

*All Payer Severity-adjusted DRGs
(APS-DRGs®)*

Normalized Charge, LOS, and Mortality Weights

*Version 0402H
(for APS-DRGs® Version 21.0)*



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HSS Industry Insight No. 258, Version 21.0 Update to the APS-DRGs®, January 2004

OVERVIEW

Charge, length of stay (LOS), and mortality weights for Version 21.0 All-Payer Severity-adjusted DRGs (APS-DRGs®) provide statistically valid, normative standards to help users identify differences in expected resource use and outcomes based on patients' clinical characteristics. Such weights also can be used to assess the performance of individual providers against national benchmarks. HSS, Inc. (HSS) has generated these weights from a large, nationally representative database containing more than 7.4 million discharges from nearly 1,000 hospitals in 33 states. The large size of the input database allows considerable precision in the estimation process.

The HSS estimation procedure closely parallels methods used by the federal Centers for Medicare & Medicaid Services (CMS, formerly HCFA, the Health Care Financing Administration) in developing weights for the Medicare Prospective Payment System (PPS). The process begins by adjusting charges reported on individual records for differences in labor costs across hospitals. It then systematically trims both charges and LOS, excluding observations with reported values outside predetermined levels. Means are recalculated and weights are derived by dividing these means by averages calculated across all inlier records. Results are inspected for logical consistency and reasonableness. When problems appear to exist because of small cell sizes, weights are imputed. Final weights are produced by normalizing weights so that their average across all records in the input database uniformly equals 1.000.

METHODS

DATA

Data from the 2001 National Inpatient Sample (NIS) of the Healthcare Cost and Utilization Project were used to develop the weights. This data source was developed by the Agency for Healthcare Research and Quality using a stratified probability sample of hospitals from 33 states to create a nationally representative 20 percent sample of all U.S. community hospitals. Strata are by hospital size, location, ownership, and teaching status. Within each stratum, sampling probabilities are directly proportional to the number of hospitals located in the 33 participating states and inversely proportional to the total number of U.S. community hospitals.

The 2001 NIS contains information on all inpatient stays from 986 hospitals, a total of 7,452,727 records. These data were linked to appropriate wage indexes published by the federal Centers for Medicare & Medicaid Services (CMS, formerly HCFA, the Health Care Financing Administration). (The NIS contains identifiers to enable such linkages for hospitals in every state except Georgia, Hawaii, Kansas, Michigan, Nebraska, South Carolina, Texas, and Tennessee, where confidentiality restrictions prohibit hospital identification. For these eight states, we used the overall, state average wage index for all NIS hospitals in each state.)

APS-DRGs® WEIGHT CALCULATION

The calculation of weights for the Version 21.0 APS-DRGs® is similar to the methodology used by CMS in developing the annual DRG relative weights. This involves several steps, as described below.

STEP 1. ASSIGN VERSION 21.0 APS-DRGs® TO THE DATA.

The 7.4+ million discharges described above were assigned to appropriate Version 21.0 APS-DRGs® using Healthcare AdVantage™. As appropriate, the ICD-9-CM diagnosis and procedure codes found in the NIS were mapped into Version 21.0 codes. An output file was then created containing linking variables, APS-DRGs®, APS-MDCs, and return codes. Finally, a series of summary statistics were calculated from the output files to assess data quality and other analytic issues.

STEP 2. CREATE HOSPITAL-LEVEL WAGE FILE AND MERGE TO PATIENT FILE.

The CMS Wage Index History File was linked to the 2001 NIS hospital weight file to obtain the associated wage index for each sample hospital. For states that prohibit hospital identification, state average wage indexes were assigned. For hospitals represented in the NIS but not on the History file (primarily specialty hospitals), indexes were assigned using the geographic information available on the NIS.

The hospital-level file was then merged to the patient-level file. Charges on the input were adjusted by dividing a portion of each hospital-specific charge by the wage index for the area in which the hospital was located. The CMS wage index reflects total hospital salaries and hours excluding the salaries and hours associated with skilled nursing facilities and other non-hospital cost centers, home office salaries and hours, and the fringe benefits associated with hospital and home office salaries. The portion of the charges adjusted by the CMS wage index was 71.10 percent (CMS's October 2001 estimate of the portion of the "hospital market basket" for labor-related items).

STEP 3. CALCULATE AND APPLY TRIMS.

Initial outlier trim points were calculated at 3.0 standard deviations from the overall arithmetic mean of the log-transformed LOS and charges. Using these trimmed data, a second set of trim points was calculated, again using 3.0 standard deviations from the arithmetic mean of the log-transformed data.

Trim points for the APS-DRGs® were then merged onto the patient file and used to identify outliers to be excluded from the remainder of the calculations. Note that outliers were determined variable by variable; for example, records containing charge outliers were not necessarily excluded from the calculations of LOS and mortality weights. Summary weights were re-estimated by APS-DRGs®, APS-MDC, and CDRG.

STEP 4. IDENTIFY AND ASSESS ATYPICAL PATTERNS THAT MIGHT AFFECT WEIGHTS.

As an additional quality-control measure, certain APS-DRGs® were identified and examined, especially when they involved atypical patterns of weights. The purpose of this step was to identify potential problems in the preceding data processing steps and to ensure that apparently unusual empirical results were based upon adequate data resources. The focus of this step included the following types of APS-DRGs®:

- APS-DRGs® with no observations.
- APS-DRGs® containing less than 50 observations.
- Weights for APS-DRGs® that were five times greater than the weight for the Consolidated DRG (CDRG).
- Weights for APS-DRGs® that were non-monotonic; that is, less than weights of less severe APS-DRGs® within the same CDRG.

STEP 5. PERFORM IMPUTATIONS.

The weights for all APS-DRGs[®] containing less than 25 observations were imputed by calculating a weighted average. Estimated weights from the national data were supplemented with additional information obtained from similar APS-DRGs[®]. More weight was given to the average LOS, charge, and mortality statistics for individual APS-DRGs[®] as the number of cases increased and as the variance of those statistics declined.

STEP 6. CALCULATE RELATIVE WEIGHTS.

The final, post-imputation estimated average LOS, charge, and mortality for individual APS-DRGs[®] was then divided by the overall LOS, charge, and mortality average to determine the relative weights. The latter was calculated by dividing the total days, charges, or deaths in the input database by the number of inlier records for that particular variable.

Normalized weights for the APS-DRGs[®] were standardized to ensure that the average weight calculated across all discharge records in the input database was 1.000 after adjustment. This was done by comparing the overall average charge, LOS, and mortality weights before and after the weights were adjusted.

RESULTS

The input data set contained a total of 7,452,727 records. Applying national sampling weights, these records represent more than 37 million discharges from community hospitals in the United States during 2001. After eliminating 1,883 records with a missing principal diagnosis, 7,450,844 records were available for developing weights.

DATA QUALITY AND APS-DRGs[®] ASSIGNMENT

Frequencies for the Version 21.0 APS-DRGs[®] were examined for variation and compared to results from previous years. Less than 0.03 percent of the records (n=1,929) were ungroupable (APS-DRG 4700), with the majority failing to group due to invalid principal diagnoses. Few records (n=58) were assigned to APS-DRG 4690, *Principal Diagnosis Invalid as Discharge Diagnosis*.

Low-volume APS-DRGs[®] were similar to previous years' results. Table 1 lists the twelve (12) APS-DRGs[®] with no observations in the study data. Note that six (6) of these twelve (12) APS-DRGs[®] represent two (2) new (and ostensibly temporary) DRGs that CMS created for FY 2003, 526 and 527 – Percutaneous Cardiovascular Procedure with Drug-Eluting Stent with and without AMI. The ICD-9-CM procedure code that defines these new, temporary DRGs (36.07, Insertion of drug-eluting coronary artery stents) is also new for FY 2003, and thus did not appear in the 2001 NIS data upon which these weights were based. Weights for the six APS-DRGs[®] in these two new CMS DRGs were, therefore, taken from existing, parallel DRGs 516 and 517 – Percutaneous Cardiovascular Procedures with and without AMI.

Table 2 lists the 27 APS-DRGs® with fewer than 50 weighted cases nationally in 2001, based upon their observed frequency in the NIS. Note that many of these low-volume APS-DRGs® are elective procedures done in an ambulatory setting (for example, eye procedures, circumcision, and sterilization). Even when performed as an inpatient, few patients have Major CCs associated with them.

FINAL WEIGHTS

Approximately 0.71 percent of the records exceeded the individual APS-DRGs[®] charge outlier thresholds, while 0.46 percent of records were identified as LOS outliers. After excluding these records, the imputation procedure described above was performed for APS-DRGs[®] with relatively low volume, and final weights were calculated. The final weights were compared to previous years, taking into account changes in the APS-DRGs[®] made in moving from Version 20 to Version 21. These CMS-originated changes include reclassifying existing codes into different DRGs and making the additional changes for FY 2004 detailed in Appendix B, HSS Industry Insight No. 258, Version 21.0 Update to the APS-DRGs[®], January 2004.

In general,

Charge weights ranged from 0.096 to 26.212 with a **mean charge** of \$14,738.60.

LOS weights ranged from 0.221 to 18.970 with a **mean LOS** of 4.5302 days.

Mortality weights ranged from 0 to 34.065 with a **mean mortality** of 0.02505 deaths per discharge.

To calculate an **expected charge** (**expected LOS**, or **expected mortality**) for a given discharge record, simply multiply the **charge weight** (**LOS weight**, or **mortality weight**) obtained by applying APS-DRGs[®] to that record, by the **mean charge** (**mean LOS**, or **mean mortality**) noted above.

The imputation procedure described above “adjusted the original estimated weights” for 69 APS-DRGs[®]. Many of these adjustments were relatively minor. At least 90 percent of the information was derived from the APS-DRGs[®] in the original study data for all three final weights in the three (3) APS-DRGs[®] shown in Table 3. At the other extreme, none of the final weight was derived from the APS-DRGs[®] in the original study data for the twelve (12) APS-DRGs[®] shown in Table 1. The 36 APS-DRGs[®] shown in Table 4 received less than half of their final weight from the APS-DRGs[®] original information for at least one weight. Table 5 contains a list of the remaining 18 APS-DRGs[®] with adjusted final weights where at least half of the information comes from its own data for all three sets of weights and at least one weight uses less than 90 percent of the information.

APS-DRGs[®] are represented in the tables as five-digit numbers, consisting of two parts: a four-digit Consolidated DRG and a one-digit severity class number. The Consolidated DRG or CDRG is derived from the patient's CMS DRG and the severity class is obtained by evaluating the patient's secondary diagnoses. The APS-DRG[®] group number may be represented by the syntax "XXXXY," where "XXXX" is the CDRG and "Y" is the severity class.

TABLE 1	
APS-DRGs® (N=12) With No Observations In Data Used To Estimate Weights	
00382	PRIMARY IRIS PROCEDURES W MCC
02912	THYROGLOSSAL PROCEDURES W MCC
03302	URETHRAL STRICTURE AGE 0-17 W MCC
03512	STERILIZATION, MALE W MCC
04122	HISTORY OF MALIGNANCY W MCC
05081	FULL BRN WO GR OR INHAL W SIG TR W CC
05260	PERC CV PR W DRUG STENT W AMI WO CC
05261	PERC CV PR W DRUG STENT W AMI W CC
05262	PERC CV PR W DRUG STENT W AMI W MCC
05270	PERC CV PR W DRUG STENT WO AMI WO CC
05271	PERC CV PR W DRUG STENT WO AMI W CC
05272	PERC CV PR W DRUG STENT WO AMI W MCC

TABLE 2	
APS-DRGs® (N=27) With Fewer Than 50 Observations in 2001 NIS	
00062	CARPAL TUNNEL RELEASE W MCC
00380	PRIMARY IRIS PROCEDURES W/O CC
00392	LENS PROCS WITH OR W/O VITRECTOMY W MCC
00592	TONSILLCT &/OR ADNDCT ONLY AGE>17 W MCC
02322	ARTHROSCOPY W MCC
02622	BRST BIOP& LOC EXCIS FOR NON-MAL W MCC
02672	PERIANAL & PILONIDAL PROCEDURES W MCC
03142	URETHRAL PROCEDURES, AGE 0-17 W MCC
03272	KIDNY, URIN TRACT SIGN, SYMP 0-17 W MCC
03431	CIRCUMCISION AGE 0-17 W CC
03432	CIRCUMCISION AGE 0-17 W MCC
03510	STERILIZATION, MALE W/O CC
03511	STERILIZATION, MALE W CC
03622	ENDOSCOPIC TUBAL INTERRUPTION W MCC
03822	FALSE LABOR W MCC
04121	HISTORY OF MALIGNANCY W CC
05062	FULL BRN W GR OR INHAL W SIG TR W MCC
05080	FULL BRN WO GR OR INHAL W SIG TR WO CC
05082	FULL BRN WO GR OR INHAL W SIG TR W MCC
05100	NON-EXT BURNS W SIG TRAUMA WO CC
05101	NON-EXT BURNS W SIG TRAUMA W CC
05102	NON-EXT BURNS W SIG TRAUMA W MCC
05132	PANCREAS TRANSPLANT W MCC
00062	CARPAL TUNNEL RELEASE W MCC
00380	PRIMARY IRIS PROCEDURES W/O CC
00392	LENS PROCS WITH OR W/O VITRECTOMY W MCC
00592	TONSILLCT &/OR ADNDCT ONLY AGE>17 W MCC

TABLE 3 APS-DRGs® (N=3) Where APS-DRGs®-Level Data Contribute at Least 90 Percent of Their Information for All Three Final Weights	
02372	SPRN,STRN,DISLOC HIP,PELVIS,THIGH W MCC
05122	SIM PANCREAS/KIDNEY TRANSPLANT W MCC
02372	SPRN,STRN,DISLOC HIP,PELVIS,THIGH W MCC

TABLE 4 APS-DRGs® (N=36) Where APS-DRGs®-Level Data Contribute Less Than 50 Percent of Their Information for At Least One Final Weight	
00062	CARPAL TUNNEL RELEASE W MCC
02322	ARTHROSCOPY W MCC
02622	BRST BIOP& LOC EXCIS FOR NON-MAL W MCC
02672	PERIANAL & PILONIDAL PROCEDURES W MCC
03142	URETHRAL PROCEDURES, AGE 0-17 W MCC
03272	KIDNY,URIN TRACT SIGN,SYMP 0-17 W MCC
03300	URETHRAL STRICTURE AGE 0-17 W/O CC
03301	URETHRAL STRICTURE AGE 0-17 W CC
03402	TESTES PROCEDURES AGE 0-17 W MCC
03422	CIRCUMCISION AGE >17 W MCC
03431	CIRCUMCISION AGE 0-17 W CC
03432	CIRCUMCISION AGE 0-17 W MCC
03510	STERILIZATION, MALE W/O CC
03511	STERILIZATION, MALE W CC
03622	ENDOSCOPIC TUBAL INTERRUPTION W MCC
03822	FALSE LABOR W MCC
04121	HISTORY OF MALIGNANCY W CC
04412	HAND PROCEDURES FOR INJURIES W MCC
04482	ALLERGIC REACTIONS AGE 0-17 W/O CC
05060	FULL BRN W GR OR INHAL W SIG TR WO CC
05062	FULL BRN W GR OR INHAL W SIG TR W MCC
05080	FULL BRN WO GR OR INHAL W SIG TR WO CC
05082	FULL BRN WO GR OR INHAL W SIG TR W MCC
05100	NON-EXT BURNS W SIG TRAUMA WO CC
05101	NON-EXT BURNS W SIG TRAUMA W CC
05102	NON-EXT BURNS W SIG TRAUMA W MCC
05132	PANCREAS TRANSPLANT W MCC
05250	HEART ASSIST SYSTEM IMPLANT WO CC
00062	CARPAL TUNNEL RELEASE W MCC
00380	PRIMARY IRIS PROCEDURES W/O CC
00381	PRIMARY IRIS PROCEDURES W CC
00392	LENS PROCS WITH OR W/O VITRECTOMY W MCC
00412	EXTRAOCUL PROC EXC ORBIT AGE 0-17 W MCC
00482	OTHER DISORDERS OF EYE AGE 0-17 W MCC
00582	T&A PROC,EX TONS/ADNCT ONLY 0-17 W MCC
00592	TONSILLCT &/OR ADNCT ONLY AGE>17 W MCC

TABLE 5	
APS-DRGs® (N=18) Where APS-DRGs®-Level Data Contribute 50 Percent to 90 Percent of Their Final Weight	
00332	CONCUSSION AGE 0-17 W MCC
00402	EXTRAOCUL PROC EXC ORBIT AGE >17 W MCC
00512	SALIVARY GLAND PROCEDURES W MCC
01030	HEART TRANSPLANT W/O CC
03141	URETHRAL PROCEDURES, AGE 0-17 W CC
03170	ADMIT FOR RENAL DIALYSIS W/O CC
03282	URETHRAL STRICTURE AGE >17 W MCC
03612	LAPAROSCPY& INCIS TUBAL INTERRUPT W MCC
03621	ENDOSCOPIC TUBAL INTERRUPTION W CC
03802	ABORTION W/O D&C W MCC
03932	SPLENECTOMY AGE 0-17 W MCC
04312	CHILDHOOD MENTAL DISORDERS W MCC
04322	OTHER MENTAL DISORDER DIAGNOSES W MCC
04462	TRAUMATIC INJURY AGE 0-17 W MCC
05051	EXTENS 3RD DEG BURN WO SKIN GRAFT W CC
05061	FULL BRN W GR OR INHAL W SIG TR W CC
00332	CONCUSSION AGE 0-17 W MCC
00402	EXTRAOCUL PROC EXC ORBIT AGE >17 W MCC

SUMMARY

Weights for the APS-DRGs[®] provide a powerful tool to assess severity across and within diagnostic groups. Based on a nationally representative all-payer sample of hospital discharges, the charge, length of stay, and mortality benchmarks can be used to measure performance and to estimate costs.

If you have questions about the All-Payer Severity-adjusted DRGs (APS-DRGs[®]), please call Client Services at 1-800-999-3747(DRGS), or contact us via the Internet at *support@hss-info.com*.

DISTRIBUTION

Weights and trims for the Version 21.0 APS-DRGs® are contained in a single ASCII disk file, as documented below.

Filename: HIPAAS21WTRIM.DAT
Description: APS-DRGs® Weight and Trims
Record Size: 110
Record Count: 1,130

The format of this file is displayed in Table 6.

TABLE 6			
Description of Weight File			
FIELD	POSITIONS	FORMAT	DESCRIPTION
APS	1 – 5	NNNNN	APS-DRGs® Number
FILLER	6 – 6	C	
DESCRIPTION	7 – 46	C (40)	APS-DRGs® Description
FILLER	47 – 47	C	
LOSWT	48 – 56	NNN.NNNNN	Length of Stay Weight (with explicit decimal)
FILLER	57 – 57	C	
CHGWT	58 – 66	NNN.NNNNN	Charge Weight (with explicit decimal)
FILLER	67 – 67	C	
LLOSTRIM	68 – 71	NNNN	Low Length of Stay Trim
FILLER	72 – 72	C	
HLOSTRIM	73 – 76	NNNN	High Length of Stay Trim
FILLER	77 – 77	C	
LCHGTRIM	78 – 88	N(8).NN	Low Charge Trim
FILLER	89 – 89	C	
HCHGTRIM	90 – 100	N(8).NN	High Charge Trim
FILLER	101 – 101	C	
MORTWT	102 – 110	NNN.NNNNN	Mortality Weight (with explicit decimal)

APPENDIX A

Product Release Notes

All Payer Severity-adjusted DRGs (APS-DRGs®)

Product Release Notes

HIPAA Release - February 2004 (Version 0402H)

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1. **Summary of Changes**: The All Payer Severity-adjusted DRGs (APS-DRGs®) Manual has been updated to conform to the current HIPAA Electronic Transactions and Code Sets requirements. These changes include new field lengths for various fields contained with the APS-DRGs weight file. The HIPAA changes to the EASYGroup™ products have been documented more extensively in Product Bulletin No. 56, *HIPAA Transactions and Code Sets Requirements, "COBOL" EASYGroup™ Update* and No. 57, *HIPAA Transactions and Code Sets Requirements, "C" EASYGroup™ Update*.
 2. **Version**: The version number on this *User Installation Guide* is 0402H.

APPENDIX B

HSS Industry Insight No. 258 Version 21.0 Update to the APS-DRGS® January 2004



INDUSTRY INSIGHT

Industry Insight No. 258

January 2004

Version 21.0 Update to the APS-DRGs®

The APS-DRGs® have been updated to include all FY 2004 ICD-9-CM code additions and deletions. In addition, the APS-DRG® algorithm has been modified to incorporate Medicare FY 2004 (Version 21.0) DRG logic changes. Changes to the APS-DRGs® for Version 21.0 are summarized below.

ICD-9-CM Code Changes

Version 21.0 of the APS-DRGs® has been updated to accommodate the following ICD-9-CM code changes.

- 104 diagnosis additions
- 32 diagnosis codes deletions
- 10 procedure codes additions
- 2 procedure code deletions

Consolidated DRG (CDRG) assignments have been updated to reflect these code changes, as have the Major CC and CC lists and associated exclusion logic. For details on these ICD-9-CM code changes, see HSS *Industry Insight No. 235, Final ICD-9-CM Changes for FY 2004*.

Consolidated DRG (CDRG) Logic Changes

1. **CDRG RENUMBERING:** To remain consistent with the Medicare Version 21.0 Grouper, the following CDRGs have been renumbered.

CDRG 4 (Spinal Procedures): CDRG 4 in MDC 1 (Nervous System) has been changed to CDRG 531 (Spinal Procedures).

CDRG 5 (Extracranial Vascular Procedures): CDRG 5 in MDC 1 (Nervous System) has been changed to CDRG 533 (Extracranial Vascular Procedures).

CDRG 231 (Local Excision and Removal of Internal Fixation Devices Except Hip and Femur): CDRG 231 in MDC 8 (Musculoskeletal and Connective Tissue) has been changed to CDRG 537 (Local Excision and Removal of Internal Fixation Devices Except Hip and Femur).

CDRG 400 (Lymphoma and Leukemia With Major O.R. Procedure): CDRG 400 in MDC 17 (Myeloproliferative Diseases and Disorders and Poorly Differentiated Neoplasms) has been replaced by CDRG 539 (Lymphoma and Leukemia With Major O.R. Procedure).

2. **MDC 1 – NERVOUS SYSTEM:** The following changes have been made to MDC 1 (Nervous System).

Intracranial Vascular Procedures: New CDRG 528 has been created for patients with an intracranial vascular procedure and a principal diagnosis of hemorrhage. These patients have been moved from CDRG 1 (Craniotomy Age > 17), because they are significantly more costly than other patients in this CDRG. New CDRG 528 (Intracranial Vascular Procedure With a Principal Diagnosis of Hemorrhage) includes the following principal diagnoses and operating room procedures:

PRINCIPAL DIAGNOSES	
CODE	DESCRIPTION
094.87	Syphilitic ruptured cerebral aneurysm
430	Subarachnoid hemorrhage
431	Intracerebral hemorrhage
432.0	Nontraumatic extradural hemorrhage
432.1	Subdural hemorrhage
432.9	Unspecified intracranial hemorrhage
OPERATING ROOM PROCEDURES	
CODE	DESCRIPTION
02.13	Ligation of meningeal vessel
38.01	Incision of vessel, intracranial vessels
38.11	Endarterectomy, intracranial vessels
38.31	Resection of vessel with anastomosis, intracranial vessels
38.41	Resection of vessel with replacement, intracranial vessels
38.51	Ligation and stripping of varicose veins, intracranial vessels
38.61	Other excision of vessels, intracranial vessels
38.81	Other surgical occlusion of vessels, intracranial vessels
39.28	Extracranial-intracranial (EC-IC) vascular bypass
39.51	Clipping of aneurysm
39.52	Other repair of aneurysm
39.53	Repair of arteriovenous fistula
39.72	Endovascular repair or occlusion of head and neck vessels
39.79	Other endovascular repair of aneurysm of other vessels

Ventricular Shunt Procedures: Patients with only a ventricular shunt procedure have been found to be less costly than other craniotomy patients in CDRG 1. Therefore, these patients have been removed from CDRG 1 and assigned to new CDRG 529 (Ventricular Shunt Procedures). CDRG 529 includes the following operating room procedures:

CODE	DESCRIPTION
02.31	Ventricular shunt to structure in head and neck
02.32	Ventricular shunt to circulatory system
02.33	Ventricular shunt to thoracic cavity
02.34	Ventricular shunt to abdominal cavity and organs
02.35	Ventricular shunt to urinary system
02.39	Other operations to establish drainage of ventricle
02.42	Replacement of ventricular shunt
02.43	Removal of ventricular shunt

CDRG 23 (Nontraumatic Stupor and Coma): Diagnosis code 780.02 (transient alteration of awareness) has been moved from CDRG 23 (Nontraumatic Stupor and Coma) in MDC 1 to CDRG 429 (Organic Disturbances and Mental Retardation) in MDC 19 (Mental Diseases and Disorders). Typically, the treatment of patients with transient alteration of awareness is more similar to the treatment of patients in CDRG 429.

3. MDC 5 – CIRCULATORY SYSTEM: The following changes have been made to MDC 5 (Circulatory System).

CDRG 478 (Other Vascular Procedures): Procedure code 37.64 (removal of heart assist system) has been removed from CDRG 478 and assigned to CDRG 110 (Major Cardiovascular Procedures).

CDRGs 514 and 515 (Cardiac Defibrillator Implant With and Without Cardiac Catheterization): CDRG 514 has been deleted and replaced by two (2) new CDRGs: CDRG 535 (Cardiac Defibrillator Implant With Cardiac Catheterization and With Acute Myocardial Infarction, Heart Failure, or Shock), and CDRG 536 (Cardiac Defibrillator Implant With Cardiac Catheterization and Without Acute Myocardial Infarction, Heart Failure, or Shock). These new CDRGs have the same procedures currently assigned to CDRG 514, but are split based on the presence or absence of a principal diagnosis of acute myocardial infarction, heart failure, or shock. No parallel changes are being made to CDRG 515 (Cardiac Defibrillator Implant Without Cardiac Catheterization).

Cardiac Resynchronization Therapy (CRT): The following code pairs have been added to the list of generator/lead procedure combinations that can result in assignment to CDRG 515 or new CDRGs 535 and 536.

- ✓ Procedure codes 37.95 (implantation of automatic cardioverter/defibrillator lead(s) only) and 00.54 (implantation or replacement of cardiac resynchronization defibrillator, pulse generator device (CRT-D) only); and
- ✓ Procedure codes 37.97 (replacement of automatic cardioverter/defibrillator lead(s) only) and 00.54.

4. MDC 8 – MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE: Because they involve the cervical spine, procedure codes 81.01 (atlas-axis spinal fusion) and 81.31 (refusion of atlas-axis) have been removed from CDRG 497 (Spinal Fusion Except Cervical). These codes are now assigned to CDRG 519 (Cervical Spinal Fusion).

5. MDC 15 – NEWBORNS AND OTHER NEONATES WITH CONDITIONS ORIGINATING IN THE PERINATAL PERIOD: The following congenital anomaly codes have been moved from MDC 15 and reassigned to other MDCs based on the affected body system. New MDC and CDRG assignments for these congenital anomaly codes are specified in the following table.

CODE	DESCRIPTION	MDC	CDRGS
758.9	Chromosome anomaly, not otherwise specified	23	467 (Other Factors Influencing Health Status)
759.4	Conjoined twins	6	188 and 190 (Other Digestive System Diagnoses, Age > 17 and Age 0 – 17)
759.7	Multiple congenital anomalies, not elsewhere classified	8	256 (Other Musculoskeletal System and Connective Tissue Diagnoses)
759.81	Prader-Willi syndrome	8	256 (Other Musculoskeletal System and Connective Tissue Diagnoses)

CODE	DESCRIPTION	MDC	CDRGS
759.83	Fragile X syndrome	19	429 (Organic Disturbances and Mental Retardation)
759.89	Specified congenital anomalies, not elsewhere classified	8	256 Other Musculoskeletal System and Connective Tissue Diagnoses)
759.9	Congenital anomaly, not otherwise specified	23	467 (Other Factors Influencing Health Status)
779.7	Periventricular leukomalacia	1	34 (Other Disorders of Nervous System)
795.2	Abnormal chromosomal analysis	23	467 (Other Factors Influencing Health Status)

6. **MDC 17 – MYELOPROLIFERATIVE DISEASES AND DISORDERS AND POORLY DIFFERENTIATED NEOPLASMS:** The logic for CDRG 492 (Chemotherapy With Acute Leukemia as Secondary Diagnosis) has been modified to include patients receiving high-dose infusion Interleukin-2 (IL-2) chemotherapy. Assignment to CDRG 492 will continue to require one of the following two principal diagnosis codes:

CODE	DESCRIPTION
V58.1	Encounter for chemotherapy
V67.2	Follow-up examination following chemotherapy

Additionally, either a secondary diagnosis of leukemia (as is currently required) or new procedure code 00.15 (high-dose infusion IL-2 therapy) will be necessary for assignment to CDRG 492. Procedure code 00.15 was being added to ICD-9-CM effective October 1, 2003. CDRG 492 is being re-titled “Chemotherapy With Acute Leukemia or With Use of High Dose Chemotherapy Agent”.

7. **MDC 23 – FACTORS INFLUENCING HEALTH STATUS AND OTHER CONTACTS WITH HEALTH SERVICES:** The following changes have been made to MDC 23 (Factors Influencing Health Status and Other Contacts With Health Services).

Implantable Device: The following codes have been moved from MDC 23 to MDC 1 (Nervous System):

CODE	DESCRIPTION
V53.01	Fitting and adjustment of cerebral ventricular (communicating) shunt
V53.02	Neuropacemaker, brain, peripheral nerve, spinal cord
V53.09	Fitting and adjustment of other devices related to nervous system and special senses

If no operating room (O.R.) procedure is performed, these diagnosis codes will be assigned to CDRG 34 (Other Disorders of Nervous System). If an O.R. procedure is performed, the case will be assigned to the CDRG in MDC 1 to which the O.R. procedure is assigned.

Malignancy Codes: Diagnosis code V10.48 (history of malignancy, epididymis) is now included as a history of malignancy code within CDRG 465 (Aftercare With History of Malignancy as Secondary Diagnosis).

8. **SURGICAL HIERARCHY REVISIONS:** The following revisions have been made to the surgical hierarchies.

MDC 1 (Nervous System): CDRG 3 (Craniotomy Age 0 – 17) has been ordered above CDRG 528 (Intracranial Vascular Procedures With Principal Diagnosis Hemorrhage); CDRG 528 above CDRG 1 (Craniotomy Age > 17); CDRG 1 above CDRG 529 (Ventricular Shunt)

Procedures); CDRG 529 above CDRG 531 (Spinal Procedures); CDRG 531 above CDRG 533 (Extracranial Procedures); and CDRG 533 above CDRG 6 (Carpal Tunnel Release).

MDC 5 (Circulatory System): CDRG 535 (Cardiac Defibrillator Implant With Cardiac Catheterization With AMI, Heart Failure, or Shock) has been reordered above CDRG 536 (Cardiac Defibrillator Implant With Cardiac Catheterization Without AMI, Heart Failure, or Shock), and CDRG 536 above CDRG 515 (Cardiac Defibrillator Implant Without Cardiac Catheterization).

MDC 8 (Musculoskeletal System and Connective Tissue): CDRG 537 (Local Excision and Removal of Internal Fixation Devices Except Hip and Femur) has been reordered above CDRG 230 (Local Excision and Removal of Internal Fixation Devices of Hip and Femur).

MDC 17 (Myeloproliferative Diseases and Disorders and Poorly Differentiated Neoplasms): CDRG 539 (Lymphoma and Leukemia With Major O.R. Procedure) has been reordered above CDRG 401 (Lymphoma and Non-Acute Leukemia With Other O.R. Procedures).

9. **PROCEDURE CODES ASSIGNED TO CDRGs 468, 476 AND 477 – O.R. PROCEDURES UNRELATED TO THE PRINCIPAL DIAGNOSIS:** Cases assigned to CDRG 468 (Extensive O.R. Procedure Unrelated to Principal Diagnosis), CDRG 476 (Prostatic O.R. Procedure Unrelated to Principal Diagnosis), and CDRG 477 (Non-Extensive O.R. Procedure Unrelated to Principal Diagnosis) have been reviewed and the following changes have been made:

Reassignment of Procedures Among DRGs 468, 476 and 477: The following non-extensive procedures have been moved from CDRG 468 to CDRGs 476 and 477.

CODE	DESCRIPTION
38.21	Biopsy of blood vessel
77.42	Biopsy of scapula, clavicle and thorax [ribs and sternum]
77.43	Biopsy of radius and ulna
77.44	Biopsy of carpals and metacarpals
77.45	Biopsy of femur
77.46	Biopsy of patella
77.47	Biopsy of tibia and fibula
77.48	Biopsy of tarsals and metatarsals
77.49	Biopsy of other bones
92.27	Implantation or insertion of radioactive elements

- **CDRG 468 (Extensive OR Procedures Unrelated to Principal Diagnosis):** Procedure code 50.29 (other destruction of lesion of liver) has been moved to CDRG 170 (Other Digestive System O.R. Procedures) in MDC 6 (Digestive System).

10. **NEW AND DELETED DISCHARGE OR PATIENT STATUS CODES:** The Version 21.0 APS-DRGs® have been updated to recognize the following new discharge or patient status codes as valid.

- 43 Discharged/transferred to a Federal hospital (effective October 1, 2003)
- 65 Discharged/transferred to a psychiatric hospital or psychiatric distinct part unit of a hospital (effective April 1, 2004)

Effective October 1, 2003, patient status codes 71 and 72 are discontinued. These codes have been removed from the Version 21.0 APS-DRGs® Grouper logic.

- 71 Discharged/transferred/referred to another institution for outpatient services when specified by the discharge plan of care
- 72 Discharged/transferred/referred within this facility for outpatient services when specified by the discharge plan of care

Refinements To The Complications and Comorbidities (CC) and Neonatal Problem Lists

1. **MAJOR CC AND CC CODE ADDITIONS AND DELETIONS:** The following diagnosis codes have been added to or deleted from the list of diagnoses considered to be Major CCs or CCs. Note that diagnosis code 785.52 is only considered a Major CC if the patient is discharged alive. If the patient expires, 785.52 is treated as a CC only.

CODE	ACTION	DESCRIPTION	STATUS
07982	Add	SARS-ASSOC CORONAVIRUS	CC
2824	Delete	THALASSEMIAS	CC
28241	Add	SICKLE-CELL W/O CRISIS	CC
28242	Add	SICKLE-CELL WITH CRISIS	CC
28249	Add	OTHER THALASSEMIA	CC
28264	Add	SICKLE-CEL/HB-C W/CRISIS	CC
28268	Add	OTHR SICKLE-CEL W/O CRIS	CC
28981	Add	PRIM HYPERCOAG STATE	CC
28982	Add	SEC HYPERCOAG STATE	CC
3580	Delete	MYASTHENIA GRAVIS	CC
35800	Add	MYASTHENIA W/O EXAC	CC
35801	Add	MYASTHENIA WITH EXAC	CC
4803	Add	PNEUMONIA DUE TO SARS	CC
53021	Add	ULCER OF ESOPH W/ BLEED	CC
67450	Add	PERIPARTUM CM, UNSPEC	CC
67451	Add	CARDIOMYOPATH, ANTEPARTU	CC
67452	Add	CARDIOMYOPATH, DEL W/ PP	CC
67453	Add	CARDIOMYOPATH ANTEPARTUM	CC
67454	Add	CARDIOMYOPATH POSTPARTUM	CC
72888	Add	RHABDOMYOLYSIS	CC
76711	Add	SUBGALEAL/EPICRANIAL HEM	CC
78552	Add	SEPTIC SHOCK	MCC
8501	Delete	CONCUSSION-BRIEF LOC	CC
85011	Add	CONCUSSION- < 30 MIN LOC	CC
85012	Add	CONCUSSION 31-59 MIN LOC	CC
99657	Add	INSULIN PUMP MECH COMP	CC
V4321	Add	HEART ASSIST DEVICE	CC
V4322	Add	IMPL ARTIFICIAL HEART	CC

2. **ADDITIONS AND DELETIONS TO THE NEONATAL PROBLEM LISTS:** The following codes have been added to or deleted from the list of diagnoses considered to be major and moderate neonatal problems.

CODE	ACTION	DESCRIPTION	PROBLEM
07982	Add	SARS-ASSOC CORONAVIRUS	Major
2551	Delete	HYPERALDOSTERONISM	Major
25510	Add	PRIM ALDOSTERONISM	Major
25511	Add	GLUCO-REMEDI ALDOSTERONISM	Major
25512	Add	CONN'S SYNDROME	Major
25513	Add	BARTTER'S SYNDROME	Major

CODE	ACTION	DESCRIPTION	PROBLEM
25514	Add	OTHER SECND ALDOSTRONISM	Major
2778	Delete	METABOLISM DISORDER NEC	Major
27781	Add	PRIMARY CARNITINE DEF	Major
27782	Add	CARN DEF DUE INBORN ERR	Major
27783	Add	IATROGENIC CARNITINE DEF	Major
27784	Add	OTHER SEC CARNITINE DEF	Major
27789	Add	OTHER SPEC DIS METABOL	Major
2824	Delete	THALASSEMIAS	Major
28241	Add	SICKLE-CELL W/O CRISIS	Major
28242	Add	SICKLE-CELL WITH CRISIS	Major
28249	Add	OTHER THALASSEMIA	Major
28264	Add	SICKLE-CEL/HB-C W/CRISIS	Major
28268	Add	OTHR SICKLE-CEL W/O CRIS	Major
3580	Delete	MYASTHENIA GRAVIS	Major
35800	Add	MYASTHENIA W/O EXAC	Major
35801	Add	MYASTHENIA WITH EXAC	Major
4803	Add	PNEUMONIA DUE TO SARS	Major
5173	Add	ACUTE CHEST SYNDROME	Major
53021	Add	ULCER OF ESOPH W/ BLEED	Major
78552	Add	SEPTIC SHOCK	Major
8501	Delete	CONCUSSION-BRIEF LOC	Major
85011	Add	CONCUSSION- <30 MIN LOC	Major
85012	Add	CONCUSSION 31-59 MIN LOC	Major
99657	Add	INSULIN PUMP MECH COMP	Major

FOR FURTHER INFORMATION

If you have questions about the APS-DRGs® or the Version 21.0 update, please contact our Client Services Department at 1-800-999-DRGS (3747) or via the Internet at support@hss-info.com. Be sure to check the HSS website (www.hssweb.com) for up-to-date information on ICD-9-CM coding changes and other casemix classification changes.