | 51 |
| 6 | 21 | 56 | 43 | 106 | 0 | 156 | 18 | 206 | 51 | 256 | 47 | 306 | 1 | 356 | 50 |
| 7 | 3 | 57 | 51 | 107 | 0 | 157 | 3 | 207 | 50 | 257 | 30 | 307 | 5 | 357 | 50 |
| 8 | 21 | 58 | 2 | 108 | 0 | 158 | 18 | 208 | 50 | 258 | 4 | 308 | 50 | 358 | 51 |
| 9 | 0 | 59 | 4 | 109 | 0 | 159 | 45 | 209 | 0 | 259 | 42 | 309 | 50 | 359 | 0 |
| 10 | 9 | 60 | 7 | 110 | 0 | 160 | 0 | 210 | 0 | 260 | 14 | 310 | 50 | 360 | 0 |
| 11 | 10 | 61 | 7 | 111 | 0 | 161 | 0 | 211 | 0 | 261 | 36 | 311 | 21 | 361 | 0 |
| 12 | 7 | 62 | 26 | 112 | 0 | 162 | 0 | 212 | 0 | 262 | 19 | 312 | 50 | 362 | 0 |
| 13 | 6 | 63 | 12 | 113 | 2 | 163 | 51 | 213 | 0 | 263 | 12 | 313 | 57 | 363 | 0 |
| 14 | 15 | 64 | 51 | 114 | 2 | 164 | 51 | 214 | 0 | 264 | 51 | 314 | 50 | 364 | 0 |
| 15 | 0 | 65 | 52 | 115 | 7 | 165 | 54 | 215 | 3 | 265 | 25 | 315 | 58 | 365 | 0 |
| 16 | 12 | 66 | 50 | 116 | 19 | 166 | 50 | 216 | 44 | 266 | 23 | 316 | 57 | 366 | 0 |
| 17 | 21 | 67 | 7 | 117 | 10 | 167 | 50 | 217 | 48 | 267 | 63 | 317 | 0 | 367 | 0 |
| 18 | 0 | 68 | 28 | 118 | 0 | 168 | 51 | 218 | 37 | 268 | 31 | 318 | 0 | 368 | 26 |
| 19 | 0 | 69 | 50 | 119 | 0 | 169 | 0 | 219 | 47 | 269 | 136 | 319 | 0 | 369 | 31 |
| 20 | 3 | 70 | 35 | 120 | 0 | 170 | 0 | 220 | 47 | 270 | 74 | 320 | 0 | 370 | 13 |
| 21 | 1 | 71 | 50 | 121 | 5 | 171 | 0 | 221 | 49 | 271 | 48 | 321 | 0 | 371 | 50 |
| 22 | 4 | 72 | 6 | 122 | 19 | 172 | 0 | 222 | 37 | 272 | 99 | 322 | 0 | 372 | 50 |
| 23 | 16 | 73 | 34 | 123 | 7 | 173 | 0 | 223 | 51 | 273 | 19 | 323 | 0 | 373 | 36 |
| 24 | 25 | 74 | 50 | 124 | 2 | 174 | 0 | 224 | 27 | 274 | 30 | 324 | 0 | 374 | 35 |
| 25 | 45 | 75 | 1 | 125 | 18 | 175 | 50 | 225 | 50 | 275 | 0 | 325 | 0 | 375 | 50 |
| 26 | 50 | 76 | 4 | 126 | 0 | 176 | 50 | 226 | 29 | 276 | 0 | 326 | 50 | 376 | 15 |
| 27 | 52 | 77 | 8 | 127 | 0 | 177 | 51 | 227 | 52 | 277 | 0 | 327 | 50 | 377 | 50 |
| 28 | 51 | 78 | 2 | 128 | 0 | 178 | 50 | 228 | 37 | 278 | 0 | 328 | 50 | 378 | 50 |
| 29 | 54 | 79 | 2 | 129 | 18 | 179 | 47 | 229 | 128 | 279 | 0 | 329 | 50 | 379 | 50 |
| 30 | 51 | 80 | 7 | 130 | 3 | 180 | 50 | 230 | 0 | 280 | 51 | 330 | 50 | 380 | 22 |
| 31 | 4 | 81 | 14 | 131 | 7 | 181 | 50 | 231 | 26 | 281 | 51 | 331 | 50 | 381 | 49 |
| 32 | 12 | 82 | 5 | 132 | 14 | 182 | 4 | 232 | 22 | 282 | 69 | 332 | 16 | 382 | 22 |
| 33 | 10 | 83 | 10 | 133 | 36 | 183 | 9 | 233 | 50 | 283 | 50 | 333 | 45 | 383 | 9 |
| 34 | 4 | 84 | 50 | 134 | 25 | 184 | 9 | 234 | 50 | 284 | 20 | 334 | 19 | 384 | 43 |

Grouping results for the test database

| | | | | | | | | | | | | | | | |
|----|----|-----|----|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|
| 35 | 20 | 85 | 23 | 135 | 5 | 185 | 15 | 235 | 54 | 285 | 14 | 335 | 50 | 385 | 22 |
| 36 | 41 | 86 | 38 | 136 | 3 | 186 | 52 | 236 | 131 | 286 | 50 | 336 | 50 | 386 | 31 |
| 37 | 50 | 87 | 47 | 137 | 3 | 187 | 35 | 237 | 0 | 287 | 50 | 337 | 50 | 387 | 19 |
| 38 | 50 | 88 | 3 | 138 | 3 | 188 | 17 | 238 | 0 | 288 | 8 | 338 | 14 | 388 | 50 |
| 39 | 50 | 89 | 15 | 139 | 6 | 189 | 50 | 239 | 50 | 289 | 3 | 339 | 23 | 389 | 50 |
| 40 | 53 | 90 | 17 | 140 | 0 | 190 | 50 | 240 | 50 | 290 | 10 | 340 | 19 | 390 | 50 |
| 41 | 53 | 91 | 32 | 141 | 0 | 191 | 50 | 241 | 32 | 291 | 67 | 341 | 16 | 391 | 50 |
| 42 | 57 | 92 | 50 | 142 | 0 | 192 | 51 | 242 | 50 | 292 | 66 | 342 | 48 | 392 | 50 |
| 43 | 0 | 93 | 29 | 143 | 0 | 193 | 51 | 243 | 56 | 293 | 67 | 343 | 49 | 393 | 50 |
| 44 | 0 | 94 | 13 | 144 | 0 | 194 | 54 | 244 | 53 | 294 | 5 | 344 | 5 | 394 | 50 |
| 45 | 0 | 95 | 3 | 145 | 0 | 195 | 53 | 245 | 43 | 295 | 1 | 345 | 17 | 395 | 50 |
| 46 | 0 | 96 | 3 | 146 | 3 | 196 | 16 | 246 | 52 | 296 | 6 | 346 | 13 | 396 | 0 |
| 47 | 0 | 97 | 9 | 147 | 2 | 197 | 14 | 247 | 49 | 297 | 3 | 347 | 16 | 397 | 0 |
| 48 | 0 | 98 | 8 | 148 | 1 | 198 | 6 | 248 | 52 | 298 | 1 | 348 | 43 | 398 | 0 |
| 49 | 0 | 99 | 1 | 149 | 50 | 199 | 6 | 249 | 49 | 299 | 45 | 349 | 25 | 399 | 0 |
| 50 | 0 | 100 | 51 | 150 | 3 | 200 | 25 | 250 | 39 | 300 | 80 | 350 | 21 | 400 | 0 |

COUNTS BY DRG

| | | | | | | | | | | | | | | | |
|-----|----|-----|----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|----|
| 401 | 0 | 451 | 0 | 501 | 39 | 551 | 43 | 601 | 3 | 651 | 0 | 701 | 0 | 751 | 0 |
| 402 | 0 | 452 | 0 | 502 | 25 | 552 | 51 | 602 | 50 | 652 | 6 | 702 | 0 | 752 | 0 |
| 403 | 0 | 453 | 5 | 503 | 5 | 553 | 13 | 603 | 50 | 653 | 12 | 703 | 0 | 753 | 0 |
| 404 | 0 | 454 | 10 | 504 | 22 | 554 | 26 | 604 | 11 | 654 | 34 | 704 | 0 | 754 | 6 |
| 405 | 9 | 455 | 5 | 505 | 10 | 555 | 5 | 605 | 50 | 655 | 3 | 705 | 0 | 755 | 16 |
| 406 | 10 | 456 | 8 | 506 | 12 | 556 | 29 | 606 | 5 | 656 | 20 | 706 | 0 | 756 | 18 |
| 407 | 7 | 457 | 34 | 507 | 30 | 557 | 13 | 607 | 11 | 657 | 45 | 707 | 50 | 757 | 3 |
| 408 | 5 | 458 | 14 | 508 | 27 | 558 | 29 | 608 | 0 | 658 | 27 | 708 | 50 | 758 | 8 |
| 409 | 17 | 459 | 50 | 509 | 1 | 559 | 3 | 609 | 0 | 659 | 11 | 709 | 11 | 759 | 12 |
| 410 | 4 | 460 | 50 | 510 | 9 | 560 | 21 | 610 | 0 | 660 | 44 | 710 | 11 | 760 | 3 |
| 411 | 5 | 461 | 6 | 511 | 41 | 561 | 15 | 611 | 0 | 661 | 18 | 711 | 5 | 761 | 5 |
| 412 | 4 | 462 | 38 | 512 | 50 | 562 | 21 | 612 | 0 | 662 | 35 | 712 | 3 | 762 | 0 |
| 413 | 3 | 463 | 45 | 513 | 7 | 563 | 53 | 613 | 0 | 663 | 50 | 713 | 50 | 763 | 0 |
| 414 | 30 | 464 | 63 | 514 | 9 | 564 | 3 | 614 | 9 | 664 | 41 | 714 | 50 | 764 | 0 |
| 415 | 26 | 465 | 61 | 515 | 46 | 565 | 18 | 615 | 6 | 665 | 15 | 715 | 5 | 765 | 26 |
| 416 | 12 | 466 | 14 | 516 | 50 | 566 | 17 | 616 | 25 | 666 | 42 | 716 | 3 | 766 | 11 |
| 417 | 50 | 467 | 50 | 517 | 54 | 567 | 0 | 617 | 50 | 667 | 39 | 717 | 12 | 767 | 3 |
| 418 | 50 | 468 | 50 | 518 | 111 | 568 | 0 | 618 | 7 | 668 | 32 | 718 | 1 | 768 | 8 |
| 419 | 50 | 469 | 53 | 519 | 57 | 569 | 0 | 619 | 9 | 669 | 50 | 719 | 0 | 769 | 5 |
| 420 | 6 | 470 | 56 | 520 | 79 | 570 | 36 | 620 | 54 | 670 | 47 | 720 | 0 | 770 | 2 |
| 421 | 16 | 471 | 39 | 521 | 0 | 571 | 50 | 621 | 56 | 671 | 7 | 721 | 0 | 771 | 0 |
| 422 | 5 | 472 | 53 | 522 | 0 | 572 | 34 | 622 | 4 | 672 | 4 | 722 | 5 | 772 | 0 |
| 423 | 34 | 473 | 51 | 523 | 0 | 573 | 12 | 623 | 36 | 673 | 50 | 723 | 8 | 773 | 0 |
| 424 | 47 | 474 | 17 | 524 | 0 | 574 | 3 | 624 | 20 | 674 | 50 | 724 | 20 | 774 | 7 |
| 425 | 26 | 475 | 38 | 525 | 0 | 575 | 7 | 625 | 22 | 675 | 52 | 725 | 1 | 775 | 23 |
| 426 | 0 | 476 | 7 | 526 | 0 | 576 | 2 | 626 | 50 | 676 | 0 | 726 | 12 | 776 | 2 |
| 427 | 0 | 477 | 19 | 527 | 0 | 577 | 2 | 627 | 50 | 677 | 0 | 727 | 6 | 777 | 3 |
| 428 | 0 | 478 | 50 | 528 | 0 | 578 | 9 | 628 | 50 | 678 | 0 | 728 | 22 | 778 | 8 |
| 429 | 0 | 479 | 50 | 529 | 0 | 579 | 50 | 629 | 50 | 679 | 0 | 729 | 1 | 779 | 9 |
| 430 | 0 | 480 | 51 | 530 | 0 | 580 | 50 | 630 | 50 | 680 | 0 | 730 | 12 | 780 | 2 |
| 431 | 0 | 481 | 50 | 531 | 0 | 581 | 52 | 631 | 0 | 681 | 0 | 731 | 0 | 781 | 13 |
| 432 | 57 | 482 | 50 | 532 | 0 | 582 | 45 | 632 | 0 | 682 | 51 | 732 | 0 | 782 | 1 |

Grouping results for the test database

| | | | | | | | | | | | | | | | |
|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|-----|
| 433 | 34 | 483 | 78 | 533 | 4 | 583 | 39 | 633 | 0 | 683 | 52 | 733 | 0 | 783 | 0 |
| 434 | 11 | 484 | 0 | 534 | 10 | 584 | 4 | 634 | 0 | 684 | 62 | 734 | 4 | 784 | 0 |
| 435 | 42 | 485 | 11 | 535 | 31 | 585 | 14 | 635 | 0 | 685 | 1 | 735 | 3 | 785 | 0 |
| 436 | 39 | 486 | 18 | 536 | 50 | 586 | 0 | 636 | 0 | 686 | 3 | 736 | 9 | 786 | 0 |
| 437 | 5 | 487 | 7 | 537 | 1 | 587 | 0 | 637 | 50 | 687 | 17 | 737 | 8 | 787 | 0 |
| 438 | 50 | 488 | 27 | 538 | 4 | 588 | 0 | 638 | 51 | 688 | 2 | 738 | 9 | 788 | 0 |
| 439 | 50 | 489 | 26 | 539 | 18 | 589 | 0 | 639 | 50 | 689 | 50 | 739 | 2 | 789 | 51 |
| 440 | 50 | 490 | 0 | 540 | 21 | 590 | 0 | 640 | 50 | 690 | 50 | 740 | 10 | 790 | 9 |
| 441 | 50 | 491 | 0 | 541 | 17 | 591 | 0 | 641 | 83 | 691 | 10 | 741 | 14 | 791 | 18 |
| 442 | 43 | 492 | 50 | 542 | 13 | 592 | 69 | 642 | 9 | 692 | 5 | 742 | 50 | 792 | 14 |
| 443 | 12 | 493 | 50 | 543 | 34 | 593 | 19 | 643 | 23 | 693 | 18 | 743 | 50 | 793 | 39 |
| 444 | 50 | 494 | 50 | 544 | 8 | 594 | 2 | 644 | 50 | 694 | 50 | 744 | 13 | 794 | 52 |
| 445 | 50 | 495 | 15 | 545 | 8 | 595 | 4 | 645 | 28 | 695 | 9 | 745 | 3 | 795 | 105 |
| 446 | 39 | 496 | 42 | 546 | 24 | 596 | 18 | 646 | 0 | 696 | 35 | 746 | 23 | 796 | 0 |
| 447 | 0 | 497 | 41 | 547 | 4 | 597 | 2 | 647 | 0 | 697 | 3 | 747 | 50 | 797 | 0 |
| 448 | 0 | 498 | 10 | 548 | 1 | 598 | 6 | 648 | 0 | 698 | 50 | 748 | 50 | 798 | 0 |
| 449 | 0 | 499 | 6 | 549 | 3 | 599 | 11 | 649 | 0 | 699 | 50 | 749 | 7 | 799 | 5 |
| 450 | 0 | 500 | 13 | 550 | 1 | 600 | 2 | 650 | 0 | 700 | 25 | 750 | 2 | 800 | 10 |

COUNTS BY DRG

| | | | | | | | | | | | | | | | |
|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|-----|
| 801 | 2 | 826 | 3 | 851 | 0 | 876 | 51 | 901 | 15 | 926 | 0 | 951 | 56 | 976 | 17 |
| 802 | 13 | 827 | 20 | 852 | 0 | 877 | 0 | 902 | 23 | 927 | 3 | 952 | 0 | 977 | 12 |
| 803 | 23 | 828 | 18 | 853 | 51 | 878 | 0 | 903 | 12 | 928 | 5 | 953 | 0 | 978 | 0 |
| 804 | 30 | 829 | 37 | 854 | 51 | 879 | 0 | 904 | 8 | 929 | 3 | 954 | 0 | 979 | 0 |
| 805 | 0 | 830 | 11 | 855 | 49 | 880 | 25 | 905 | 3 | 930 | 0 | 955 | 3 | 980 | 0 |
| 806 | 0 | 831 | 0 | 856 | 51 | 881 | 34 | 906 | 8 | 931 | 0 | 956 | 25 | 981 | 51 |
| 807 | 0 | 832 | 0 | 857 | 51 | 882 | 7 | 907 | 53 | 932 | 0 | 957 | 13 | 982 | 51 |
| 808 | 30 | 833 | 0 | 858 | 24 | 883 | 9 | 908 | 53 | 933 | 52 | 958 | 12 | 983 | 51 |
| 809 | 38 | 834 | 13 | 859 | 0 | 884 | 50 | 909 | 55 | 934 | 50 | 959 | 19 | 984 | 46 |
| 810 | 6 | 835 | 13 | 860 | 0 | 885 | 50 | 910 | 0 | 935 | 14 | 960 | 0 | 985 | 50 |
| 811 | 50 | 836 | 9 | 861 | 0 | 886 | 8 | 911 | 0 | 936 | 0 | 961 | 0 | 986 | 50 |
| 812 | 51 | 837 | 14 | 862 | 30 | 887 | 2 | 912 | 0 | 937 | 0 | 962 | 0 | 987 | 50 |
| 813 | 44 | 838 | 4 | 863 | 50 | 888 | 0 | 913 | 6 | 938 | 0 | 963 | 15 | 988 | 50 |
| 814 | 3 | 839 | 4 | 864 | 51 | 889 | 0 | 914 | 15 | 939 | 49 | 964 | 11 | 989 | 50 |
| 815 | 6 | 840 | 28 | 865 | 5 | 890 | 0 | 915 | 9 | 940 | 51 | 965 | 65 | 990 | 0 |
| 816 | 2 | 841 | 41 | 866 | 24 | 891 | 0 | 916 | 16 | 941 | 51 | 966 | 0 | 991 | 0 |
| 817 | 0 | 842 | 9 | 867 | 24 | 892 | 0 | 917 | 50 | 942 | 0 | 967 | 0 | 992 | 0 |
| 818 | 0 | 843 | 11 | 868 | 9 | 893 | 0 | 918 | 50 | 943 | 0 | 968 | 0 | 993 | 0 |
| 819 | 0 | 844 | 16 | 869 | 8 | 894 | 5 | 919 | 41 | 944 | 0 | 969 | 17 | 994 | 0 |
| 820 | 12 | 845 | 32 | 870 | 50 | 895 | 3 | 920 | 46 | 945 | 0 | 970 | 3 | 995 | 0 |
| 821 | 14 | 846 | 21 | 871 | 50 | 896 | 25 | 921 | 17 | 946 | 0 | 971 | 0 | 996 | 0 |
| 822 | 6 | 847 | 50 | 872 | 50 | 897 | 68 | 922 | 6 | 947 | 44 | 972 | 0 | 997 | 0 |
| 823 | 21 | 848 | 1 | 873 | 0 | 898 | 0 | 923 | 34 | 948 | 50 | 973 | 0 | 998 | 1 |
| 824 | 40 | 849 | 2 | 874 | 0 | 899 | 0 | 924 | 0 | 949 | 0 | 974 | 21 | 999 | 280 |
| 825 | 13 | 850 | 0 | 875 | 0 | 900 | 0 | 925 | 0 | 950 | 0 | 975 | 6 | | |

COUNTS BY MDC

| | |
|---|------|
| 0 | 280 |
| 1 | 2045 |
| 2 | 91 |

| | |
|----|------|
| 3 | 403 |
| 4 | 1676 |
| 5 | 4169 |
| 6 | 2352 |
| 7 | 1021 |
| 8 | 2844 |
| 9 | 731 |
| 10 | 1053 |
| 11 | 1323 |
| 12 | 341 |
| 13 | 378 |
| 14 | 125 |
| 15 | 288 |
| 16 | 325 |
| 17 | 464 |
| 18 | 632 |
| 19 | 238 |
| 20 | 104 |
| 21 | 534 |
| 22 | 142 |
| 23 | 302 |
| 24 | 163 |
| 25 | 76 |

COUNTS BY RTC

| | |
|----|-------|
| 0 | 21820 |
| 1 | 3 |
| 2 | 0 |
| 3 | 0 |
| 4 | 11 |
| 5 | 9 |
| 6 | 1 |
| 7 | 67 |
| 8 | 0 |
| 9 | 68 |
| 10 | 75 |
| 11 | 37 |
| 12 | 0 |
| 13 | 0 |
| 14 | 0 |
| 15 | 9 |

TOTAL RECORDS PROCESSED 22100

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