

## Technical Support

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### 1. DRGGROUPERS.COM MANUAL

Looking for more information about DRGs, groupers in general, or our grouper product line in particular? Download our complete manual / catalog / reference as a PDF: [drgman.pdf](#) . Available soon as a paperback book.

### 2. HOW TO PICK A VERSION

US Federal (aka CMS or HCFA) DRG versions are released in October of every year. Version 3 (the first version we support) was released in October of 1985. So if you are using calendar years, 1/1/2001 - 9/30/2001 would be covered by version 18 and 10/1/2001 through 9/30/2002 would be covered by version 19. And so on.

### 3. HOW TO INSTALL CGI-DRG

CGI-DRG is Common Gateway Interface (CGI) program, which means that it can be called by a web server. CGI-DRG works with Microsoft's Internet Information Service (IIS) under NT or Windows 2000. CGI-DRG also works with just about any web server under UNIX (we test with Apache under Linux).

CGI-DRG needs to know where to find the DRG mask files you have, so you have to give CGI-DRG that information when you call it for the first time in any given session. This is transparent to the user: just put the path to the DRG masks in the URL that the user clicks on.

(The masks files are binary data files whose names are of the form "drgmasks.fNN" where "NN" is the CMS (formerly HCFA) DRG version. So the masks file for version 12 is called "drgmasks.f12".)

*NOTE: the demo version of CGI-DRG only knows about version f10, f11 and f12. The full version automatically detects which masks files are present and offers the corresponding versions to the user.*

1. Put the CGI-DRG executable into whatever directory your web server expects to find it. C:\inetpub\WWWRoot\Scripts is common, as is C:\inetpub\WWWRoot\cgi-bin. If you have installed CGI-DRG correctly, you will be able to run the program and get the appropriate form, but you won't be able to assign a DRG yet because CGI-DRG won't be able to find the masks files.

2. Create a directory on your web server into which to put the masks files. For example, you might create "D:\MNH\DRG".
3. Copy your masks files into the masks directory.
4. Create a URL to call CGI-DRG. For instance, one of our test servers is called "w2k-server" and runs Windows 2000. We put the masks in **D:\MNH\DRG** and CGI-DRG.EXE in the **scripts** directory, so the URL on our system is: **http://w2k-server/scripts/cgi-drg.exe/d:/mnh/drg**

#### 4. HOW TO RUN SA-DRG

There is now an MS-DOS batch file, "sa-drg.bat," and a Bourne shell script, "sa-drg," which does all the work for you. You just invoke that command at the prompt:

```
C:\MNH\SA-DRG>sa-drg
```

#### 5. HOW TO INSTALL DRGFILT

DRGFilt is a Unix-style "filter" so it reads its input from STDIN and writes its output to STDOUT and writes its errors to STDERR.

To install DRGFilt, you put the DRGFilt executable in a directory in the users' search path (often /usr/local/bin), and you put the masks file(s) and control file(s) in a directory which is readable by the users (often /usr/local/drggrouper or /usr/share/drggrouper).

**WARNING:** Tragically, a historical accident means that a leading dot in a masks file or path name will confuse DRGFilt, so please don't use masks file names or path names that start with "."

#### 6. HOW TO RUN DRGFILT

To assign version 15 DRGs to the contents of a file names "input" and to save the results in a file named "output" you would do the following:

```
drgfilt f15 drgmasks.f15 cntl.f15 < input > output
```

#### 7. DRGFILT'S ARGUMENTS

If you invoke DRGFilt with no arguments, it gives you a simple usage message. For US Federal (CMS--formerly HCFA) version 15, that message looked like this:

```
drgfilt (c) 1989-2001 M+H Consulting LLC. (f15)
Usage: drgfilt [-0|1] version masksfile cntlfile
```

This tells you that -0 or -1 are optional arguments, but that a version, a masksfile and a control file name are all required. The version is "f" + the CMS (formerly HCFA) version number you want, so version 19 (released in October of 2001) would be "f19". The masks file is our format file of ICD9cm-specific grouping masks; these files are named "drgmasks.VN" where "VN" is replaced by the version number. So the

version 19 masksfile would be "drgmasks.f19". The control file is documented in its own section.

## 8. DRGFILT'S CONTROL FILE

The control file controls DRGFilt's hunt for input. In order to group, DRGFilt needs the five inputs mentioned earlier: a contiguous string of diagnoses, a contiguous string of procedures, an age, a sex and a discharge status. Since DRGFilt is meant to operate on arbitrary input records, each input record has to be described so DRGFilt can find what it is looking for. The control file is that description.

The control file also tells DRGFilt where you want it to write the results of its grouping.

The control file is a simple ASCII text file with one variable description per line. The fields in the description are fixed-width and always in this order: keyword, offset length. Leading whitespace is not allowed. The first 4 characters of every line are the keyword. The fifth character is ignored and is usually a blank for readability. The next 3 characters are the offset, which is also followed by a spacer character. Finally, the next 2 characters are the length. Either the '/' character or the '#' character can be used as the comment character.

Type	Description	
<b>sex</b>	In	Where to find Patient gender, coded 1=male, 2=female
<b>age</b>	In	Where to find Patient age, expected to be 0-124
<b>dx</b>	In	Where to find the start of the contiguous diagnosis string
<b>dxl</b>	In	Length of each code in the contiguous diagnosis string (offset ignored)
<b>surg</b>	In	Where to find the start of the contiguous procedure string
<b>sgl</b>	In	Length of each code in the contiguous procedure string (offset ignored)
<b>ds</b>	In	Where to find Discharge Status, coded following UB82
<b>recl</b>	In	<i>See note 1, below</i>
<b>drg</b>	Out	Where in the output record to put the DRG
<b>mdc</b>	Out	Where in the output record to put the MDC
<b>rc</b>	Out	Where in the output record to put the Grouper return code
<b>ver</b>	Out	Where in the output record to put the version of DRGs being assigned
<b>dflg</b>	Out	<i>See note 2, below</i>

**sflg**

Out

*See note 3, below***NOTES**

1. **recl** was introduced with DRGFilt f16. If you don't specify a record length with "recl" then DRGFilt assumes that its input is a text file and that each line of the text file is a record. If you *do* specify a record length, then DRGFilt reads its input in chunks as big you specified, ignoring end-of-line markers.
2. **dflg** is short for "diagnosis flags." It is possible that for any given input record some of the diagnosis codes will be ignored as irrelevant to the group into which the record ultimately falls. In order to report which diagnosis codes were used and which were not, our grouper keeps a list of flags, one per diagnosis, of upto 16 diagnoses. These flags are boolean, which means that they are either zero, meaning "this code was not relevant," or one, meaning "this code was relevant." If you use the dflg keyword, your output will have a string of ones and zeros in it which tell you, in order, which diagnosis codes were used and which were not.
3. **sflg** is short for "surgery flags" because, once upon a time, "surgery" and "procedure" were synonymous. See the note on "dflg" for an explanation of the code flag data type. If you use the sflg keyword, your output will have a string of ones and zeros in it which tell you, in order, which procedure codes were used and which were not.

**9. SAMPLE DRGFILT CONTROL FILE**

Here is the control file we use to run DRGFilt against the standard CMS (formerly HCFA) test data set:

```

# DRGFilt control file for federal testdb
# there are 3 columns: name, offset and length
# ----- input fields
age  000 03
sex  003 01
ds   004 02
dxl  000 06
dx   006 60
sgl  000 07
surg 066 70
# ----- output fields
drg  195 03
mdc  198 02
rc   200 01
#
# 'dflg' stands for "DX Flags" and 'sflg' stands
# for "Surgery Flags". (In ancient times, we called
# "Procedures" "Surgeries").
#
# these are bit-strings by which we mean strings
# of 1's and 0's. Each element of the string
# corresponds to a code. So the fifth element of
# dflag corresponds to the fifth Dx code.
#
# If an element is 1, then the corresponding code was
# used in the DRG assignment. If 0, then not.
#
# dflg represents all the DX codes.
dflg 201 10
# sflg represents all the Procedure codes.
sflg 211 15
# M or P attribute of the DRG that was assigned.
# Actually, either "Medical" or "Procedure" will be
# spelled out, depending on how long you make the
# output length.
morp 226 01

```

## 10. DRGFILT: USING "<" AND ">"

DRGFilt is a UNIX-style "filter" which means that it is a program that reads from STDIN and writes to STDOUT. Under UNIX, MS-DOS, OS/2 and NT, the syntax for this is the same: "<" means STDIN and ">" means STDOUT.

## 11. DRGFILT: -0 AND -1

"-0" means "the control file offsets are zero-based," which is the default. "-1" means "the control file offsets are one-based." Zero-based offsets are offsets which start at zero, so the first position in the record is 0. One-based offsets are offsets which start 1, so the first position in the record is 1.

## 12. ALL: GROUPER RETURN CODES (RC)

Code	Description	Code	Description
1	<i>Bad principal diagnosis</i>	6	<i>Unspecified DRG error</i>
2	<i>Bad prin dx for MDC</i>	7	<i>Invalid prin diagnosis</i>
3	<i>Invalid age</i>	8	<i>No DRG file this version</i>
4	<i>Invalid sex</i>	9	<i>DRG number too high</i>
5	<i>Invalid discharge status</i>	10	<i>Error in DRG file</i>

## 13. GROUPER RC DESCRIPTIONS

- **Error 1 means EITHER that there were no diagnosis codes given or that the given principal dx code does not have an MDC (ie is not valid as a principal dx).**
- **Error 2 means no DRG could be found to match MDC and principal dx.**
- **Error 3 means that the given age was not between 0-124.**
- **Error 4 means that the given sex was not 1=male or 2=female**
- **Error 5 is no longer used; Discharge Status is defaulted depending on various factors (disposition status coding system, eg)**
- **Error 6 depends on various factors; for example, for some DRG versions this means that birthweight was not between 200 and 9000 grammes.**
- **Error 7 means that the principal dx code was not a valid choice as a primary diagnosis; the code may be valid, but it is not an allowed starting point for assigning a DRG.**
- **Error 8 means that the DRG masks file could not be found or initialized by the run-time environment.**
- **Error 9 means that the DRG to be labelled is too high for the specified DRG version**
- **Error 10 means that the DRG masks file has internal structural errors.**

## 14. CONCLUSION

If this paper doesn't answer your Grouper-related technical questions, please feel free to submit your questions to us via email to [techsupport@drggrouper.com](mailto:techsupport@drggrouper.com) .