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HEALTHCARE COST AND UTILIZATION PROJECT

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Summary

The Comorbidity Software is a tool that assigns variables to identify comorbidities in hospital discharge records using diagnosis coding from the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). This software, consisting of two computer programs, was developed at the Agency for Healthcare Research and Quality (AHRQ, formerly known as the Agency for Health Care Policy and Research).

This document describes the software that maps ICD-9-CM diagnosis codes into comorbidity indicators, as reported by Elixhauser et al. (Comorbidity Measures for Use with Administrative Data. *Medical Care*, 1998;36:8-27). The report includes the technical documentation for the Comorbidity Software and describes three topics:

- Data elements required for the programs.
- The SAS programs.
- How to use the SAS programs on an IBM-compatible PC.

The first software download is the format program that defines a format library needed to complete comorbidity analysis. The second download program is the analysis program that assigns an indicator to each inpatient record for the comorbidity variables of interest.

These programs will be useful to researchers and policy analysts seeking information on ways to assess and control for disease severity.

Comorbidity Software

Comorbidity software assigns variables that identify comorbidities in hospital discharge records using the diagnosis coding of ICD-9-CM (*International Classification of Diseases, Ninth Edition, Clinical Modifications*). This document describes the software that creates the comorbidity measures reported by Elixhauser et al. ("Comorbidity Measures for Use with Administrative Data." *Medical Care*, 1998;36:8-27).

The comorbidity software consists of two SAS computer programs for PCs. Although these programs are written in SAS, they are being distributed in ASCII so that they can be readily adapted to other programming languages.

The first program, *Creation of Format Library for Comorbidity Groups*, creates a SAS format library that maps diagnosis codes into comorbidity indicators. Additional formats are created to exclude conditions that may be complications or that may be related to the principal diagnosis.

The second SAS program, *Creation of Comorbidity Variables*, applies these formats to a data set containing administrative data.

This document describes three topics:

- Data elements required for the programs.
- The SAS programs.
- How to use the SAS programs on an IBM-compatible PC.

Data Elements and Coding Conventions

The input data file must contain certain elements that are coded in specific ways. These elements are required for the assignment of the comorbidity flags. The flags are 0/1 indicators that note whether individual records include each comorbidity.

The input data set **must** have the following two variables:

1. Diagnosis-related groups (DRGs).
2. Diagnostic codes (ICD-9-CMs).

The required elements and coding are detailed further below.

Required Elements of Input File

Element	Type	Length	Label and Uniform Coding
DRG	Num	3	DRG in effect on discharge date, assigned by the DRG Grouper algorithm of the Health Care Financing Administration (HCFA)
DX1	Char	5	Principal diagnosis, annnn (blanks indicate missing)
DX2- DXn	Char	5	Secondary diagnoses 2- <i>n</i> , where <i>n</i> varies by data set
NDX	Num	3	Number of diagnoses on this discharge. (Note: A macro variable defines this element; it is currently set as 2.) NDX should always be equal or less than the macro variable called NUMDX.

Format Program

Creation of Format Library for Comorbidity Groups

The format program defines a format library that contains the diagnosis screens necessary for the comorbidity analysis. It will be used by Program 2, the comorbidity analysis program.

- Input: None
- Output: Permanent SAS format library called \FMTLIB\formats.sc2.
- Changes: The code points to a directory called FMTLIB on the c: drive for the format library output file. If you use another directory or drive, this code must be changed. Initially, this directory should be defined.

Analysis Program

Creation of Comorbidity Variables

The analysis program assigns to the inpatient records 0/1 indicators for the comorbidity variables of interest. This program assumes that the input data file conforms to specific variables names, attributes, and coding conventions, as described above.

- Input: SAS inpatient data (CORE) conforming to HCUP coding conventions (described above), and SAS format library (FMTLIB), created from the included format program.
- Output: SAS data set (ANALYSIS) containing inpatient records with their comorbidity indicators. The contents of the ANALYSIS file and the means for the comorbidity variables are output as hard copy. The output file is

called ANALYSIS; if your file name differs, the DATA statement needs to be changed.

- Changes: The code points to a directory called DATA on the c: drive for the input and output files. If you use another directory or drive, this code must be changed. Initially, the DATA directory needs to be defined. The macro variable (NUMDX) that defines the number of diagnoses on your data file needs to be defined (change the “2” to the appropriate number).

The macro variable (CORE) that defines the input file (SASname) needs to be defined; change the XXXXXX to the appropriate name.

There is an options statement that defines page and line size preferences; the settings currently are linesize=159 and pagesize=56. These settings can be changed, depending upon whether you prefer portrait or landscape style output.

Diagnoses and DRGs

ICD-9-CM and DRG coding changes through September 30, 2004, are incorporated into this software. *Appendix 1* contains these coding changes.

Variables Created

Thirty comorbidity variables are created using the comorbidity software, based on the format library. The library contains formats for the ICD-9-CM codes and DRG screens. Construction of these variables is summarized in *Appendix 2*.

The original table appeared in the paper by Elixhauser et al (1998). This table has been updated to reflect the ICD-9-CM and DRG updates in the software.

Software Download

The comorbidity program files can be downloaded from the HCUP-US website at:

<http://www.hcup-us.ahrq.gov/toolssoftware/comorbidity/comorbidity.jsp#download>

Though they are written in SAS, both files are being distributed in ASCII so they can be readily adapted to other programming languages.

Appendix 1. Changes Made to Comorbidity Software for FY2004, Version 2.0

The following changes were made to the Comorbidity Software for fiscal year 2004. This year included not only ICD-9-CM updates for fiscal year 2004, but also some modifications to the software as described below. These changes are incorporated in the tool currently available: Comorbidity Software, Version 2.0.

ICD-9-CM Changes to the Comorbidity Software, FY2004		
ICD-9-CM Diagnosis Code	ICD-9-CM Diagnosis Code Label	Comorbidity Assignment
07022	HPT B CHRN COMA WO DLTA	Liver disease
07023	HPT B CHRN COMA W DLTA	Liver disease
07044	CHRN C HPT C W HEPAT COMA	Liver disease
25080	DMII OTH NT ST UNCNRDL	Diabetes with chronic complications
25081	DMI OTH NT ST UNCNRDL	Diabetes with chronic complications
25082	DMII OTH UNCNRDL	Diabetes with chronic complications
25083	DMI OTH UNCNRDL	Diabetes with chronic complications
28521	ANEMIA IN ESRD	Deficiency anemias
28522	ANEMIA IN NEOPLASTIC DIS	Deficiency anemias
28529	ANEMIA-OTHCHRONIC ILL	Deficiency anemias
28981*	PRIM HYPERCOAGULABLE ST	Coagulopathy – note: this comorbidity should be dropped when used with the AHRQ Patient Safety Indicators
28982*	SEC HYPERCOGABULABLE ST	Coagulopathy – note: this comorbidity should be dropped when used with the AHRQ Patient Safety Indicators
2910	DELIRIUM TREMENS	Alcohol abuse
2913	ALCOHOLIC HALLUCINOSIS	Alcohol abuse
3300	LEUKODYSTROPHY	Other neurological
3301	CEREBRAL LIPIDOSES	Other neurological
3302	CEREB DEGEN IN LIPIDOSIS	Other neurological
3303	CEREB DEG CHLD IN OTH DIS	Other neurological
3308	DEREB DEGEN IN CHILD NEC	Other neurological
3309	CEREB DEGEN IN CHILD NOS	Other neurological
3310	ALZHEIMER'S DISEASE	Other neurological
33111*	PICK'S DISEASE	Other neurological
33119*	FRONTOTEMP DEMENTIA NEC	Other neurological
3312	SENILE DEGENERAT BRAIN	Other neurological
3313	COMMUNICAT HYDROCEPHALUS	Other neurological
3314	OBSTRUCTIV HYDROCEPHALUS	Other neurological
3317	CEREB DEGEN IN OTH DIS	Other neurological
33181	REYE'S SYNDROME	Other neurological
33182*	DEMENTIA W LEWY BODIES	Other neurological
33189	CEREB DEGENERATION NEC	Other neurological
3452	PETIT MAL STATUS	Other neurological

3453	GRAND MAL STATUS	Other neurological
34560	INF SPASM W/O INTR EPIL	Other neurological
34561	INF SPASM W INTRACT EPIL	Other neurological
34570	EPIL PAR CONT W/O INT EP	Other neurological
34571	EPIL PAR CONT W INTR EPI	Other neurological
34830*	ENCEPHALOPATHY NOS	Other neurological
34831*	METABOLIC ENCEPHALOPATHY	Other neurological
34839*	ENCEPHALOPATHY NEC	Other neurological
4010	MALIGNANT HYPERTENSION	Hypertension, complicated
40200	MAL HYP HT DIS W/O HF	Hypertension, complicated
40201	MAL HYPERT HRT DIS W HF	Congestive heart failure (CHF)
40300	MAL HYP REN W/O REN FAIL	Hypertension, complicated
40301	MAL HYP REN W RENAL FAIL	Renal failure
40310	BEN HYP REN W/O REN FAIL	Hypertension, complicated
40390	HYP REN NOS W/O REN FAIL	Hypertension, complicated
40400	MAL HY HT/REN W/O HF/RF	Hypertension, complicated
40401	MAL HYPER HRT/REN W HF	Congestive heart failure (CHF)
40402	MAL HY HT/REN W REN FAIL	Renal failure
40403	MAL HYP HRT/REN W HF&RF	Renal failure
40410	BEN HY HT/REN W/O HF/RF	Hypertension, complicated
40413	BEN HYP HRT/REN W HF&RF	Renal failure
40493	HYP HRT/REN NOS W HF&RF	Renal failure
40501	MAL RENOVASC HYPERTENS	Hypertension, complicated
40509	MAL SECOND HYPERTEN NEC	Hypertension, complicated
43820	LATE EF-HEMPLGA SIDE NOS	Paralysis
43821	LATE EF-HEMPLGA DOM SIDE	Paralysis
43822	LATE EF-HEMIPLGA NON-DOM	Paralysis
43830	LATE EF-MPLGA UP LMB NOS	Paralysis
43831	LATE EF-MPLGA UP LMB DOM	Paralysis
43832	LT EF-MPLGA UPLMB NONDOM	Paralysis
43840	LTE EF-MPLGA LOW LMB NOS	Paralysis
43841	LTE EF-MPLGA LOW LMB DOM	Paralysis
43842	LT EF-MPLGA LOWLMB NONDM	Paralysis
43850	LT EF OTH PARAL SIDE NOS	Paralysis
43851	LT EF OTH PARAL DOM SIDE	Paralysis
43852	LT EF OTH PARALS NON-DOM	Paralysis
43853	LT EF OTH PARALS-BILAT	Paralysis
44100	DSCT OF AORTA UNSP SITE	Peripheral vascular disorder
44101	DSCT OF THORACIC AORTA	Peripheral vascular disorder
44102	DSCT OF ABDOMINAL AORTA	Peripheral vascular disorder
44103	DSCT OF THORACOABD AORTA	Peripheral vascular disorder
4411	RUPTUR THORACIC ANEURYSM	Peripheral vascular disorder
4413	RUPT ABD AORTIC ANEURYSM	Peripheral vascular disorder
4415	RUPT AORTIC ANEURYSM NOS	Peripheral vascular disorder
4416	THORACOABD ANEURYSM RUPT	Peripheral vascular disorder
4420	UPPER EXTREMITY ANEURYSM	Peripheral vascular disorder
4421	RENAL ARTERY ANEURYSM	Peripheral vascular disorder
4422	ILIAC ARTERY ANEURYSM	Peripheral vascular disorder
4423	LOWER EXTREMITY ANEURYSM	Peripheral vascular disorder

44281	ANEURYSM OF NECK	Peripheral vascular disorder
44282	SUBCLAVIAN ANEURYSM	Peripheral vascular disorder
44283	SPLENIC ARTERY ANEURYSM	Peripheral vascular disorder
44284	VISCERAL ANEURYSM NEC	Peripheral vascular disorder
44289	ANEURYSM NEC	Peripheral vascular disorder
4429	ANEURYSM NOS	Peripheral vascular disorder
49381*	EXERCISE IND BRONCHOSPASM	Chronic pulmonary disease
49382*	COUGH VARIANT ASHTMA	Chronic pulmonary disease
49392	ASTHMA NOS W (AC) EXAC	Chronic pulmonary disease
53141	CHR STOM ULC W HEM-OBSTR	Peptic ulcer disease including bleeding
53151	CHR STOM ULC W PERF-OBST	Peptic ulcer disease including bleeding
53161	CHRSTOM ULC HEM-PERF-OB	Peptic ulcer disease including bleeding
53171	CHR STOMACH ULC NOS-OBST	Peptic ulcer disease including bleeding
53191	STOMACH ULCER NOS-OBSTR	Peptic ulcer disease including bleeding
53241	CHR DUODEN ULC HEM-OBSTR	Peptic ulcer disease including bleeding
53251	CHR DUODEN ULC PERF-OBST	Peptic ulcer disease including bleeding
53261	CHR DUOD ULC HEM/PERF-OB	Peptic ulcer disease including bleeding
53271	CHR DUODEN ULC NOS-OBSTR	Peptic ulcer disease including bleeding
53291	DUODENAL ULCER NOS-OBSTR	Peptic ulcer disease including bleeding
53341	CHR PEPTIC ULC W HEM-OBS	Peptic ulcer disease including bleeding
53351	CHR PEPTIC ULC PERF-OBST	Peptic ulcer disease including bleeding
53361	CHR PEPT ULC HEM/PERF-OB	Peptic ulcer disease including bleeding
53371	CHR PEPTIC ULCER NOS-OBS	Peptic ulcer disease including bleeding
53391	PEPTIC ULCER NOS-OBSTRUC	Peptic ulcer disease including bleeding
53441	CHR MARGIN ULC W HEM-OBS	Peptic ulcer disease including bleeding
53451	CHR MARGIN ULC PERF-OBST	Peptic ulcer disease including bleeding
53461	CHR MARG ULC HEM/PERF-OB	Peptic ulcer disease including bleeding
53471	CHR MARGINAL ULC NOS-OBS	Peptic ulcer disease including bleeding
53491	GASTROJEJUN ULC NOS-OBST	Peptic ulcer disease including bleeding
64200	ESSEN HYPERTEN PREG-UNSP	Hypertension, uncomplicated
64201	ESSEN HYPERTEN-DELIVERED	Hypertension, uncomplicated
64202	ESSEN HYPERTEN-DEL W P/P	Hypertension, uncomplicated
64203	ESSEN HYPERTEN-ANTEPART	Hypertension, uncomplicated
64204	ESSEN HYPERTEN-POSTPART	Hypertension, uncomplicated
64210	RENAL HYPERTEN PREG-UNSP	Hypertension, complicated
64211	RENAL HYPERTEN PG-DELIV	Hypertension, complicated
64213	RENAL HYPERTEN-ANTEPART	Hypertension, complicated
64214	RENAL HYPERTEN-POSTPART	Hypertension, complicated
64220	OLD HYPERTEN PREG-UNSPEC	Hypertension, complicated
64221	OLD HYPERTEN NEC-DELIVER	Hypertension, complicated
64222	OLD HYPERTEN-DELIV W P/P	Hypertension, complicated
64223	OLD HYPERTEN NEC-ANTEPAR	Hypertension, complicated
64224	OLD HYPERTEN NEC-POSTPAR	Hypertension, complicated
64270	TOX W OLD HYPERTEN-UNSP	Hypertension, complicated
64271	TOX W OLD HYPERTEN-DELIV	Hypertension, complicated
64272	TOX W OLD HYP-DEL W P/P	Hypertension, complicated
64273	TOX W OLD HYPER-ANTEPART	Hypertension, complicated
64274	TOX W OLD HYPER-POSTPART	Hypertension, complicated
64290	HYPERTEN PREG NOS-UNSPEC	Hypertension, complicated

64291	HYPERTENS NOS-DELIVERED	Hypertension, complicated
64292	HYPERTENS NOS-DEL W P/P	Hypertension, complicated
64293	HYPERTENS NOS-ANTEPARTUM	Hypertension, complicated
64294	HYPERTENS NOS-POSTPARTUM	Hypertension, complicated
64820	ANEMIA IN PREG-UNSPEC	Blood loss anemia
64821	ANEMIA – DELIVERED	Blood loss anemia
64822	ANEMIA – DELIVERED W P/P	Blood loss anemia
64823	ANEMIA – ANTEPARTUM	Blood loss anemia
64824	ANEMIA – POSTPARTUM	Blood loss anemia
64830	DRUG DEPEND PREG-UNSPEC	Drug abuse
64831	DRUG DEPENDENCE-DELIVER	Drug abuse
64832	DRUG DEPENDEN-DEL W P/P	Drug abuse
64833	DRUG DEPENDENCE-ANTEPARTUM	Drug abuse
64834	DRUG DEPENDENCE-POSTPART	Drug abuse
7751	NEONAT DIABETES MELLITUS	Diabetes with chronic complications
V561	FT/ADJ XTRCORP DIAL CATH	Renal failure
V562	FIT/ADJ PERIT DIAL CATH	Renal failure

* ICD-9-CM changes designated with an asterisk are new ICD-9-CM codes introduced in FY2004. All other changes are pre-existing codes that have been added to the software.

Other Changes to Comorbidity Software, FY2004	
Comorbidity	Description of Change
Cardiac arrhythmias	This comorbidity was removed for FY2004, Version 2.0.
Coagulopathy	This comorbidity should be dropped when using the AHRQ Patient Safety Indicators.
Diabetes w/o chronic complications	In the previous version, this comorbidity was labeled as "Diabetes."
Diabetes w/ chronic complications	In the previous version, this comorbidity was labeled as "Diabetes, complicated."
Fluid and electrolyte disorders	This comorbidity should be dropped when using the AHRQ Patient Safety Indicators.

Current as of March 2004.

Appendix 2. Definitions of Comorbidities

1. Congestive heart failure

ICD-9-CM codes: 398.91, 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.0-428.9

Discharge does not have these DRGs: Cardiac (103-112, 115-118, 120-127, 129, 132, 133, 135-143)

2. Valvular disease

ICD-9-CM codes: 093.20-093.24, 394.0-397.1, 424.0-424.91, 746.3-746.6, V42.2, V43.3

Discharge does not have these DRGs: Cardiac (103-112, 115-118, 120-127, 129, 132, 133, 135-143)

3. Pulmonary circulation disorders

ICD-9-CM codes: 416.0-416.9, 417.9

Discharge does not have these DRGs: Cardiac (103-112, 115-118, 120-127, 129, 132, 133, 135-143) or COPD asthma (88, 96-98)

4. Peripheral vascular disorders

ICD-9-CM codes: 440.0-440.9, 441.00-441.9, 442.0-442.9, 443.1-443.9, 447.1, 557.1, 557.9, V43.4

Discharge does not have these DRGs: Peripheral vascular (130, 131)

5. Hypertension (combine uncomplicated and complicated)

Hypertension, uncomplicated

ICD-9-CM codes: 401.1, 401.9, 642.00-642.04

Discharge does not have these DRGs: No DRGs apply

Hypertension, complicated

ICD-9-CM codes: 401.0, 402.00, 402.10, 402.90, 403.00, 403.10, 403.90, 404.00, 404.10, 404.90, 405.01, 405.09, 405.11, 405.19, 405.91, 405.99, 642.10-462.24, 642.70-642.94

Discharge does not have these DRGs: Cardiac (103-112, 115-118, 120-127, 129, 132, 133, 135-143) or Renal (302-305, 315-333)

6. Paralysis

ICD-9-CM codes: 342.0-342.12, 342.9-344.9, 438.20-438.53

Discharge does not have these DRGs: Cerebrovascular (5, 14-17, 524)

7. Other neurological disorders

ICD-9-CM codes: 330.0-331.9, 332.0, 333.4, 333.5, 334.0-335.9, 340, 341.1-341.9, 345.00-345.11, 345.2-345.3, 345.40-345.91, 348.1, 348.3-348.39, 780.3,

780.39, 784.3

Discharge does not have these DRGs: Nervous system (1-35, 524)

8. Chronic pulmonary disease

ICD-9-CM codes: 490-492.8, 493.00-493.92, 494-494.1, 495.0-505, 506.4

Discharge does not have these DRGs: COPD asthma (88, 96-98)

9. Diabetes, uncomplicated

ICD-9-CM codes: 250.00-250.33

Discharge does not have these DRGs: Diabetes (294, 295)

10. Diabetes, complicated

ICD-9-CM codes: 250.40-250.93

Discharge does not have these DRGs: Diabetes (294, 295)

11. Hypothyroidism

ICD-9-CM codes: 243-244.2, 244.8, 244.9

Discharge does not have these DRGs: Thyroid endocrine (290, 300, 301)

12. Renal failure

ICD-9-CM codes: 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 585, 586, V42.0, V45.1, V56.0-V56.2, V56.8

Discharge does not have these DRGs: Kidney transplant, Renal failure/dialysis (302, 316, 317)

13. Liver disease

ICD-9-CM codes: 070.22, 070.23, 070.32, 070.33, 070.44, 070.54, 456.0, 456.1, 456.20, 456.21, 571.0, 571.2, 571.3, 571.40-571.49, 571.5, 571.6, 571.8, 571.9, 572.3, 572.8, V42.7

Discharge does not have these DRGs: Liver (199-202, 205-208)

14. Peptic ulcer disease excluding bleeding

ICD-9-CM codes: 531.41, 531.51, 531.61, 531.70, 531.71, 531.90, 531.91, 532.41, 532.51, 532.61, 532.70, 531.71, 532.90, 532.91, 533.41, 533.51, 533.61, 533.70, 533.71, 533.90, 533.91, 534.41, 534.51, 534.61, 534.70, 534.71, 534.90, V12.71

Discharge does not have these DRGs: GI hemorrhage or ulcer (174-178)

15. AIDS: Acquired immune deficiency syndrome I

ICD-9-CM codes: 042-044.9

Discharge does not have these DRGs: HIV (488, 489, 490)

16. Lymphoma

ICD-9-CM codes: 200.00-202.38, 202.50-203.01, 203.8-203.81, 238.6, 273.3, V10.71, V10.72, V10.79

Discharge does not have these DRGs: Leukemia/lymphoma (400-414, 473, 492)

17. Metastatic cancer

ICD-9-CM codes: 196.0-199.1

Discharge does not have these DRGs: Cancer, lymphoma (10, 11, 64, 82, 172, 173, 199, 203, 239, 257-260, 274, 275, 303, 318,319, 338, 344, 346, 347, 354, 355, 357, 363, 366, 367, 406-414)

18. Solid tumor without metastasis

ICD-9-CM codes: 140.0-172.9, 174.0-175.9, 179-195.8, V10.00-V10.59, V10.81-V10.9

Discharge does not have these DRGs: Cancer, lymphoma (10, 11, 64, 82, 172, 173, 199, 203, 239, 257-260, 274, 275, 303, 318, 319, 338, 344, 346, 347, 354, 355, 357, 363, 366, 367, 406-414)

19. Rheumatoid arthritis/collagen vascular diseases

ICD-9-CM codes: 701.0, 710.0-710.9, 714.0-714.9, 720.0-720.9, 725

Discharge does not have these DRGs: Connective tissue (240, 241)

20. Coagulopathy

ICD-9-CM codes: 2860-2869, 287.1, 287.3-287.5, 289.81-289.82

Discharge does not have these DRGs: No DRGs apply

21. Obesity

ICD-9-CM codes: 278.0, 278.00, 278.01

Discharge does not have these DRGs: Nutrition /metabolic (296-298)

22. Weight loss

ICD-9-CM codes: 260-263.9

Discharge does not have these DRGs: Nutrition/metabolic (296-298)

23. Fluid and electrolyte disorders

ICD-9-CM codes: 276.0-276.9

Discharge does not have these DRGs: Nutrition/metabolic (296-298)

24. Blood loss anemia

ICD-9-CM codes: 2800, 648.20-648.24

Discharge does not have these DRGs: Anemia (395, 396)

25. Deficiency anemias

ICD-9-CM codes: 280.1-281.9, 285.21-285.29, 285.9

Discharge does not have these DRGs: Anemia (395, 396)

26. Alcohol abuse

ICD-9-CM codes: 291.0-291.3, 291.5, 291.8, 291.81, 291.89, 291.9, 303.00-

303.93, 305.00-305.03, V113

Discharge does not have these DRGs: Alcohol or drug (433-437)

27. Drug abuse

ICD-9-CM codes: 292.0, 292.82-292.89, 292.9, 304.00-304.93, 305.20-305.93, 648.30-648.34

Discharge does not have these DRGs: Alcohol or drug (433-437)

28. Psychoses ICD-9-CM codes: 295.00-298.9, 299.10, 299.11

Discharge does not have these DRGs: No DRGs apply,

29. Depression

ICD-9-CM codes: 300.4, 301.12, 309.0, 309.1, 311

Discharge does not have these DRGs: No DRGs apply

Note: A hierarchy was established between the following pairs of comorbidities: If both uncomplicated diabetes and complicated diabetes are present, count only complicated diabetes. If both solid tumor without metastasis and metastatic cancer are present, count only metastatic cancer.

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